Online Appendix
for
“Spillover Effects of Institutions on Cooperative Behavior, Preferences, and Beliefs”

Florian Engl — University of Cologne
Arno Riedl — Maastricht University
Roberto A. Weber — University of Zurich

Contents

A Theoretical predictions and additional results

A.1 Theoretical predictions - Standard preferences

If we assume that players are only motivated to maximize their own material payoff, the game-theoretic predictions for the one-stage game are as follows. Since the material payoff from the *PGG No Rule* is independent of the *PGG Rule*, and vice versa, a player's overall utility U_i is additive separable into payoffs from *PGG No Rule*, π_i^L, and payoffs from *PGG Rule*, π_i^R.

Given the contributions of all other players, the payoff π_i^L of player i from *PGG No Rule* is equal to

$$\pi_i^L(g_1^L, ..., g_4^L) = w^L - g_i^L + a\sum_{j=1}^{4} g_j^L, \tag{1}$$

where $0 < a < 1 < 4a$. The parameter a models the marginal per capita return (MPCR) from contributing to the public good, w^L is the per period endowment, and g_i^L is player i's contribution to the public good in *PGG No Rule*. Assumption $a < 1$ implies that contributing nothing is the strictly dominant action for every player with standard preferences because every player's material payoff is maximized by contributing zero to the public good regardless of the other players' contributions.

The payoff π_i^R of player i from *PGG Rule* is equal to

$$\pi_i^R(g_1^R, ..., g_4^R) = \begin{cases} w^R - g_i^R + a\sum_{j=1}^{4} g_j^R & \text{if } g_i^R \geq \textit{MCR} \\ 0 & \text{if } g_i^R < \textit{MCR}, \end{cases} \tag{2}$$

where *MCR* is the minimum contribution requirement that is implemented by the institution. The *MCR* is equal to zero in the *no institution* treatment, equal to w^R in the *exogenous institution* treatment, and equal to the outcome of the voting process in the *endogenous institution* treatment.

Because the institution deters any material incentive to contribute less than the contribution threshold, the dominant action for every player with standard preferences is to contribute exactly the *MCR* level in *PGG Rule*. In the *no institution* treatment, the strategy profile $\{(g_1^L, g_1^R), (g_2^L, g_2^R), (g_3^L, g_3^R), (g_4^L, g_4^R)\} = \{(0, 0), (0, 0), (0, 0), (0, 0)\}$ is thus the unique Nash equilibrium of the entire game. In the *exogenous institution* treatment, the strategy profile $\{(0, w^R), (0, w^R), (0, w^R), (0, w^R)\}$ is the unique Nash equilibrium.

In the *endogenous institution* treatment, every period consists of two stages - a voting stage and a contribution stage. Therefore both voting behavior in the first stage and the contributions in the second stage are part of a player's strategy. In a subgame perfect equilibrium, players play a Nash equilibrium in every subgame. We solve the game by applying backward induction. Consider first the contribution stage. If players attempt to maximize their material payoff, they contribute nothing in the *PGG No Rule* and according to the *MCR* in *PGG Rule*. Given this behavior in the contribution stage one can derive the optimal voting behavior in the voting stage.

Since the contributions in *PGG No Rule* are unaffected by w^R, voting can affect payoffs only in *PGG Rule*. It is easily seen that everybody placing the same vote is a Nash equilibrium in the voting subgame. Since $4a > 1$, deviating to a lower vote (if possible) decreases the *MCR* and makes the deviating player strictly worse off because all players will decrease their contributions to this lower level in stage 2. Deviating to a higher vote (if possible) does not change the *MCR* and thus behavior in the second stage, leaving the payoff of the deviating player unaltered. In case everybody votes for 20 deviating to a lower vote makes the deviating player strictly worse off and a deviation to a higher vote is not possible. Thus, only if all other players vote for 20, also voting for 20 is a strict best response which yields the following proposition.

PROPOSITION 1: *If players have standard preferences, there exists a unique <u>strict</u> subgame perfect equilibrium in which all players vote to set the* MCR *equal to the full endowment ($v_i = w^R \; \forall \; i$), contribute their full endowment in* PGG Rule *($g_i^R = w^R \; \forall \; i$), and contribute nothing in* PGG No Rule *($g_i = 0 \; \forall \; i$).*[1]

[1]Note that there exist other subgame perfect equilibria in which at least two players vote for the same *MCR* $v_i = v_j < w^R$, $v_i = \min \{(v_i)_{i \in I}\}$, all contribute $v_i =$ *MCR* in *PGG Rule* and 0 in *PGG No Rule*. This is the case because deviating in their vote from v_i would not change the implemented threshold (only the smallest vote counts).

A.2 Part II - Results

A.2.1 Voting behavior in the *endogenous institution* treatment

Table A.1: Correlations of individual characteristics with voting decisions in period 1

	Vote	N
Part I - Uncond. contr.	0.237**	92
	(0.023)	
Part I - Belief	0.270***	92
	(0.009)	
Part I - Avg. cond. contr.	0.148	92
	(0.159)	
Risk	0.047	92
	(0.654)	
Patience	0.058	92
	(0.581)	
Altruism	0.137	92
	(0.190)	
Avg. pos. reciprocity	-0.006	92
	(0.949)	
Avg. neg. reciprocity	-0.127	92
	(0.226)	
Avg. trust	-0.012	92
	(0.913)	
CRT	-0.027	66
	(0.832)	
RFP	-0.116	92
	(0.270)	
Age	-0.021	92
	(0.846)	
Female	-0.197*	92
	(0.060)	
Business & economics	0.034	92
	(0.750)	

Notes: The table reports Spearman's rank correlation coefficients. P-values in parentheses. CRT has 66 observations only because we exclude the 26 subjects who indicated that they saw the CRT questions before. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A.2.2 Regression analysis of direct and spillover effects in the *exogenous institution* treatment and the *endogenous institution* treatment

The non-parametric results regarding spillover effects reported in the main text are corroborated using regression analyses. Table A.2 reports the outcome of an OLS and a random effects Tobit panel regression, respectively. The independent variable is contributions to *PGG No Rule*. The variable "No (constant)" indicates the *no institution* treatment as the baseline category, "Exo" ("Endo") is a dummy variable for the *exogenous institution* treatment (*endogenous institution* treatment), "Period" captures the contribution dynamics in the *no institution* treatment and the interaction variables "Exo × Period" ("Endo × Period") reflect how these dynamics differ in the two treatments with institutions in comparison to the treatment with no institution.

Table A.2: Treatment effect on contributions to *PGG No Rule*

	(1) OLS	(2) Tobit panel
No (constant)	12.208***	13.911***
	(1.012)	(1.219)
Exo	2.540*	3.886*
	(1.405)	(2.110)
Endo	0.477	0.690
	(1.380)	(1.633)
Period	-0.291***	-0.490***
	(0.048)	(0.074)
Exo × Period	0.080	0.105
	(0.088)	(0.105)
Endo × Period	0.252***	0.475***
	(0.091)	(0.113)
Observations	5440	5440
Adjusted R^2	0.062	

Notes: Robust standard errors clustered on part-II groups in model (1) and bootstrapped standard errors (55 replications) in model (2) in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The results show that the *exogenous institution* treatment ("Exo") leads to an upward shift in the level of contributions, whereas no such effect is detected for the *endogenous institution* treatment ("Endo"). Thus, there is a spillover effect 'on impact' in the *exogenous institution* treatment but not in the *endogenous institution* treatment. Over time the effects are opposite. In the *exogenous institution* treatment the decline in contributions over the 20 periods is the same as in the *no institution* treatment ("Exo × Period" is statistically insignificant), which implies a stable spillover effect. In contrast, in the *endogenous institution* treatment, the downward dynamics observed in the *no institution* treatment are completely offset (coefficient of "Endo ×

Period" is almost equal to the negative of "Period" and statistically significant), which implies an increasing spillover effect over time.

Table A.10 in Appendix A.2.10 shows that the results reported here are robust to the inclusion of individual characteristics as control variables. Of all individual characteristics elicited in Part V, the altruism, CRT and rule-following measure have a positive and significant effect on contributions to *PGG No Rule*. Average trust has a marginally significant, negative effect on contributions to *PGG No Rule*.

A.2.3 MCR effect

Table A.3: MCR and spillover effect on contributions in the *exogenous institution* treatment and the *endogenous institution* treatment

		Period				
		All	1-5	6-10	11-15	16-20
	MCR effect	11.17	9.40	10.36	12.25	12.68
	(s.e.)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Exo	Spillover effect	3.38	2.54	2.94	4.92	3.12
(N=22)	(s.e.)	(0.95)	(0.83)	(1.17)	(1.28)	(1.12)
	[p-value]	[0.026]	[0.047]	[0.073]	[0.013]	[0.052]
	Relative size of spillover effect	0.30	0.27	0.28	0.40	0.25
	MCR effect	6.67	0.13	6.29	9.83	10.43
	(s.e.)	(0.82)	(1.11)	(1.02)	(0.80)	(0.81)
	[p-value]	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]
Endo	Spillover effect	3.12	1.09	2.46	4.29	4.63
(N=23)	(s.e.)	(1.02)	(0.84)	(1.13)	(1.32)	(1.31)
	[p-value]	[0.047]	[0.386]	[0.153]	[0.020]	[0.013]
	Relative size of spillover effect	0.47	8.38	0.39	0.44	0.44

Notes: For each group in the treatments, the MCR (spillover) effect equals the difference between that group's MCR in *PGG Rule* (average contributions to *PGG No Rule*) and the average contributions of all groups to *PGG Rule* (*PGG No Rule*) in the *no institution* treatment. p-values are from Wilcoxon rank-sum tests comparing the group-level MCR in *PGG Rule* (contributions in *PGG No Rule*) of the *exogenous institution* treatment and the *endogenous institution* treatment, respectively, to contributions in *PGG Rule* (*PGG No Rule*) in the *no institution* treatment. Relative size of spillover effect is the quotient of spillover and MCR effect.

A.2.4 Relationship between the *MCR* and contributions to *PGG No Rule*

Table A.4: The effect of the *MCR* on contributions to *PGG No Rule*

	(1) OLS
MCR	0.198***
	(0.064)
Period	-0.211***
	(0.039)
Constant	11.189***
	(0.909)
Observations	5440
Adjusted R^2	0.073

Notes: Robust standard errors clustered on part-II groups in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A.2.5 Evidence against imitation

In this part, we test whether our findings are driven by subjects who simply copied their decisions in *PGG Rule* to *PGG No Rule*. If that would be the case, then it could explain the treatment effects that we find, because, due to the *MCR*, contributions to *PGG Rule* are higher in the *exogenous institution* treatment and the *endogenous institution* treatment than in the *no institution* treatment.

First, we focus on cases in which subjects inserted identical contribution levels in *PGG No Rule* and *PGG Rule*. In the *no institution* treatment, we find that this is the case in 62.77 percent of observations. In the *exogenous institution* treatment and the *endogenous institution* treatment, the frequency of such cases is significantly lower (34.20 percent and 37.88 percent, respectively; Fisher's exact test, $p < 0.001$ and $p < 0.001$, respectively). However, contributing the same amount to *PGG No Rule* and *PGG Rule* is not necessarily evidence of imitation. Indeed, for many preference types, a person with identical beliefs about others' behavior across the two games has no reason to contribute anything but identical values.Nevertheless, imitation by copying contributions may occur in those relatively infrequent cases where contributions are identical.

To determine whether the treatments have an effect only because subjects copy the *MCR* in *PGG No Rule*, we consider those cases in the *endogenous institution* treatment in which a *MCR* above 0 but below 20 was implemented. Only for those cases it is fairly certain that, if subjects imitated the *MCR* in *PGG No Rule*, it is deliberate and not because they hit the corner of 0 or 20. Out of 868 cases (individual observations) in which a *MCR* above 0 and below 20 was implemented, the contributions to *PGG No Rule* were identical to the contributions to *PGG Rule* in 199 cases (22.93 percent) and were identical to the *MCR* in 86 cases (9.91 percent). Thus, in maximally 10 percent of all cases may have subjects mirrored the *MCR* deliberately. Excluding those observations and only considering a *MCR* between 0 and 20, we still find a highly significant positive correlation between the implemented *MCR* and contributions to *PGG No Rule* (Spearman's rho, $\rho = 0.181$, $p < 0.001$).[2] Thus, we don't find evidence that such a *pure imitation* effect is driving the treatment effect.

Second, we test whether two proxy variables, which arguably measure proneness to simply (but perhaps imperfectly) imitating the *MCR* in *PGG No Rule*, explain contributions to *PGG No Rule*. These two variables are i) a binary variable that indicates whether the contribution to *PGG Rule* was submitted first, and ii) a continuous variables that measures the time span in between the contribution submission to *PGG Rule* and *PGG No Rule*. We assume that subjects who submit their contribution decision for *PGG Rule* first and let little time pass in between the two decisions are more prone to simply (but possibly imperfectly) imitate the *MCR*.

Averaged over all periods, the proportion of subjects who submitted their contribution decision for *PGG Rule* before their decision for *PGG No Rule* is somewhat higher in the *exogenous institution* treatment (34.55 percent) and the *endogenous institution* treatment (37.17 percent) than in the *no institution* treatment (30.49 percent). Furthermore, in the very first period, the differences are even more pronounced (26.14 percent in the *exogenous institution* treatment and 31.52 percent in the *endogenous institution* treatment vs 15.22 percent in the *no institution* treatment). On the other hand, the time between the submissions is lower in the *no institution* treatment than in both the *exogenous institution* treatment and the *endogenous institution* treatment (1.54 seconds vs 2.17 and 2.43 seconds, respectively).

When we regress the decision to submit first in *PGG Rule* on the absolute difference in contributions between *PGG No Rule* and *PGG Rule* (see column (1) of Table A.5), we find that there is no effect in the *no institution* treatment and the *exogenous institution* treatment, but a significantly positive effect in the *endogenous institution* treatment. Thus, submitting the contribution to *PGG Rule* first significantly increases the difference in contributions between the *PGG Rule* and *PGG No Rule* in the *endogenous institution* treatment compared to the *no institution* treatment, which is the opposite of what one would expect in case of an imitation effect.

When regressing the time span between the submissions of contributions on the absolute difference in contributions in the two games (see column (2) of Table A.5), we do not find any significant effect.

Finally, when regressing all interactions on the absolute difference in contribution between *PGG No Rule* and *PGG Rule* (see column (3) of Table A.5), we find that, in the *no institution* treatment, the difference in contributions significantly decreases the shorter is the difference

[2]When taking individual averages over all relevant periods that fit the criteria, the results remain the same (Spearman's rho, $\rho = 0.299$, $p = 0.005$).

in time between the two decisions, but only if one decides about *PGG Rule* first. Thus, this looks like an imitation effect. However, the effect is completely counteracted in the *exogenous institution* treatment and the *endogenous institution* treatment. Thus, to summarize, we don't find any evidence that imitation effects could explain our results.

Table A.5: Influence of decision sequence and time on the difference in contributions

	(1) OLS	(2) OLS	(3) OLS
Period	0.135***	0.140***	0.138***
	(0.039)	(0.038)	(0.038)
No (constant)	0.563	0.426	0.468
	(0.507)	(0.507)	(0.503)
Exo	5.328***	5.470***	5.306***
	(1.090)	(1.023)	(1.099)
Endo	3.000***	3.447***	2.898***
	(0.919)	(1.070)	(0.993)
Right first	-0.039		-0.781*
	(0.295)		(0.408)
Right first × Exo	0.437		1.279
	(0.830)		(0.896)
Right first × Endo	1.362*		2.182**
	(0.764)		(0.964)
Time diff		0.043	0.034
		(0.043)	(0.036)
Time diff × Exo		-0.009	0.010
		(0.060)	(0.064)
Time diff × Endo		0.008	0.030
		(0.085)	(0.084)
Right first × Time diff			0.641***
			(0.226)
Right first × Time diff × Exo			-0.694***
			(0.244)
Right first × Time diff × Endo			-0.672***
			(0.250)
Observations	5440	5440	5440
Adjusted R^2	0.128	0.125	0.128

Notes: The dependent variable is the absolute difference in contributions between *PGG No Rule* and *PGG Rule*. "Right first" is a binary variable that is 1 if the subject submitted his decision for *PGG Rule* first and zero otherwise. "Time diff" is the time difference, in seconds, between the first and the second submission of contribution decision. Robust standard errors (clustered on part-II groups) in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A.2.6 Decomposing the spillover effect

Table A.6 shows the two stages of a hurdle model. In Stage 1, a Probit regression estimates the effect of treatments, period, and treatment-period interactions on the decision to contribute. The results show that both treatments (variables "Exo" and "Endo") do not have a significant level effect on the decision to contribute something positive. The variable "Period" has a significantly negative effect, indicating that the likelihood to contribute a positive amount is decreasing over time in the *no institution* treatment. The trend is the same in the *exogenous institution* treatment and in the *endogenous institution* treatment, as shown by the insignificant interaction variables.

In Stage 2, the hurdle model estimates a linear regression model truncated at zero. That is, it measures the effect on the level of contribution, conditional on a positive contribution. The estimation results show that the *exogenous institution* treatment leads to significantly higher contribution levels compared to the *no institution* treatment, while there is no such effect for the *endogenous institution* treatment. Similar to the decision to contribute, the level of contributions is significantly decreasing over time in the *no institution* treatment. This negative trend is offset in the *exogenous institution* treatment. Although, the difference with the *no institution* treatment is not significant, it is the case that the trend in the *exogenous institution* treatment is statistically not different from zero ($Period + Exo \times Period = 0, p = 0.453$, Wald test). The negative trend in the *no institution* treatment is effectively overturned in the *endogenous institution* treatment and contribution levels rise significantly over time ($Period + Endo \times Period = 0, p = 0.067$, Wald test).

Table A.6: Decision to contribute and contributions to *PGG No Rule*

	Hurdle Stage 1	Hurdle Stage 2
No (constant)	1.294***	13.213***
	(0.193)	(0.921)
Exo	-0.087	3.142***
	(0.285)	(1.069)
Endo	0.298	-0.341
	(0.290)	(1.242)
Period	-0.052***	-0.161**
	(0.008)	(0.068)
Exo × Period	0.013	0.122
	(0.015)	(0.086)
Endo × Period	0.006	0.289***
	(0.012)	(0.097)
Observations	5440	4357

Notes: The baseline category "No (constant)" is a binary variable that indicates the *no institution* treatment. The dependent variable in regression (1) is a dummy that equals 1 if contribution is positive and 0 otherwise. The dependent variable in regression (2) is the level of contributions to *PGG No Rule* conditional on a positive contribution. Stage 1 is a Probit regression; Stage 2 is a linear regression truncated at 0. Robust standard errors (clustered on part-II groups) in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

A.2.7 Estimating a causal tree.

Figures A.1–A.3 show the causal trees for the three outcomes. The bubble at the top of the tree shows the average treatment effect for the whole sample. The splitting rule then selects one covariate for the first split of the sample according to the greatest heterogeneous treatment effect. For instance, in the causal tree of Figure A.1 the first selected covariate is *positive reciprocity* and the sample is split in those with a positive reciprocity measure below and above 6.5 (as elicited in our preference module). The 31% of subjects with positive reciprocity above 6.5 exhibit a Conditional Average Treatment Effect (CATE) of 1.5 tokens whereas those with positive reciprocity below 6.5 exhibit a CATE of 4.3 tokens. It thus seems that the presence of an institution leads to positive spillovers especially for those subjects that exhibit small positive reciprocity. Next, the causal tree searches, within each of the two subsamples, the next covariate to split the subsample according to heterogeneous treatment effects. For instance, among those with positive reciprocity above 6.5, the tree is further split into those of age below 25 years (24% of the sample and a CATE of 0.29) and those above 25 years (7% of the sample and a CATE of 5.7). Note that even so we applied cross-validation techniques to prune the tree, the optimal suggested tree size is not pruned at all.

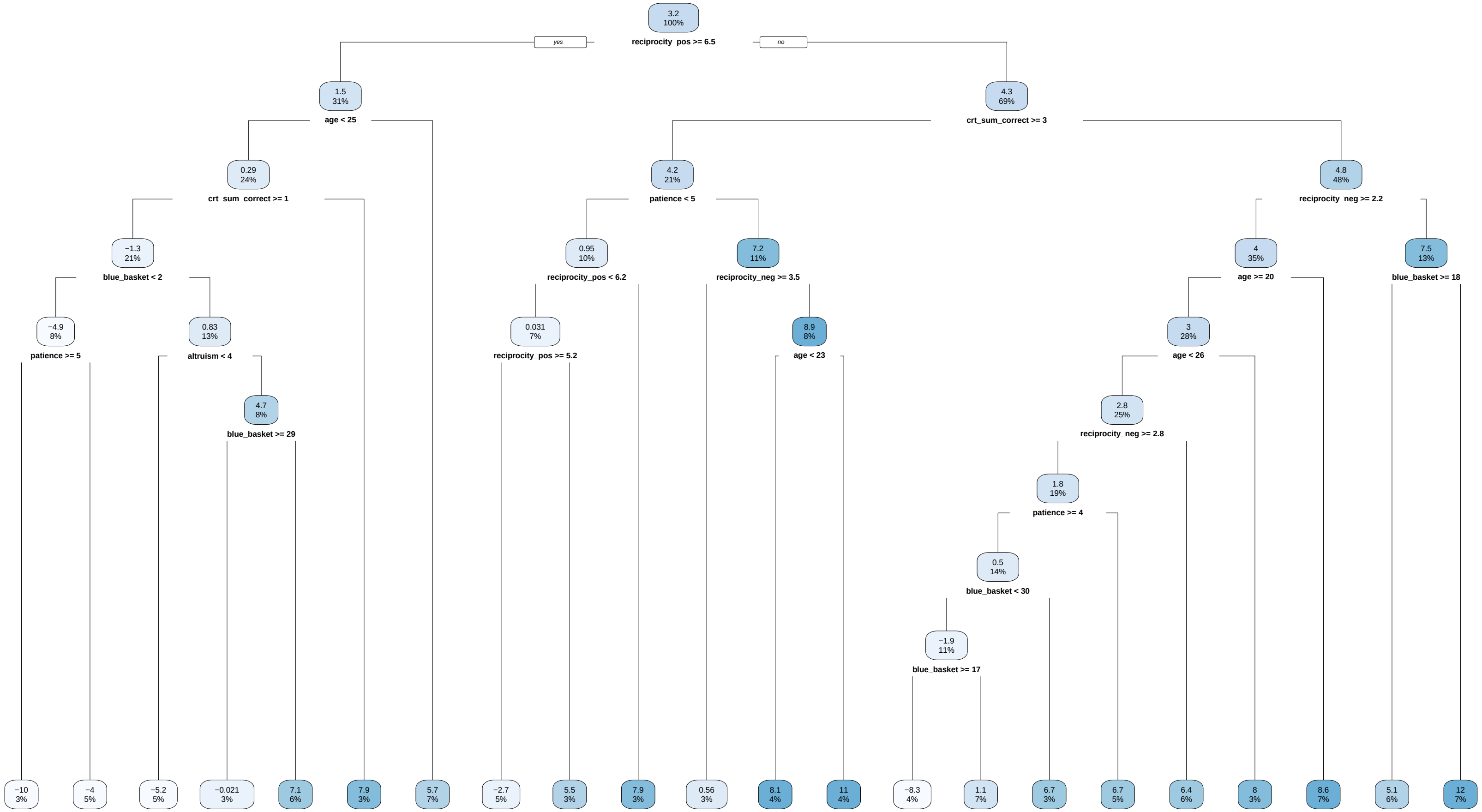


Figure A.1: Causal tree for contributions to *PGG No Rule* in Part II.

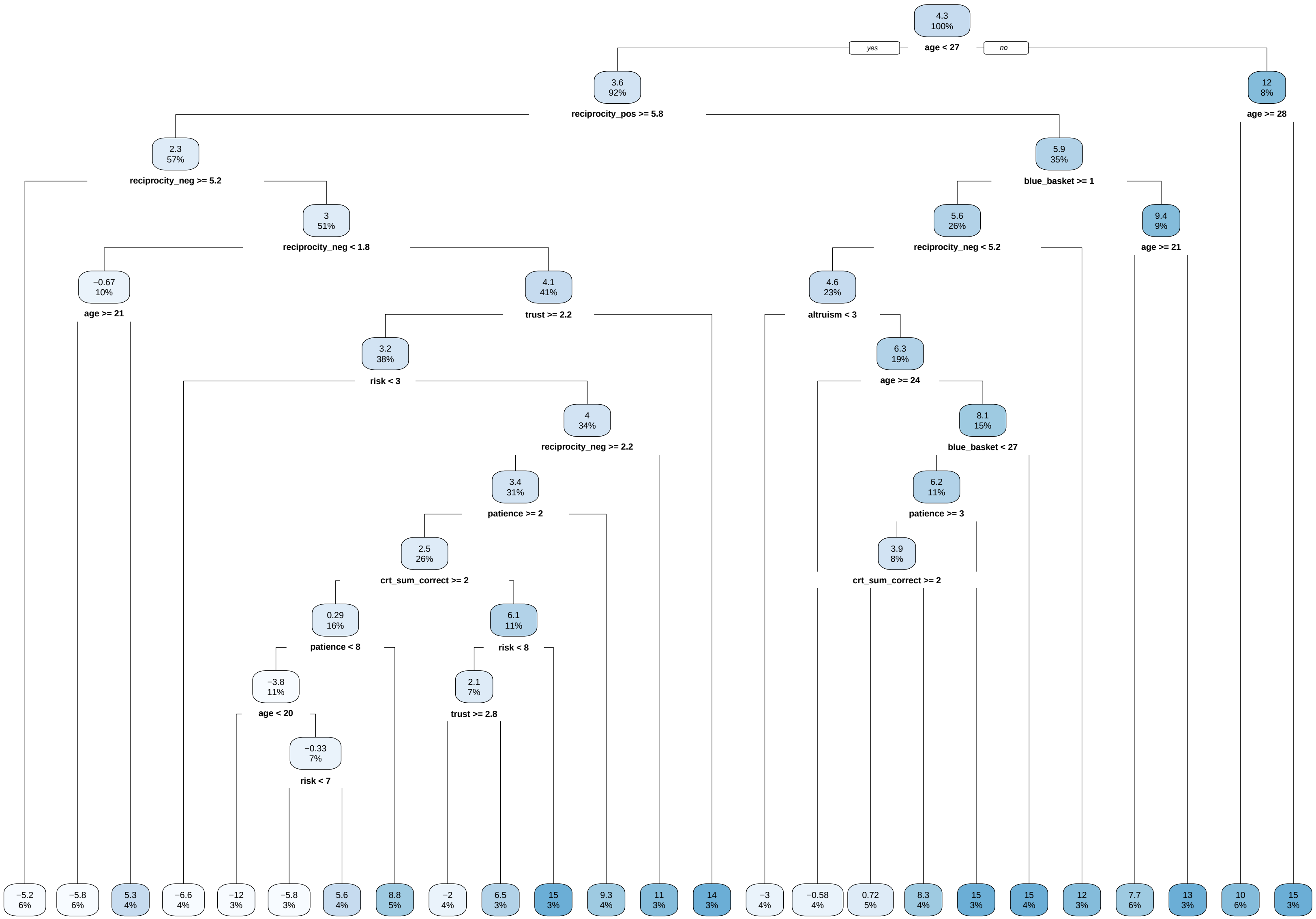


Figure A.2: Causal tree for unconditional contributions in Part III.

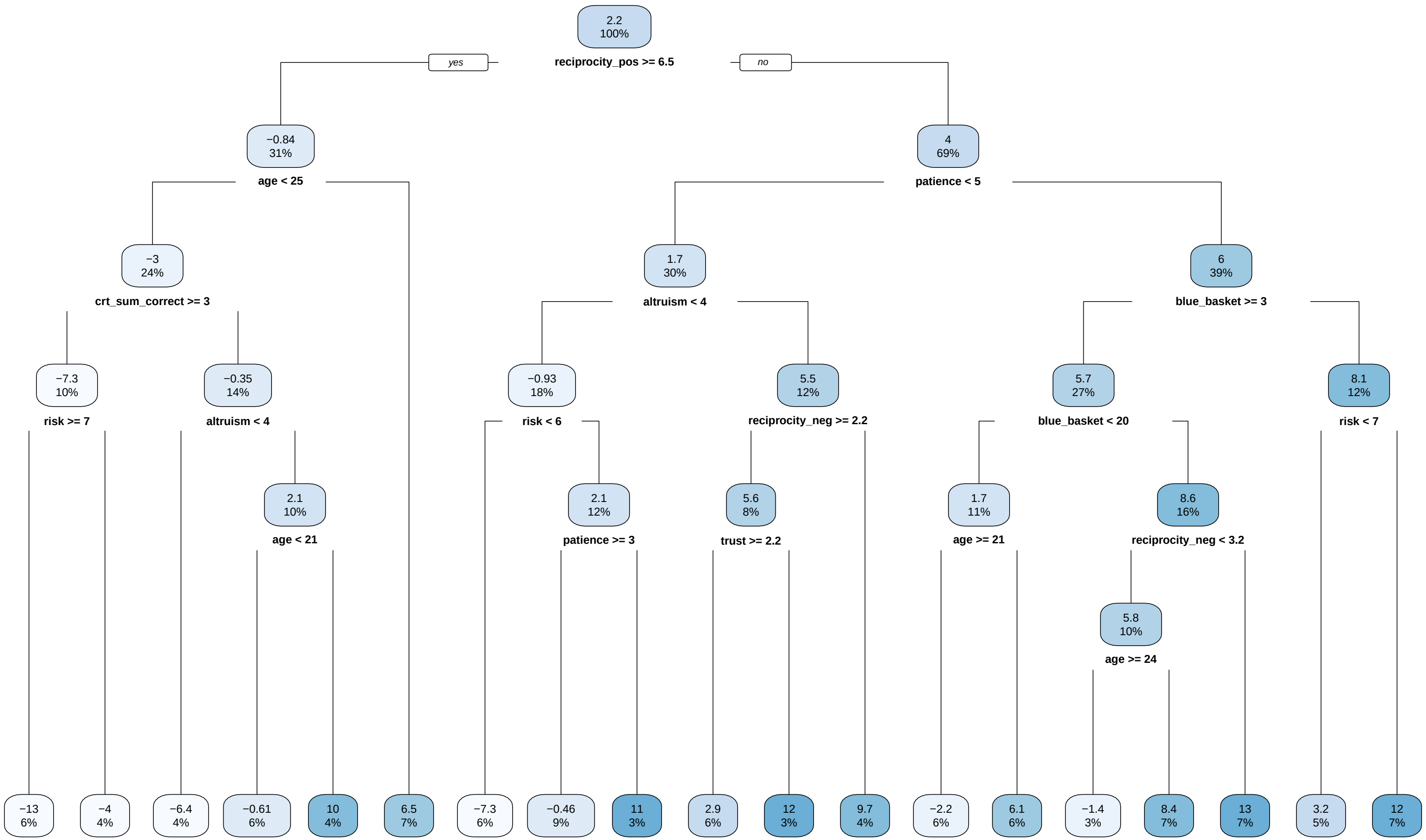
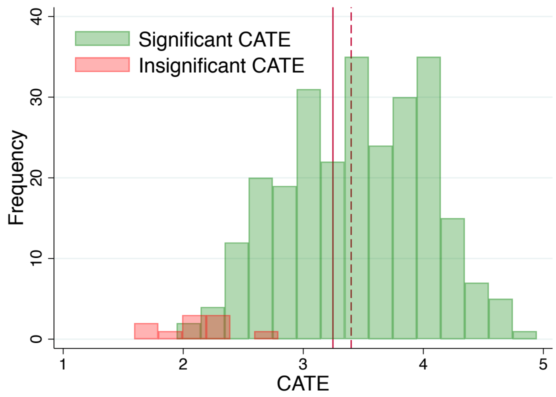
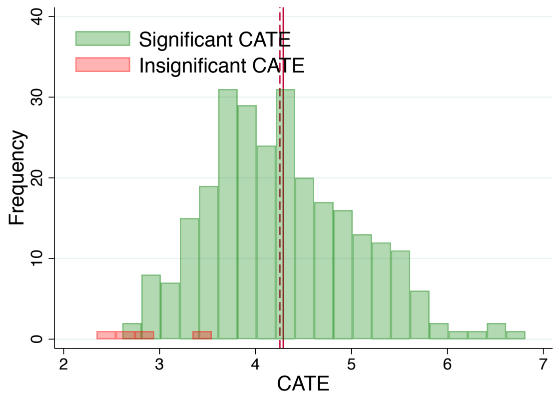


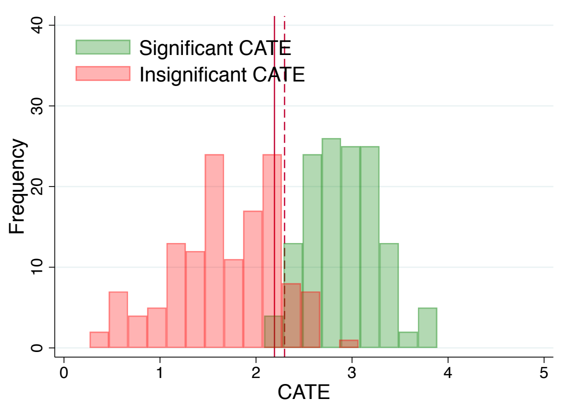
Figure A.3: Causal tree for unconditional contributions in Part IV.



(a) Part II - Contributions to *PGG No Rule*



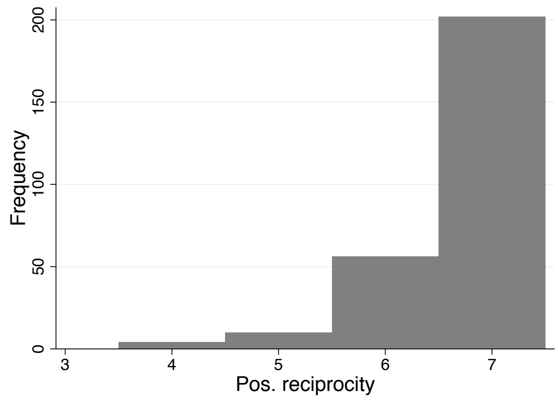
(b) Part III - Unconditional contributions



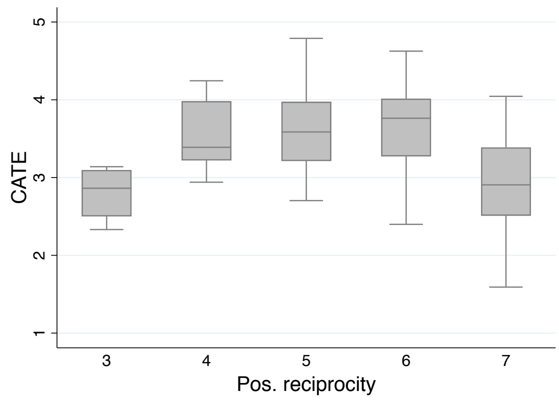
(c) Part IV - Unconditional contributions

Figure A.4: X-learner estimated CATEs by outcome.

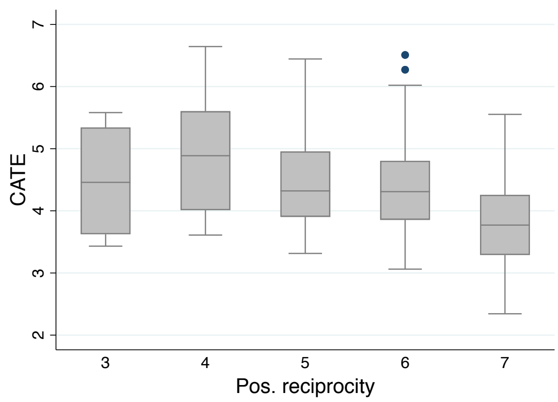
Note: The red bars indicate the true ATE and the dotted red bars indicate the mean of the CATE.



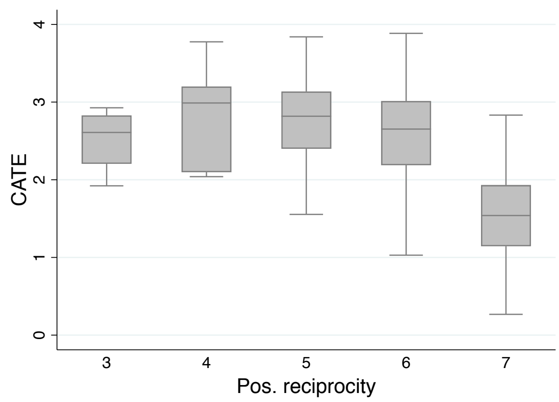
(a) Distribution



(b) Part II - Contributions to *PGG No Rule*

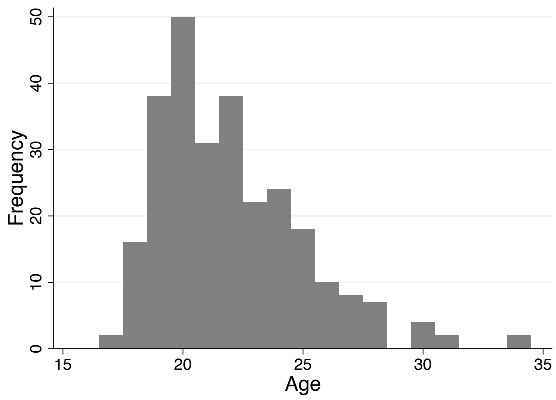


(c) Part III - Unconditional contributions

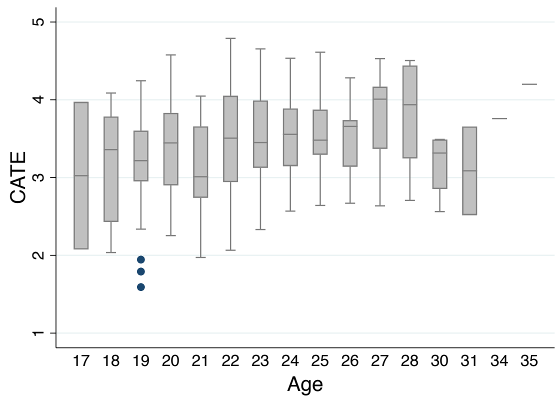


(d) Part IV- Unconditional contributions

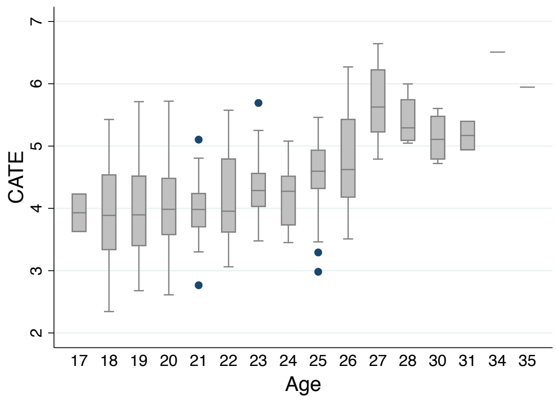
Figure A.5: Pos. reciprocity: Distribution and X-learner estimated CATEs.



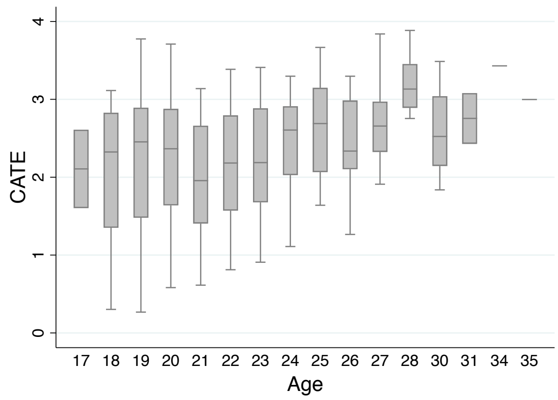
(a) Distribution



(b) Part II - Contributions to *PGG No Rule*



(c) Part III - Unconditional contributions



(d) Part IV- Unconditional contributions

Figure A.6: Age: Distribution and X-learner estimated CATEs.

A.2.8 Voting behavior in the *endogenous 0-20 institution* treatment

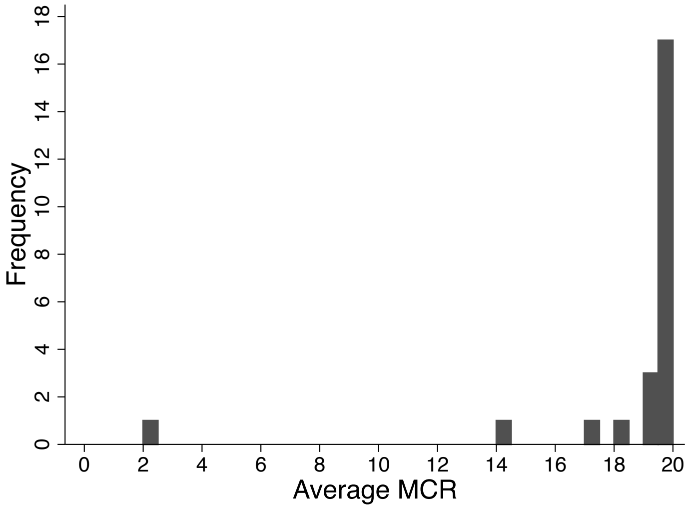


Figure A.7: Frequency of implemented *MCR*'s (group averages) in the *endogenous 0-20 institution* treatment.

A.2.9 Direct and spillover effects in the *exogenous yoked institution* treatment and the *endogenous 0-20 institution* treatment

Table A.7: Direct and spillover effect of institutions on contributions in the *endogenous 0-20 institution* treatment and the *exogenous yoked institution* treatment

		Period				
		All	1-5	6-10	11-15	16-20
	Direct effect	10.31	8.52	9.55	11.27	11.88
	(s.e.)	(0.56)	(0.52)	(0.55)	(0.68)	(0.56)
	[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Endo 0-20	Spillover effect	0.71	1.18	0.38	0.97	0.31
(N=24)	(s.e.)	(1.00)	(0.79)	(0.99)	(1.16)	(1.31)
	[p-value]	[0.595]	[0.328]	[0.865]	[0.395]	[0.873]
	Relative size of spillover effect	0.07	0.14	0.04	0.09	0.03
	Direct effect	8.56	3.83	8.03	10.86	11.50
	(s.e.)	(0.22)	(0.40)	(0.27)	(0.17)	(0.15)
	[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Exo yoked	Spillover effect	1.98	0.39	1.13	3.22	3.18
(N=24)	(s.e.)	(0.95)	(0.87)	(1.17)	(1.14)	(1.19)
	[p-value]	[0.142]	[0.670]	[0.551]	[0.072]	[0.053]
	Relative size of spillover effect	0.23	0.10	0.14	0.30	0.28

Notes: For each group in the treatments, the direct (spillover) effect equals the difference between that group's average contributions to *PGG Rule* (*PGG No Rule*) and the average contributions of all groups to *PGG Rule* (*PGG No Rule*) in the *no institution* treatment. p-values are from Wilcoxon rank-sum tests comparing the group-level contributions in *PGG Rule* (*PGG No Rule*) of the *endogenous 0-20 institution* treatment and the *exogenous yoked institution* treatment, respectively, to contributions in *PGG Rule* (*PGG No Rule*) in the *no institution* treatment. Relative size of spillover effect is the quotient of spillover and direct effect.

Table A.8: MCR and spillover effect of institutions on contributions in the *endogenous 0-20 institution* treatment and the *exogenous yoked institution* treatment

		Period				
		All	1-5	6-10	11-15	16-20
	MCR effect	9.84	7.56	9.19	10.91	11.68
	(s.e.)	(0.78)	(0.99)	(0.74)	(0.89)	(0.69)
	[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Endo 0-20	Spillover effect	0.71	1.18	0.38	0.97	0.31
(N=24)	(s.e.)	(1.00)	(0.79)	(0.99)	(1.16)	(1.31)
	[p-value]	[0.595]	[0.328]	[0.865]	[0.395]	[0.873]
	Relative size of spillover effect	0.07	0.16	0.04	0.09	0.03
	MCR effect	6.62	-0.20	6.16	9.85	10.68
	(s.e.)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Exo yoked	Spillover effect	1.98	0.39	1.13	3.22	3.18
(N=24)	(s.e.)	(0.95)	(0.87)	(1.17)	(1.14)	(1.19)
	[p-value]	[0.142]	[0.670]	[0.551]	[0.072]	[0.053]
	Relative size of spillover effect	0.30	-	0.18	0.33	0.30

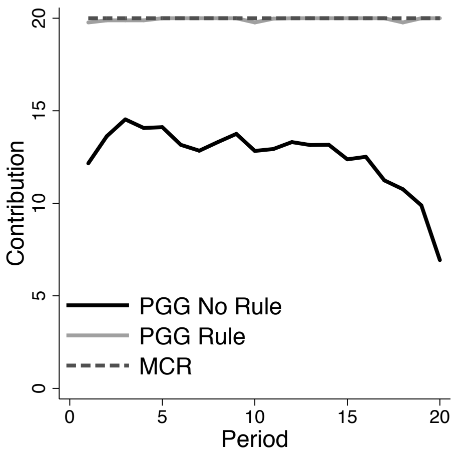
Notes: For each group in the treatments, the MCR (spillover) effect equals the difference between that group's MCR in *PGG Rule* (average contributions to *PGG No Rule*) and the average contributions of all groups to *PGG Rule* (*PGG No Rule*) in the *no institution* treatment. p-values are from Wilcoxon rank-sum tests comparing the group-level MCR in *PGG Rule* (contributions in *PGG No Rule*) of the *endogenous 0-20 institution* treatment and the *exogenous yoked institution* treatment, respectively, to contributions in *PGG Rule* (*PGG No Rule*) in the *no institution* treatment. Relative size of spillover effect is the quotient of spillover and MCR effect.

Two possible explanations of the weak spillover effect in *endogenous 0-20 institution* treatment. One possible explanation is that the cases in which a *MCR* of 0 was implemented resulted in very low contribution levels, which is consistent with lower average contributions to *PGG No Rule* when a *MCR* of 0 instead of a *MCR* of 20 is implemented (7.65 vs 10.02). However, looking only at groups and periods with a *MCR* of 20 produces no significant difference compared to the *no institution* treatment. Alternatively, it could be that the deviation from unanimity in implementing the *MCR* weakens the spillover effect, but we find no significant behavioral differences between groups in which only three subjects voted for a *MCR* of 20 from those in which all four subjects did so. It is also not the case that, conditional on voting for 20, subjects contributed different amounts depending on whether two or three other group members also voted for 20 (for an overview of these results, see Table A.9). Hence, while we cannot completely rule out that weakening the unanimity requirement had some negative effect on contributions in *PGG No Rule*, we cannot detect any such effect in our data.

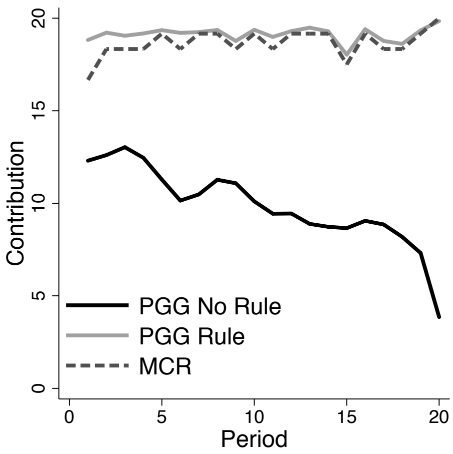
Table A.9: Contributions to *PGG No Rule* for different voting outcomes in the *endogenous 0-20 institution* treatment

	Votes for a *MCR* of 20				
	0	1	2	3	4
Number of periods	3	6	23	91	357
Avg. contribution to *PGG No Rule*	4.00	5.88	8.59	9.52	10.14
...of those who voted for 20	-	3.5	10.11	10.47	10.14
...of those who voted for 0	4.00	6.67	7.07	6.68	-

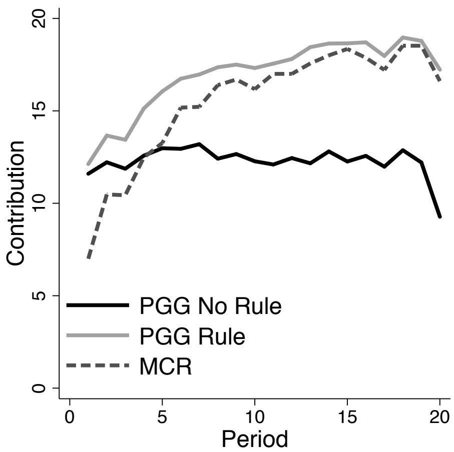
A.2.10 Contributions to *PGG No Rule* and *PGG Rule*



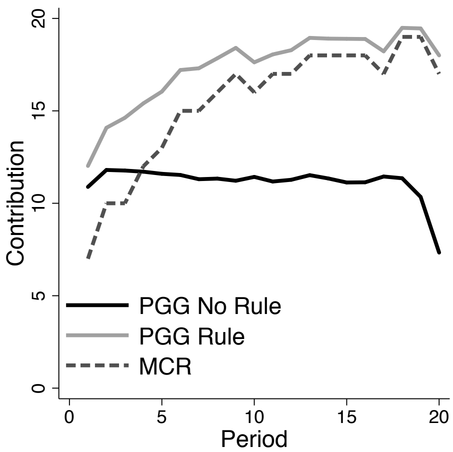
(a) Exogenous institution



(b) Endogenous 0-20 institution



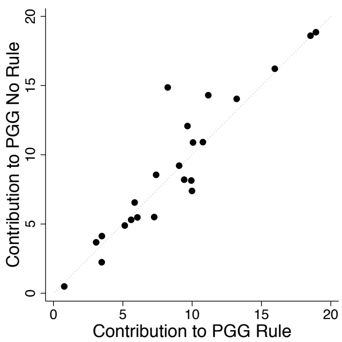
(c) Endogenous institution



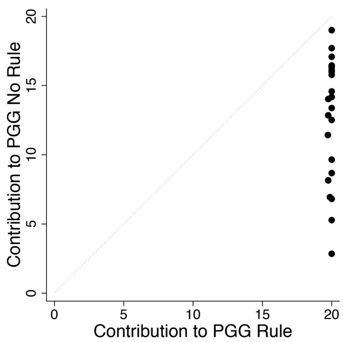
(d) Exogenous yoked institution

Figure A.8: Mean contributions under *PGG No Rule* and *PGG Rule*, and *MCR*.

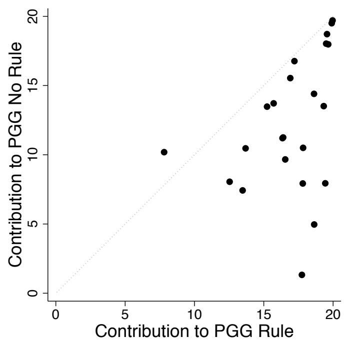
Note: The slight differences in the *MCR* of the *endogenous institution* treatment and the *exogenous yoked institution* treatment are due to rounding in the latter.



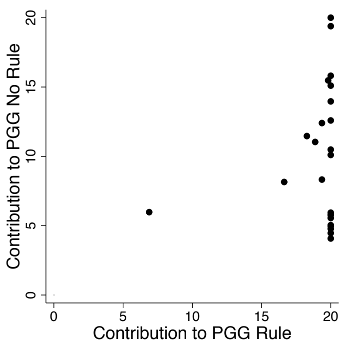
(a) No institution



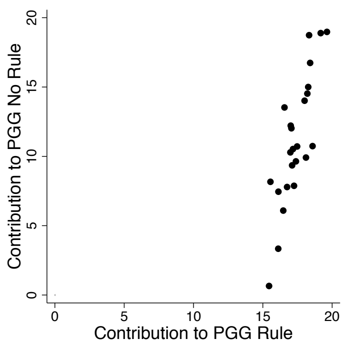
(b) Exogenous institution



(c) Endogenous institution



(d) Endogenous 0-20 institution



(e) Exogenous yoked institution

Figure A.9: Average contributions to *PGG No Rule* and *PGG Rule*.

Notes: Each dot shows one group's average contribution across the 20 periods of Part II to *PGG No Rule* (vertical axis) and *PGG Rule* (horizontal axis).

Table A.10: Treatment effect on contributions to *PGG No Rule*

	(1) OLS	(2) OLS	(3) OLS	(4) Tobit panel	(5) Tobit panel	(6) Tobit panel
No (constant)	12.208***	5.730*	1.318	13.783***	2.670	-7.596
	(1.009)	(3.318)	(3.082)	(1.297)	(5.763)	(5.417)
Exo	2.540*	2.810**	2.572**	3.771**	4.283*	3.784***
	(1.401)	(1.362)	(1.190)	(1.782)	(2.229)	(1.343)
Endo 0-20	1.106	1.623	1.544	2.201	3.204**	3.025*
	(1.242)	(1.178)	(1.019)	(1.505)	(1.575)	(1.656)
Endo	0.477	0.909	0.864	0.669	1.480	1.413
	(1.376)	(1.315)	(1.192)	(2.146)	(1.330)	(1.341)
Exo yoked	-0.213	0.237	0.235	-1.394	-0.576	-0.554
	(1.497)	(1.491)	(1.302)	(1.668)	(1.640)	(1.738)
Period	-0.291***	-0.291***	-0.291***	-0.475***	-0.475***	-0.475***
	(0.048)	(0.048)	(0.048)	(0.061)	(0.068)	(0.079)
Exo	0.080	0.080	0.080	0.103	0.103	0.103
× Period	(0.088)	(0.088)	(0.088)	(0.112)	(0.113)	(0.120)
Endo 0-20	-0.038	-0.038	-0.038	-0.095	-0.096	-0.095
× Period	(0.073)	(0.073)	(0.073)	(0.097)	(0.108)	(0.120)
Endo	0.252***	0.252***	0.252***	0.458***	0.457***	0.458***
× Period	(0.090)	(0.091)	(0.091)	(0.118)	(0.104)	(0.101)
Exo yoked	0.209**	0.209**	0.209**	0.392***	0.392***	0.392***
× Period	(0.092)	(0.092)	(0.092)	(0.090)	(0.102)	(0.121)
Controls (Part I)	No	NO	YES	NO	NO	YES
Controls (Part V)	No	YES	YES	NO	YES	YES
Observations	9280	9280	9280	9280	9280	9280
Adj. R^2	0.057	0.106	0.183			

Notes: Robust standard errors clustered on part-II groups in models (1)-(3) and bootstrapped standard errors (55 replications) in models (4)-(6) in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.11: Contributions to *PGG No Rule*

	(1) Hurdle Stage 1	(2) Hurdle Stage 2
No (constant)	1.294***	13.224***
	(0.192)	(0.909)
Exo	-0.087	3.135***
	(0.284)	(1.061)
Endo 0-20	0.169	0.585
	(0.237)	(1.178)
Endo	0.298	-0.339
	(0.289)	(1.234)
Exo yoked	0.022	-0.396
	(0.305)	(1.237)
Period	-0.052***	-0.160**
	(0.008)	(0.068)
Exo × Period	0.013	0.121
	(0.015)	(0.085)
Endo 0-20 × Period	-0.014	0.044
	(0.011)	(0.100)
Endo × Period	0.006	0.288***
	(0.012)	(0.097)
Exo yoked × Period	0.020	0.195**
	(0.016)	(0.098)
Observations	9280	7419

Notes: The baseline category "No (constant)" is a binary variable that indicates the *no institution* treatment. The dependent variable in regression (1) is a dummy that equals 1 if contribution is positive and 0 otherwise. The dependent variable in regression (2) is the level of contributions to *PGG No Rule* conditional on a positive contribution. Stage 1 is a Probit regression; Stage 2 is a linear regression truncated at 0. Robust standard errors (clustered on part-II groups) in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A.2.11 Potential channels

Table A.12: Rule-following channel and SSH

	(1)	(2)
	OLS	OLS
No (constant)	11.701***	9.293***
	(1.242)	(1.298)
Exo	2.062	5.321***
	(1.872)	(1.789)
Endo 0-20	0.482	1.677
	(1.558)	(1.625)
Endo	1.123	2.652
	(1.653)	(1.748)
Exo yoked	-0.995	1.514
	(1.841)	(1.732)
Period	-0.291***	-0.280***
	(0.048)	(0.061)
Exo × Period	0.080	0.062
	(0.088)	(0.096)
Endo 0-20 × Period	-0.038	-0.072
	(0.073)	(0.082)
Endo × Period	0.252***	0.210**
	(0.091)	(0.106)
Exo yoked × Period	0.209**	0.194*
	(0.092)	(0.100)
RFP	0.037	
	(0.038)	
Exo × RFP	0.036	
	(0.066)	
Endo 0-20 × RFP	0.046	
	(0.056)	
Endo × RFP	-0.047	
	(0.059)	
Exo yoked × RFP	0.062	
	(0.061)	
CRT		1.636***
		(0.467)
Exo × CRT		-1.462**
		(0.666)
Endo 0-20 × CRT		-0.390
		(0.728)
Endo × CRT		-1.152
		(0.925)
Exo yoked × CRT		-0.842
		(0.570)
Observations	9280	7260
Adj. R^2	0.069	0.087

Notes: The independent variable is contributions to *PGG No Rule*. There are fewer observation in model (2) as we excluded those subjects that indicated that they had seen the CRT questions before. Robust standard errors (clustered on part-II groups) in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.13: Learning channel

	(1)
	OLS
Contribution to *PGG No Rule* (Period 1)	0.797*** (0.063)
Profit *PGG Rule* (Period 1) - Profit *PGG No Rule* (Period 1)	-0.230*** (0.069)
Constant	4.955*** (0.866)
Observations	184
R^2	0.510

Notes: The independent variable is contributions to *PGG No Rule* in period 2. Robust standard errors clustered on part-II groups in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A.3 Part I, III, IV - Results

Table A.14: Unconditional contributions

	Part I	Part III	Part IV	p-value (I vs. III)	p-value (I vs. IV)	p-value (III vs. IV)
No inst.	11.37	6.95	8.65	0.000	0.002	0.005
(N=23)	(.60)	(1.01)	(.88)			
Exo. inst.	11.40	10.40	10.30	0.398	0.168	0.961
(N=22)	(.67)	(.85)	(.75)			
Endo. 0-20 inst.	11.53	8.42	9.06	0.001	0.002	0.126
(N=24)	(.68)	(.95)	(.81)			
Endo. inst.	11.53	12.03	11.37	0.553	0.738	0.212
(N=23)	(.61)	(1.05)	(.87)			
Exo. yoked inst.	11.75	10.35	10.09	0.086	0.036	0.406
(N=24)	(.47)	(.97)	(.84)			
p-value (No vs. Exo)	0.901	0.009	0.173			
p-value (No vs. Endo 0-20)	0.966	0.268	0.765			
p-value (No vs. Endo)	0.783	0.002	0.017			
p-value (No vs. Exo yoked)	0.693	0.012	0.145			
p-value (Exo vs. Endo 0-20)	0.921	0.082	0.198			
p-value (Endo vs. Exo yoked)	0.924	0.183	0.205			
p-value (Exo vs. Endo)	0.750	0.195	0.159			

Notes: Numbers in brackets are standard errors. Across treatments: p-values from Wilcoxon rank-sum tests. Within treatments: p-values from Wilcoxon signed-rank tests.

Table A.15: Midpoint of belief interval

	Part I	Part III	Part IV	p-value (I vs. III)	p-value (I vs. IV)	p-value (III vs. IV)
No inst.	11.88	8.14	9.78	0.000	0.002	0.002
(N=23)	(.38)	(.94)	(.70)			
Exo. inst.	11.98	11.41	11.74	0.987	0.871	0.291
(N=22)	(.44)	(.78)	(.59)			
Endo. 0-20 inst.	12.07	9.82	11.09	0.010	0.045	0.004
(N=24)	(.37)	(.79)	(.58)			
Endo. inst.	11.42	13.02	11.96	0.018	0.260	0.005
(N=23)	(.37)	(.66)	(.52)			
Exo. yoked inst.	11.80	10.99	11.04	0.265	0.067	0.668
(N=24)	(.35)	(.77)	(.50)			
p-value (No vs. Exo)	0.892	0.012	0.047			
p-value (No vs. Endo 0-20)	0.725	0.233	0.198			
p-value (No vs. Endo)	0.422	0.000	0.013			
p-value (No vs. Exo yoked)	0.966	0.029	0.108			
p-value (Exo vs. Endo 0-20)	0.973	0.124	0.468			
p-value (Endo vs. Exo yoked)	0.469	0.047	0.106			
p-value (Exo vs. Endo)	0.346	0.196	0.708			

Notes: Numbers in brackets are standard errors. Across treatments: p-values from Wilcoxon rank-sum tests. Within treatments: p-values from Wilcoxon signed-rank tests.

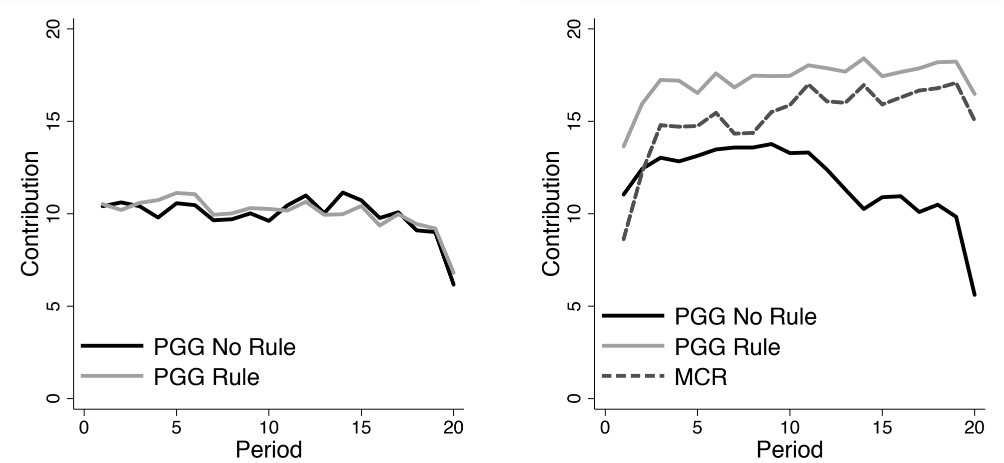
Table A.16: Avg. conditional contributions

	Part I	Part III	Part IV	p-value (I vs. III)	p-value (I vs. IV)	p-value (III vs. IV)
No inst.	7.86	5.63	5.76	0.000	0.000	0.867
(N=23)	(.50)	(.54)	(.48)			
Exo. inst.	8.48	7.60	7.64	0.064	0.127	0.948
(N=22)	(.45)	(.51)	(.65)			
Endo. 0-20 inst.	7.89	6.30	6.24	0.002	0.002	0.558
(N=24)	(.30)	(.54)	(.51)			
Endo. inst.	7.95	7.69	7.20	0.412	0.094	0.023
(N=23)	(.35)	(.35)	(.45)			
Exo. yoked inst.	7.75	6.41	6.14	0.012	0.002	0.415
(N=24)	(.47)	(.57)	(.53)			
p-value (No vs. Exo)	0.414	0.005	0.011			
p-value (No vs. Endo 0-20)	0.949	0.431	0.734			
p-value (No vs. Endo)	0.861	0.008	0.024			
p-value (No vs. Exo yoked)	0.915	0.302	0.431			
p-value (Exo vs. Endo 0-20)	0.276	0.077	0.065			
p-value (Endo vs. Exo yoked)	0.924	0.101	0.069			
p-value (Exo vs. Endo)	0.401	0.991	0.829			

Notes: Numbers in brackets are standard errors. Across treatments: p-values from Wilcoxon rank-sum tests. Within treatments: p-values from Wilcoxon signed-rank tests.

A.4 Additional Results - Trust Treatments

A.4.1 Part II



(a) Trust No institution (b) Trust Endogenous institution

Figure A.10: Average contributions under *PGG No Rule* and *PGG Rule*, and *MCR* in the *trust no institution* and *trust endogenous institution* treatments.

Table A.17: Direct and spillover effect of institutions on contributions in the *trust endogenous institution* treatment

		Period				
		All	1-5	6-10	11-15	16-20
	Direct effect	7.23	5.48	7.04	7.66	8.73
	(s.e.)	(.66)	(.69)	(.80)	(.77)	(.85)
	[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Trust Endo	Spillover effect	1.83	2.13	3.65	.96	.57
(N=24)	(s.e.)	(.91)	(.83)	(1.06)	(1.16)	(1.14)
	[p-value]	[0.150]	[0.095]	[0.040]	[0.538]	[0.621]
	Relative size of spillover effect	0.25	0.39	0.52	0.13	0.07

Notes: For each group in the treatment, the direct (spillover) effect equals the difference between that group's average contributions to *PGG Rule* (*PGG No Rule*) and the average contributions of all groups to *PGG Rule* (*PGG No Rule*) in the *no institution* treatment. p-values are from Wilcoxon rank-sum tests comparing the group-level contributions in *PGG Rule* (*PGG No Rule*) of the *trust endogenous* institution, respectively, to contributions in *PGG Rule* (*PGG No Rule*) in the *no institution* treatment. Relative size of spillover effect is the quotient of spillover and direct effect.

Table A.18: Direct and spillover effect of institutions on contributions in the pooled data from the *endogenous institution* treatment and *trust endogenous institution* treatment

		Period				
		All	1-5	6-10	11-15	16-20
	Direct effect	7.69	4.50	7.30	9.09	9.88
	(s.e.)	(.45)	(.54)	(.57)	(.50)	(.53)
	[p-value]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Endo-Pooled	Spillover effect	2.48	1.61	3.06	2.65	2.60
(N=47)	(s.e.)	(.67)	(.59)	(.77)	(.87)	(.87)
	[p-value]	[0.015]	[0.059]	[0.009]	[0.033]	[0.038]
	Relative size of spillover effect	0.32	0.36	0.42	0.29	0.26

Notes: For each group in the treatments, the direct (spillover) effect equals the difference between that group's average contributions to *PGG Rule* (*PGG No Rule*) and the average contributions of all groups to *PGG Rule* (*PGG No Rule*) in the *no institution* treatment. p-values are from Wilcoxon rank-sum tests comparing the group-level contributions in *PGG Rule* (*PGG No Rule*) of the *endogenous* and the *trust endogenous* institution to contributions in *PGG Rule* (*PGG No Rule*) in the *no institution* treatment. Relative size of spillover effect is the quotient of spillover and direct effect.

A.4.2 Parts I, III, and IV

Table A.19: Unconditional amount sent

	Part I	Part III	Part IV	p-value (I vs. III)	p-value (I vs. IV)	p-value (III vs. IV)
Trust No inst.	10.16	9.20	9.34	0.188	0.200	0.453
(N=22)	(.73)	(1.14)	(1.01)			
Trust Endo. inst.	11.24	10.67	10.21	0.808	0.109	0.149
(N=24)	(.81)	(.69)	(.70)			
p-value (No vs. Endo)	0.361	0.253	0.481			

Notes: Numbers in brackets are standard errors. Across treatments: p-values from Wilcoxon rank-sum tests. Within treatments: p-values from Wilcoxon signed-rank tests.

Table A.20: Belief about amount sent back

	Part I	Part III	Part IV	p-value (I vs. III)	p-value (I vs. IV)	p-value (III vs. IV)
Trust No inst.	26.36	22.70	22.53	0.001	0.000	0.581
(N=22)	(.81)	(1.43)	(1.26)			
Trust Endo. inst.	25.86	23.32	22.48	0.004	0.000	0.199
(N=24)	(1.15)	(1.06)	(1.08)			
p-value (No vs. Endo)	0.895	0.613	0.930			

Notes: Numbers in brackets are standard errors. Across treatments: p-values from Wilcoxon rank-sum tests. Within treatments: p-values from Wilcoxon signed-rank tests.

Table A.21: Conditional amount sent back

	Part I	Part III	Part IV	p-value (I vs. III)	p-value (I vs. IV)	p-value (III vs. IV)
Trust No inst.	12.09	10.60	10.35	0.013	0.001	0.592
(N=22)	(.66)	(.83)	(.63)			
Trust Endo. inst.	11.93	10.24	9.49	0.003	0.000	0.018
(N=24)	(.67)	(.70)	(.65)			
p-value (No vs. Endo)	0.775	0.878	0.455			

Notes: Numbers in brackets are standard errors. Across treatments: p-values from Wilcoxon rank-sum tests. Within treatments: p-values from Wilcoxon signed-rank tests.

A.5 Part V - Questions

- Risk question (SOEP, 2004, 2006, 2008, 2009)
  How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?
  Please tick a box on the scale where the value 0 means: "not at all willing to take risks" and the value 10 means: "very willing to take risks".

- Patience question (SOEP, 2008)
  How would you describe yourself: Are you generally an impatient person, or someone who always shows great patience?
  Please tick a box on the scale where the value 0 means: "very impatient" and the value 10 means: "very patient".

- Altruism question (SOEP, 2004, 2008)
  Is it important for you to be there for others?
  Please tick a box on the scale where the value 0 means:"not at all important" and the value 4 means: "very important".

- Reciprocity question (SOEP, 2005)
  For the questions below, please tick a box on the scale, where the value 1 means: "does not apply to me at all" and the value 7 means: "applies to me perfectly".
  (1) If someone does me a favor, I am prepared to return it.
  (2) If I suffer a serious wrong, I will take revenge as soon as possible, no matter what the cost.
  (3) If somebody puts me in a difficult position, I will do the same to him/her.
  (4) I go out of the way to help somebody who has been kind to me before.
  (5) If somebody offends me, I will offend him/her back.
  (6) I am ready to undergo personal costs to help somebody who helped me before.

- Trust question (SOEP, 2003, 2008)
  For the questions below, please tick a box on the scale, where the value 1 means: "totally disagree" and the value 4 means: "totally agree".
  On the whole one can trust people.
  Nowadays one can't rely on anyone.
  If one is dealing with strangers, it is better to be careful before one can trust them.

B Experimental instructions

Instructions for Part I - PGG treatments

General instructions

Welcome to this experiment.

Please read this first page of the instructions carefully on your own. We will then read the rest of the instructions aloud in front of all participants.

In the experiment you can earn a considerable amount of money in addition to the **10 Swiss francs** that you receive for showing up on time. How much you earn will depend on your own decisions and those of the other participants. It is thus very important that you read the instructions carefully. If you have any questions please do not ask aloud but raise your hand.

During the experiment, speaking with the other participants and the use of mobile phones are not allowed. Violation of these rules can lead to exclusion from the experiment and loss of all associated earnings.

During the experiment, we will refer to earnings in Experimental Currency Units, or ECU. Your entire income will first be calculated in ECU. The ECU you earn during the experiment will be converted to Swiss francs at the end of the experiment, according to the following conversion rate:

100 ECU = 3 CHF

At the end of today's experiment, you will receive these earnings plus the show-up payment of 10 Swiss francs **in cash**.

At no point, during or after the experiment, will you learn the identities of the people with whom you interact during the experiment, nor will these people learn your identity.

The Experiment

The experiment consists of several parts. At the beginning of each part you will receive instructions that explain that part of the experiment. The earnings that you will receive for the experiment consist of the sum of your earnings in the individual parts in addition to the fee for showing up.

Part I

Group Membership

At the beginning of Part I, the computer will assign you at random to a group consisting of **four participants**. All interactions during Part I take place within the group to which you are assigned.

Part I consists of two phases. In both phases you will make decisions related to a basic task. Before explaining the two phases in more detail, we first explain the basic task to you.

The Basic Task

Each of the four members of your group is endowed with 20 tokens. Each member of the group decides how many of the 20 tokens to put in a private account and how many to contribute to a group account. Any tokens you put in the private account cannot be contributed to the group account and vice versa. You can earn income from the private account as well as from the group account.

Your income from the private account

For each token you put in your private account you earn an income of one ECU. Nobody except you earns anything from tokens you put in your private account.

EXAMPLE: If you put 6 tokens in your private account, you earn 6 ECU from the private account.

Your income from the group account

For each token you contribute to the group account you and the other three group members each receive 0.5 ECU. Note that you will also earn income from the tokens that other group members contribute to the group account. For each group member the income from the group account will be determined as follows:

Each group member's income from the group account

= 0.5 * sum of all tokens contributed to the group account

Put differently, the total number of tokens in the group account will be doubled and then equally distributed among all four group members. This yields, for each group member, 0.5 times the total number of tokens contributed. Suppose you contribute one token to the group account. The sum of tokens in the group account would then rise by one token. Your income from the group account would, thus, rise by 0.5 * 1 = 0.5 ECU. The income of each other group member would also rise by 0.5 ECU. So, contributing one token to the group account generates total income for the group of 4 * 0.5 ECU = 2 ECU.

*EXAMPLE: If the sum of tokens in the group account is 60 tokens, then you and all other group members each earn an income of 0.5 * 60 = 30 ECU from the group account. The total income for the group from the group account is 4 * 30 ECU = 120 ECU.*

Your total income

Your total income equals the sum of your income from the private account and your income from the group account.

Total income =

Income from the private account + Income from the group account =

(20 – tokens you contribute to the group account) + (0.5 * sum of tokens in the group account)

Part I of the experiment consists of two phases. In the first phase you are asked to indicate your belief about how much **the other three members** of your group will, on average, contribute to the group account in a task identical to the one just described. In the second phase you are asked to decide how much **you** contribute to the group account in a task identical to the one just described.

a) Phase 1: Estimates of other group members' average contributions

In Phase 1, we ask you to estimate how many tokens the other three members in your group will, on average, contribute to the group account in Phase 2. Remember that each member has an endowment of 20 tokens and can contribute any amount from 0 to 20 tokens to the group account. Specifically, we ask you to provide **a range of values** that you believe will contain the average number of tokens that the other group members contribute to the group account. You will enter your estimate as two integers: one number for the lower end of the range and another for the higher end of the range.

In Phase 2 of Part I, all group members will decide how much to actually contribute to the group account. We will round the actual average contribution of the other group members to the nearest integer, and compare it to the range you specified. You will earn ECU only if the actual (rounded) average contribution of others to the group account lies inside the range you specify. Furthermore, the wider the range you indicate the smaller are your potential earnings. More precisely, the exact amount you earn is calculated according to the following rules:

- If the actual (rounded) average lies outside of the range you specify you earn 0 ECU.

- The maximum you can earn is 20 ECU. You earn 20 ECU if you (a) specify only a single value – that is, if the lower number and the higher number you specify are the same – and (b) this value is equal to the actual (rounded) average contribution of others to the group account. So, for example, if you are certain that the average contribution of others will be 15 then you should enter 15 for both the lower number and the higher number. If the (rounded) average of others is actually 15 you will earn 20 ECU.

- As the range you specify becomes wider, you earn **less** money for a correct estimate. Specifically, for every unit that your range increases in width, your potential income decreases by 1 ECU. So, for example, if you enter 8 for the lower and 20 for the higher end of the range (i.e. your range has a width of 12) and the actual (rounded) average contribution of others is 14 tokens, then you will earn 20 – 12 = 8 ECU. You earn more than you would earn if you had entered a wider range, say from 5 to 20 (income 20 – 15 = 5 ECU), but you earn less than you would earn if you had entered a narrower range, say from 10 to 15 (income 20 – 5 = 15 ECU) or if you had entered a range consisting only of 14 (income = 20 – 0 = 20 ECU).

If you enter 0 for the lower end and 20 for the higher end, your range covers all possible average token amounts and the actual (rounded) average of others' contributions is thus guaranteed to lie in your range. In this case, you earn nothing (income = 20 – 20 = 0 ECU).

To summarize, the rule is that you earn money for specifying a range that contains the actual average of others' contributions,, but the amount you earn for such a correct estimate is smaller the wider the range you indicate.

b) Phase 2: “Unconditional contribution” and “contribution table”

In the second phase of Part I, you will decide about your actual contribution to the group account. You have 20 tokens and you can choose to contribute any of these tokens to a group account. The tokens you do not contribute are put into your private account.

In this phase, you will make two types of contribution decisions: an **unconditional contribution** decision and a decision through a **contribution table**. Only one of these decisions will count, but you will not know which one until the end of the experiment. This means that you should treat each one as if it is the one that determines your earnings from Phase 2.

- In the **unconditional contribution** decision, you decide how many of the 20 tokens you contribute to the group account. You will enter your contribution decision as a single number between 0 and 20.

- In the decision through a **contribution table** you may contribute different amounts for each possible average unconditional contribution of the other group members (rounded to the nearest integer). That is, you have to specify how much you want to contribute if the other three group members contribute, on average, 0 tokens, 1 token, 2 tokens, etc., up to 20 tokens, to the group account. You will see a table, with all 21 possible integer values from 0 to 20, corresponding to the possible average unconditional contributions made by the other three group members.

Earnings from Part I

After all four participants in a group have made both types of decisions in Phase 2, your earnings from Part I will be determined as follows.

- First, the computer will compare the range you provided as an estimate for the other group members’ average contributions to their actual average **unconditional contributions**. This will determine your earnings from Phase 1.
- Second, the computer will randomly select three group members to have their unconditional contributions count as their contribution decision. The computer will then calculate the average unconditional contribution of the three selected group members. This average determines how much the remaining group member will contribute, based on how that group member completed the contribution table. Together this determines the actual contributions of all four group members and, thus, each member’s earnings from Phase 2.

*EXAMPLE: Assume that the three group members that were randomly selected to have their unconditional contributions count decided to contribute 0, 3, and 15 tokens. The average contribution of these three group members, therefore, is 18/3 = 6 tokens. The computer will then check the contribution table of the remaining group member, for the entry in the row corresponding to an average contribution of 6, and will use this entry to determine the contribution decision of this fourth group member. Suppose that this group member decided to contribute 10 when the average contribution by other group members is 6. Then, the computer will make this group member contribute 10. The total sum of contributions to the group account is thus 0 + 3 + 15 + 10 = 28 tokens. All group members, therefore, earn 0.5 * 28 = 14 ECU from the group account* ***plus*** *their respective incomes from the private accounts.*

You will make these decisions only once in Part I. You will be informed about the contribution decisions of the other group members and your payoff from Part I at the end of the experiment, after everyone has made all decisions in the experiment.

Do you have any questions? If yes, please raise your hand. We will then come to you at your workplace. If not, please click "Continue" on your computer screen.

Once we have answered all questions, we will ask you to answer some comprehension questions on your computer screen. These questions will ensure that everyone understands the instructions for Part I.

Decision screens for Part I - PGG treatments

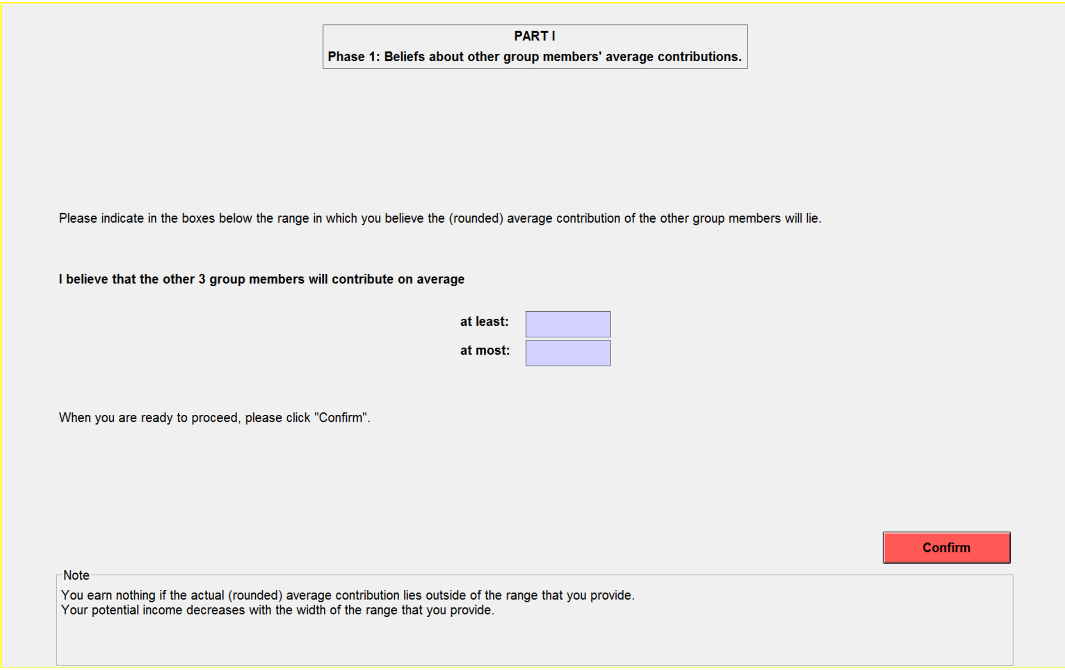


Figure B.11: Beliefs about others' contributions.

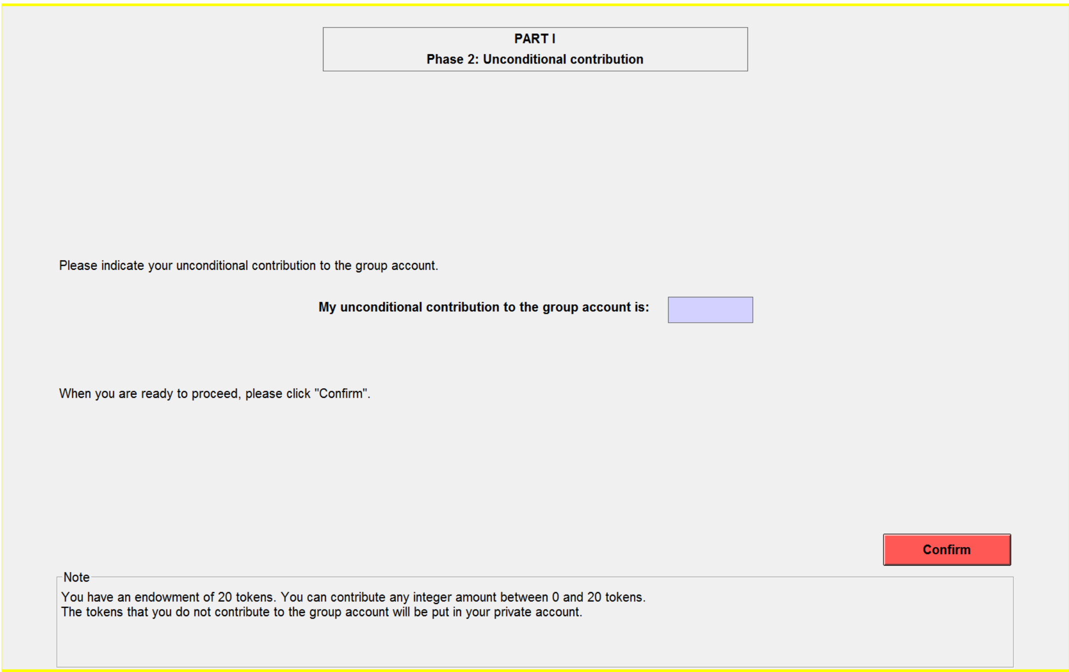


Figure B.12: Unconditional contribution decision.

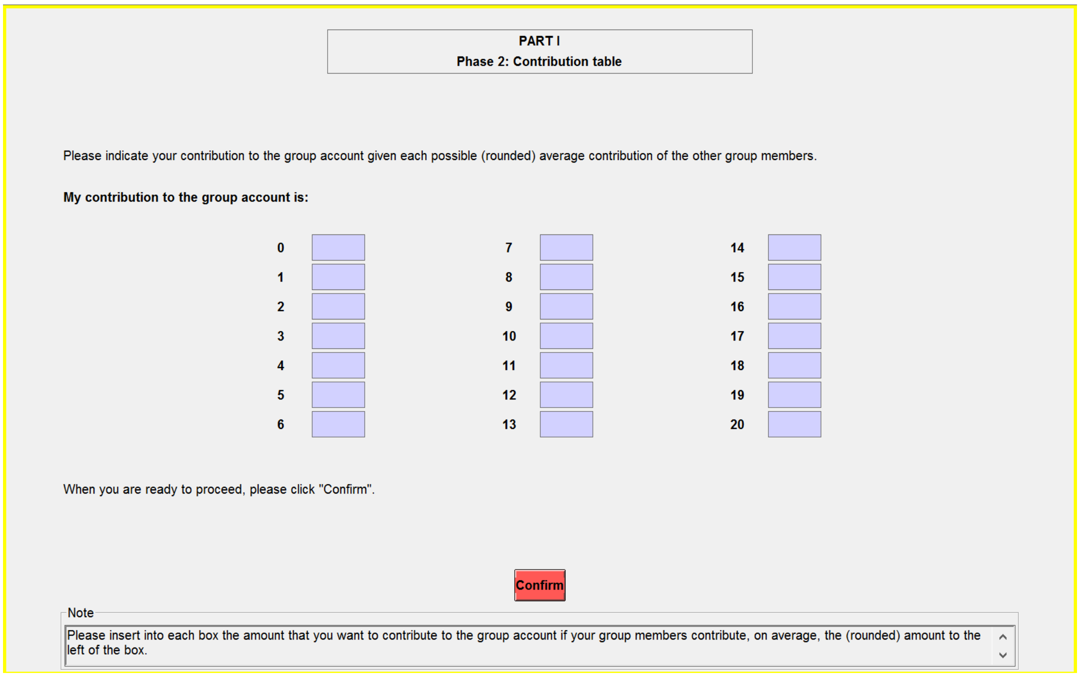


Figure B.13: Conditional contribution decision.

Instructions for Part II - “Endogenous institution” treatment

Part II

Group membership

At the beginning of Part II, the computer will assign you at random to a group consisting of four participants **that you have not interacted with before**. This part of the experiment consists of 20 periods and all interactions during Part II take place **with the same group members**. In each period, you will simultaneously participate in two tasks. They will be displayed next to each other on the same computer screen and we will, thus, refer to these as **Task Left** and **Task Right**.

For each task, you have a separate endowment of 20 tokens that you can contribute to a group account or put in your private account, similar to the basic task in Part I. In Part II, everyone will make unconditional contributions. You will enter, separately, the number of tokens you decide to contribute to the group account in Task Left and in Task Right.

Task Left

<u>On the left side of the computer screen</u>, you will decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. Your income from Task Left is calculated in the same way as described for the basic task and, thus, depends on your contribution and the contributions of the other three members of your group.

Task Right

<u>On the right side of the computer screen</u>, your group will, at the beginning of each period (and thus before a decision in Task Left can be made), first vote on a “**contribution threshold.**” The contribution threshold specifies a minimum level of contribution to the group account in Task Right for each group member. The contribution threshold can be any value between 0 and 20.

The contribution threshold affects the income of group members from Task Right, depending on whether they contribute at least as many or fewer tokens to the group account than specified by the contribution threshold. Specifically:

- The income from Task Right of any group member who contributes **at least as many** tokens to the group account as specified by the contribution threshold is **not affected** by the contribution threshold. The income from Task Right is then determined as described for the basic task.

- Any group member who contributes **fewer** tokens to the group account than the minimum level specified by the contribution threshold **loses any income** from Task Right. That is, a group member that contributes less than the contribution threshold receives an income of 0 for Task Right, regardless of how much this group member or other group members contributed. Thus, there is a penalty for contributing fewer tokens to the group account than the contribution threshold, and the penalty is the loss of all income for that period in Task Right. **A participant's income in Task Left is not affected by anything that happens in Task Right and vice versa.** Similarly, if one participant is penalized for contributing less than the contribution threshold in Task Right, the incomes of other participants are not affected. Thus, the other group members still benefit from any contributions made by any group member in Task Right.

*EXAMPLE: The contribution threshold is set to 15 in Task Right. Group member A contributes 5, member B 15, member C 20, and member D 20 tokens to the group account in Task Right. The total contributions are thus 60 tokens. Member A earns 0 ECU from Task Right, because he contributed less than the "contribution threshold" of 15 tokens. Member B earns 5 ECU from the private account plus an income of 0.5 * 60 = 30 ECU from the group account from Task Right. Member C and Member D earn 0 ECU from the private account plus 30* ECU *from the group account in Task Right. Note that all group members also earn money based on what happens in Task Left, which is independent of Task Right.*

How the contribution threshold for Task Right is determined:

At the beginning of every period, before any contribution decisions are made, all four members of a group vote on the contribution threshold for Task Right for that period. Every member votes for a desired contribution threshold, by specifying an integer value between 0 and 20.

The implemented contribution threshold for Task Right for that period is the <u>lowest value</u> voted for by any group member.

EXAMPLE: Assume that group member A votes for 7, group member B for 12, group member C for 18, and group member D for 10. The implemented contribution threshold for Task Right in that period is 7, the lowest vote in the group. Any group member who contributes less than 7 tokens in that period in Task Right then earns 0 ECU from Task Right.

After the voting takes place, all group members are informed about the implemented contribution threshold and about all of the separate votes cast by members of the group. The votes will be presented in descending order and it is not possible to identify which member of the group voted for which value of the contribution threshold.

Before you make your contribution decisions in Task Left and Task Right, we will ask you about your belief about the other group members' average contribution in Task Left and Task Right. Contrary to Part I, you will enter your (rounded) belief as a single number. So, for example, if you believe that the (rounded) average contribution is 12 in Task Left and 8 in Task Right, you should enter the numbers 12 and 8 in the respective input boxes on the screen. Whether your beliefs are correct or not does not impact your payoff. Please enter your best estimates.

After that you will make your contribution decisions in Task Left and Task Right.

Summary
You will make the following decisions in Part II:

- You will vote on a contribution threshold for Task Right. The contribution threshold changes the potential payoffs only in Task Right. It has no effect on the payoffs from Task Left.
- You will enter your beliefs about the average contribution of the other group members in Task Left and Task Right.
- You will then make two contribution decisions, one in Task Left and one in Task Right.

Total income in each period
Your total income in each period is equal to the sum of your incomes in the two tasks. So, for example, if you earn 30 ECU from Task Left and 10 ECU from Task Right, your total income in that period will be 40 ECU. At the end of each period all group members will be informed about their incomes in Task Left and Task Right and the respective contributions of all group members. The contributions will be presented in descending order and it is not possible to identify which member of the group contributed which number of tokens to the group accounts in Task Left and Task Right.

Earnings from Part II
At the end of the experiment, one out of the twenty periods from Part II will be randomly selected to count for payment. Your decisions and those of your group members in that period will then be implemented and will determine your earnings from Part II. Specifically, **your payoff for the randomly selected period will be multiplied by 20, so that it counts for all 20 periods.** Note that every decision in each of the twenty periods can be relevant for your payoff. It is therefore important that you make your decisions in every period as if it would be the period that determines your actual payoff.

Do you have any questions? If yes, please raise your hand. We will then come to you at your workplace. Once we have answered all questions, we will ask you to answer some comprehension questions on your computer screen. These questions will ensure that everyone understands the instructions for Part II.

Decision screens for Part II - "Endogenous institution" treatment

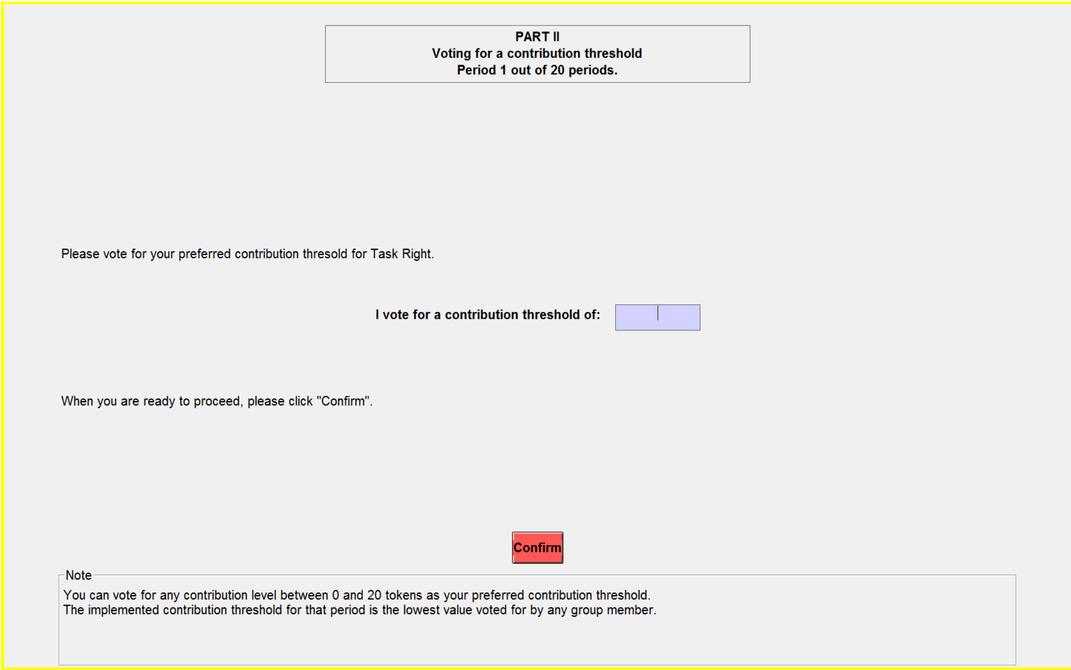


Figure B.14: Voting decision.

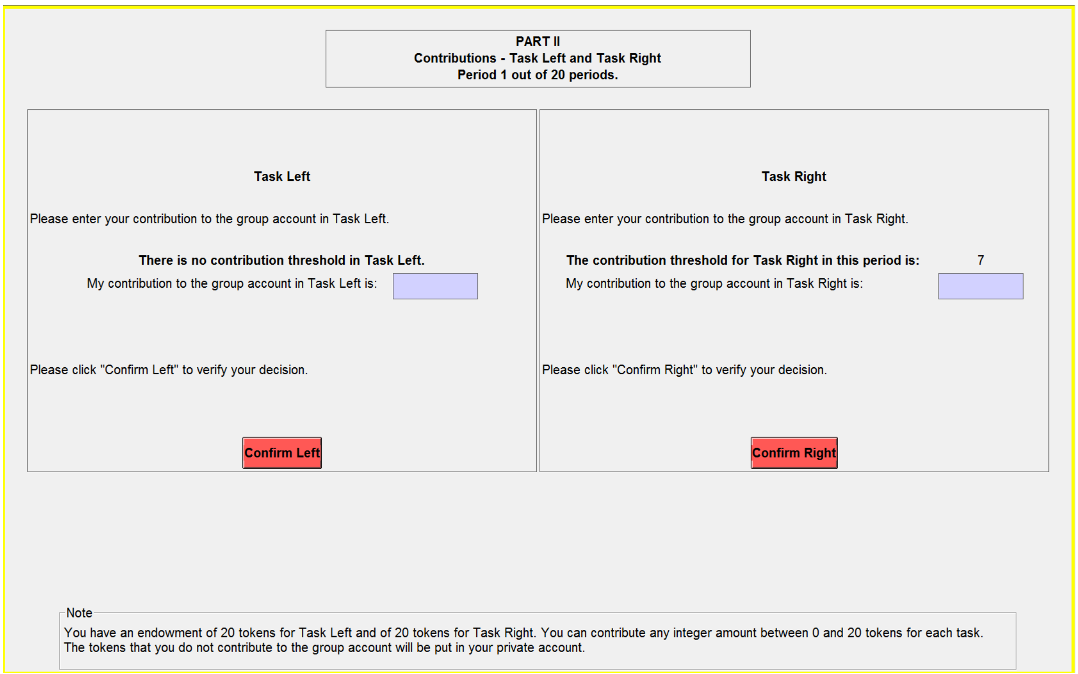


Figure B.15: Contribution decision for *PGG No Rule* and *PGG Rule*.

Instructions for Part II - "No institution" treatment

Part II

Group membership

At the beginning of Part II, the computer will assign you at random to a group consisting of four participants **that you have not interacted with before**. This part of the experiment consists of 20 periods and all interactions during Part II take place **with the same group members**. In each period, you will simultaneously participate in two tasks. They will be displayed next to each other on the same computer screen and we will, thus, refer to these as **Task Left** and **Task Right**.

For each task, you have a separate endowment of 20 tokens that you can contribute to a group account or put in your private account, similar to the basic task in Part I. In Part II, everyone will make unconditional contributions. You will enter, separately, the number of tokens you decide to contribute to the group account in Task Left and in Task Right.

Task Left

On the left side of the computer screen, you will decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. Your income from Task Left is calculated in the same way as described for the basic task and, thus, depends on your contribution and the contributions of the other three members of your group.

Task Right

On the right side of the computer screen, you will also decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. Your income from Task Right is calculated in the same way as described for the basic task and, thus, depends on your contribution and the contributions of the other three members of your group.

A participant's income in Task Left is not affected by anything that happens in Task Right and vice versa.

EXAMPLE: Group member A contributes 5, member B 15, member C 20, and member D 20 tokens to the group account in Task Right. The total contributions are thus 60 tokens. Member A earns 45 ECU, member B earns 35 ECU, member C earns 30 ECU and member D earns 30 ECU from Task Right. Note that all group members also earn money based on what happens in Task Left, which is independent of Task Right.

Before you make your contribution decisions in Task Left and Task Right, we will ask you about your belief about the other group members' average contribution in Task Left and Task Right. Contrary to Part I, you will enter your (rounded) belief as a single number. So, for example, if you believe that the (rounded) average contribution is 12 in Task Left and 8 in Task Right, you should enter the numbers 12 and 8 in the respective input boxes on the screen. Whether your beliefs are correct or not does not impact your payoff. Please enter your best estimates.

After that you will make your contribution decisions in Task Left and Task Right.

Summary
You will make the following decisions in Part II:

- You will enter your beliefs about the average contribution of the other group members in Task Left and Task Right.
- You will then make two contribution decisions, one in Task Left and one in Task Right.

Total income in each period
Your total income in each period is equal to the sum of your incomes in the two tasks. So, for example, if you earn 30 ECU from Task Left and 10 ECU from Task Right, your total income in that period will be 40 ECU. At the end of each period all group members will be informed about their incomes in Task Left and Task Right and the respective contributions of all group members. The contributions will be presented in descending order and it is not possible to identify which member of the group contributed which number of tokens to the group accounts in Task Left and Task Right.

Earnings from Part II
At the end of the experiment, one out of the twenty periods from Part II will be randomly selected to count for payment. Your decisions and those of your group members in that period will then be implemented and will determine your earnings from Part II. Specifically, **your payoff for the randomly selected period will be multiplied by 20, so that it counts for all 20 periods.** Note that every decision in each of the twenty periods can be relevant for your payoff. It is therefore important that you make your decisions in every period as if it would be the period that determines your actual payoff.

Do you have any questions? If yes, please raise your hand. We will then come to you at your workplace. Once we have answered all questions, we will ask you to answer some comprehension questions on your computer screen. These questions will ensure that everyone understands the instructions for Part II.

Instructions for Part II - "Exogeneous institution" treatment

Part II

Group membership

At the beginning of Part II, the computer will assign you at random to a group consisting of four participants **that you have not interacted with before**. This part of the experiment consists of 20 periods and all interactions during Part II take place **with the same group members**. In each period, you will simultaneously participate in two tasks. They will be displayed next to each other on the same computer screen and we will, thus, refer to these as **Task Left** and **Task Right**.

For each task, you have a separate endowment of 20 tokens that you can contribute to a group account or put in your private account, similar to the basic task in Part I. In Part II, everyone will make unconditional contributions. You will enter, separately, the number of tokens you decide to contribute to the group account in Task Left and in Task Right.

Task Left

<u>On the left side of the computer screen</u>, you will decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. Your income from Task Left is calculated in the same way as described for the basic task and, thus, depends on your contribution and the contributions of the other three members of your group.

Task Right

<u>On the right side of the computer screen</u>, you will also decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. However, in Task Right there is a "**contribution threshold**" that is set to **20**. The contribution threshold specifies a minimum level of contribution to the group account in Task Right for each group member.

The contribution threshold affects the income of group members from Task Right, depending on whether they contribute as many or fewer tokens to the group account than specified by the contribution threshold. Specifically:

- The income from Task Right of any group member who contributes **at least as many** tokens to the group account as specified by the contribution threshold, which is 20 tokens, is **not affected** by the contribution threshold. The income from Task Right is then determined as described for the basic task.

- Any group member who contributes **fewer** tokens to the group account than the minimum level specified by the contribution threshold **loses any income** from Task Right. That is, a group member that contributes less than 20 tokens to the group account in Task Right receives an income of 0 for Task Right, regardless of how much this group member or other group members contributed. Thus, there is a penalty for contributing fewer tokens to the group account than the contribution threshold, and the penalty is the loss of all income for that period in Task Right. **A participant's income in Task Left is not affected by anything that happens in Task Right and vice versa.** Similarly, if one participant is penalized for contributing less than the contribution threshold in Task Right, the incomes of other participants are not affected. Thus, the other group members still benefit from any contributions made by any group member in Task Right.

*EXAMPLE: The contribution threshold is set to 20 in Task Right. Group member A contributes 5, member B 15, member C 20, and member D 20 tokens to the group account in Task Right. The total contributions are thus 60 tokens. Member A and member B both earn 0 ECU from Task Right, because they contributed less than the contribution threshold of 20 tokens. Member C and member D both earn 0 ECU from the private account plus an income of 0.5 * 60 = 30 ECU from the group account from Task Right. Note that all group members also earn money based on what happens in Task Left, which is independent of Task Right.*

Before you make your contribution decisions in Task Left and Task Right, we will ask you about your belief about the other group members' average contribution in Task Left and Task Right. Contrary to Part I, you will enter your (rounded) belief as a single number. So, for example, if you believe that the (rounded) average contribution is 12 in Task Left and 8 in Task Right, you should enter the numbers 12 and 8 in the respective input boxes on the screen. Whether your beliefs are correct or not does not impact your payoff. Please enter your best estimates.

After that you will make your contribution decisions in Task Left and Task Right.

Summary

You will make the following decisions in Part II:

- You will enter your beliefs about the average contribution of the other group members in Task Left and Task Right.
- You will then make two contribution decisions, one in Task Left and one in Task Right.

Total income in each period
Your total income in each period is equal to the sum of your incomes in the two tasks. So, for example, if you earn 30 ECU from Task Left and 10 ECU from Task Right, your total income in that period will be 40 ECU. At the end of each period all group members will be informed about their incomes in Task Left and Task Right and the respective contributions of all group members. The contributions will be presented in descending order and it is not possible to identify which member of the group contributed which number of tokens to the group accounts in Task Left and Task Right.

Earnings from Part II
At the end of the experiment, one out of the twenty periods from Part II will be randomly selected to count for payment. Your decisions and those of your group members in that period will then be implemented and will determine your earnings from Part II. Specifically, **your payoff for the randomly selected period will be multiplied by 20, so that it counts for all 20 periods.** Note that every decision in each of the twenty periods can be relevant for your payoff. It is therefore important that you make your decisions in every period as if it would be the period that determines your actual payoff.

Do you have any questions? If yes, please raise your hand. We will then come to you at your workplace. Once we have answered all questions, we will ask you to answer some comprehension questions on your computer screen. These questions will ensure that everyone understands the instructions for Part II.

Instructions for Part II - “Exogeneous yoked institution” treatment

Part II

Group membership

At the beginning of Part II, the computer will assign you at random to a group consisting of four participants **that you have not interacted with before**. This part of the experiment consists of 20 periods and all interactions during Part II take place **with the same group members**. In each period, you will simultaneously participate in two tasks. They will be displayed next to each other on the same computer screen and we will, thus, refer to these as **Task Left** and **Task Right**.

For each task, you have a separate endowment of 20 tokens that you can contribute to a group account or put in your private account, similar to the basic task in Part I. In Part II, everyone will make unconditional contributions. You will enter, separately, the number of tokens you decide to contribute to the group account in Task Left and in Task Right.

Task Left

<u>On the left side of the computer screen</u>, you will decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. Your income from Task Left is calculated in the same way as described for the basic task and, thus, depends on your contribution and the contributions of the other three members of your group.

Task Right

<u>On the right side of the computer screen</u>, you will also decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. However, in Task Right there is a “**contribution threshold**”. The contribution threshold can vary across periods. At the beginning of each period, you will be informed about the contribution threshold for that period. The contribution threshold in a given period is identical for all group members and will always be a value between 0 and 20. The contribution threshold in a given period is predetermined and therefore not affected by any decision that you or any other participant takes in today's experiment. The contribution threshold specifies a minimum level of contribution to the group account in Task Right for each group member.

The contribution threshold affects the income of group members from Task Right, depending on whether they contribute as many or fewer tokens to the group account than specified by the contribution threshold. Specifically:

1

- The income from Task Right of any group member who contributes **at least as many** tokens to the group account as specified by the contribution threshold is **not affected** by the contribution threshold. The income from Task Right is then determined as described for the basic task.

- Any group member who contributes **fewer** tokens to the group account than the minimum level specified by the contribution threshold **loses any income** from Task Right. That is, a group member that contributes less than the contribution threshold receives an income of 0 for Task Right, regardless of how much this group member or other group members contributed. Thus, there is a penalty for contributing fewer tokens to the group account than the contribution threshold, and the penalty is the loss of all income for that period in Task Right. **A participant's income in Task Left is not affected by anything that happens in Task Right and vice versa.** Similarly, if one participant is penalized for contributing less than the contribution threshold in Task Right, the incomes of other participants are not affected. Thus, the other group members still benefit from any contributions made by any group member in Task Right.

*EXAMPLE: The contribution threshold is set to 15 in Task Right. Group member A contributes 5, member B 15, member C 20, and member D 20 tokens to the group account in Task Right. The total contributions are thus 60 tokens. Member A earns 0 ECU from Task Right, because he contributed less than the "contribution threshold" of 15 tokens. Member B earns 5 ECU from the private account plus an income of 0.5 * 60 = 30 ECU from the group account from Task Right. Member C and Member D earn 0 ECU from the private account plus 30* ECU *from the group account in Task Right. Note that all group members also earn money based on what happens in Task Left, which is independent of Task Right.*

Before you make your contribution decisions in Task Left and Task Right, we will ask you about your belief about the other group members' average contribution in Task Left and Task Right. Contrary to Part I, you will enter your (rounded) belief as a single number. So, for example, if you believe that the (rounded) average contribution is 12 in Task Left and 8 in Task Right, you should enter the numbers 12 and 8 in the respective input boxes on the screen. Whether your beliefs are correct or not does not impact your payoff. Please enter your best estimates.

After that you will make your contribution decisions in Task Left and Task Right.

Summary

You will make the following decisions in Part II:

- You will enter your beliefs about the average contribution of the other group members in Task Left and Task Right.
- You will then make two contribution decisions, one in Task Left and one in Task Right.

Total income in each period

Your total income in each period is equal to the sum of your incomes in the two tasks. So, for example, if you earn 30 ECU from Task Left and 10 ECU from Task Right, your total income in that period will be 40 ECU. At the end of each period all group members will be informed about their incomes in Task Left and Task Right and the respective contributions of all group members. The contributions will be presented in descending order and it is not possible to identify which member of the group contributed which number of tokens to the group accounts in Task Left and Task Right.

Earnings from Part II

At the end of the experiment, one out of the twenty periods from Part II will be randomly selected to count for payment. Your decisions and those of your group members in that period will then be implemented and will determine your earnings from Part II. Specifically, **your payoff for the randomly selected period will be multiplied by 20, so that it counts for all 20 periods.** Note that every decision in each of the twenty periods can be relevant for your payoff. It is therefore important that you make your decisions in every period as if it would be the period that determines your actual payoff.

Do you have any questions? If yes, please raise your hand. We will then come to you at your workplace. Once we have answered all questions, we will ask you to answer some comprehension questions on your computer screen. These questions will ensure that everyone understands the instructions for Part II.

Instructions for Part II - "Endogeneous 0-20 institution" treatment

Part II

Group membership

At the beginning of Part II, the computer will assign you at random to a group consisting of four participants **that you have not interacted with before**. This part of the experiment consists of 20 periods and all interactions during Part II take place **with the same group members**. In each period, you will simultaneously participate in two tasks. They will be displayed next to each other on the same computer screen and we will, thus, refer to these as **Task Left** and **Task Right**.

For each task, you have a separate endowment of 20 tokens that you can contribute to a group account or put in your private account, similar to the basic task in Part I. In Part II, everyone will make unconditional contributions. You will enter, separately, the number of tokens you decide to contribute to the group account in Task Left and in Task Right.

Task Left

<u>On the left side of the computer screen</u>, you will decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. Your income from Task Left is calculated in the same way as described for the basic task and, thus, depends on your contribution and the contributions of the other three members of your group.

Task Right

<u>On the right side of the computer screen</u>, your group will, at the beginning of each period (and thus before a decision in Task Left can be made), first vote on a "**contribution threshold.**" The contribution threshold specifies a minimum level of contribution to the group account in Task Right for each group member. The contribution threshold can be **<u>either</u> 20 <u>or</u> 0**.

The contribution threshold affects the income of group members from Task Right, depending on whether they contribute at least as many or fewer tokens to the group account than specified by the contribution threshold. Specifically:

- The income from Task Right of any group member who contributes **at least as many** tokens to the group account as specified by the contribution threshold is **not affected** by the contribution threshold. The income from Task Right is then determined as described for the basic task.

- Any group member who contributes **fewer** tokens to the group account than the minimum level specified by the contribution threshold **loses any income** from Task Right. That is, a group member that contributes less than the contribution threshold receives an income of 0 for Task Right, regardless of how much this group member or other group members contributed. Thus, there is a penalty for contributing fewer tokens to the group account than the contribution threshold, and the penalty is the loss of all income for that period in Task Right. **A participant's income in Task Left is not affected by anything that happens in Task Right and vice versa.** Similarly, if one participant is penalized for contributing less than the contribution threshold in Task Right, the incomes of other participants are not affected. Thus, the other group members still benefit from any contributions made by any group member in Task Right.

*EXAMPLE: The contribution threshold is set to 20 in Task Right. Group member A contributes 5, member B 15, member C 20, and member D 20 tokens to the group account in Task Right. The total contributions are thus 60 tokens. Member A and member B both earn 0 ECU from Task Right, because they contributed less than the contribution threshold of 20 tokens. Member C and member D both earn 0 ECU from the private account plus an income of 0.5 * 60 = 30 ECU from the group account from Task Right. Note that all group members also earn money based on what happens in Task Left, which is independent of Task Right.*

How the contribution threshold for Task Right is determined:

At the beginning of every period, before any contribution decisions are made, all four members of a group vote on the contribution threshold for Task Right for that period. Every member votes for a desired contribution threshold, by selecting <u>either</u> 20 <u>or</u> 0.

The implemented contribution threshold for Task Right for that period is:

- **20, if at least three (i.e., three or four) group members vote for a contribution threshold of 20**

- **0, if less than three (i.e., zero, one or two) group members vote for a contribution threshold of 20.**

EXAMPLE: Assume that group member A votes for 20, group member B for 20, group member C for 0, and group member D for 20. The implemented contribution threshold for Task Right in that period is 20. Any group member who contributes less than 20 tokens in that period in Task Right then earns 0 ECU from Task Right.

EXAMPLE: Assume that group member A votes for 0, group member B for 20, group member C for 0, and group member D for 20. The implemented contribution threshold for Task Right in that period is 0. This means the contribution threshold has no effect and income from Task Right is determined as described for the basic task.

After the voting takes place, all group members are informed about the implemented contribution threshold and about all of the separate votes cast by members of the group. The votes will be presented in descending order and it is not possible to identify which member of the group voted for which value of the contribution threshold.

Before you make your contribution decisions in Task Left and Task Right, we will ask you about your belief about the other group members' average contribution in Task Left and Task Right. Contrary to Part I, you will enter your (rounded) belief as a single number. So, for example, if you believe that the (rounded) average contribution is 12 in Task Left and 8 in Task Right, you should enter the numbers 12 and 8 in the respective input boxes on the screen. Whether your beliefs are correct or not does not impact your payoff. Please enter your best estimates.

After that you will make your contribution decisions in Task Left and Task Right.

Summary

You will make the following decisions in Part II:

- You will vote on a contribution threshold for Task Right. The contribution threshold changes the potential payoffs only in Task Right. It has no effect on the payoffs from Task Left.
- You will enter your beliefs about the average contribution of the other group members in Task Left and Task Right.
- You will then make two contribution decisions, one in Task Left and one in Task Right.

Total income in each period

Your total income in each period is equal to the sum of your incomes in the two tasks. So, for example, if you earn 30 ECU from Task Left and 10 ECU from Task Right, your total income in that period will be 40 ECU. At the end of each period all group members will be informed about their incomes in Task Left and Task Right and the respective contributions of all group members. The contributions will be presented in descending order and it is not possible to identify which member of the group contributed which number of tokens to the group accounts in Task Left and Task Right.

Earnings from Part II

At the end of the experiment, one out of the twenty periods from Part II will be randomly selected to count for payment. Your decisions and those of your group members in that period will then be implemented and will determine your earnings from Part II. Specifically, **your payoff for the randomly selected period will be multiplied by 20, so that it counts for all 20 periods.** Note that every decision in each of the twenty periods can be relevant for your payoff. It is therefore important that you make your decisions in every period as if it would be the period that determines your actual payoff.

Do you have any questions? If yes, please raise your hand. We will then come to you at your workplace. Once we have answered all questions, we will ask you to answer some comprehension questions on your computer screen. These questions will ensure that everyone understands the instructions for Part II.

Instructions for Part III - PGG treatments

Part III

[These instructions are displayed on the computer screen and read aloud but not printed.]

“On the next screen, we will start with Part III.

Part III is identical to Part I. You will face the same decision situation as in Part I and your earnings will be determined in the same way as in Part I.

You are still in the same group of participants as in Part II. These are the same three participants with whom you interacted in all 20 periods of Part II.

As in Part I, you will make your decisions only once.

You will again indicate a range in which you believe the average contribution of the other three group members will lie.

Also, you will again make an "unconditional contribution" and fill out a "contribution table." **[ONLY IN TREATMENTS WITH INSTITUTION:] There is no contribution threshold.**

As in Part I, the computer will randomly select three group members for which their "unconditional contribution" will count and one for which the "contribution table" will count.

Your decisions will affect your and your group members' final earnings from this part.

Therefore, please consider your decisions carefully.

If you have questions, please consult the instructions for Part I or raise your hand.

When you are ready to proceed, please click "Continue”.”

Instructions for Part IV - PGG treatments

Part IV

[These instructions are displayed on the computer screen and read aloud but not printed.]

“On the next screen, we will start with Part IV.

Part IV is identical to Part I. You will face the same decision situation as in Part I and your earnings will be determined in the same way as in Part I.

However, **contrary to Part III**, at the beginning of Part IV, the computer will assign you at random to a group consisting of four participants **that you have not interacted with before**.

As in Part I, you will make your decisions only once.

You will again indicate a range in which you believe the average contribution of the other three group members will lie.

Also, you will again make an "unconditional contribution" and fill out a "contribution table".

[ONLY IN TREATMENTS WITH INSTITUTION:] There is no contribution threshold.

As in Part I, the computer will randomly select three group members for which their "unconditional contribution" will count and one for which the "contribution table" will count.

Your decisions will affect your and your group members' final earnings from this part. Therefore, please consider your decisions carefully.

If you have questions, please consult the instructions for Part I or raise your hand.

When you are ready to proceed, please click "Continue”.”

1

Instructions for Part I - Trust treatments

General instructions

Welcome to this experiment.

Please read this first page of the instructions carefully on your own. We will then read the rest of the instructions aloud in front of all participants.

In the experiment you can earn a considerable amount of money in addition to the **10 Swiss francs** that you receive for showing up on time. How much you earn will depend on your own decisions and those of the other participants. It is thus very important that you read the instructions carefully. If you have any questions please do not ask aloud but raise your hand.

During the experiment, speaking with the other participants and the use of mobile phones are not allowed. Violation of these rules can lead to exclusion from the experiment and loss of all associated earnings.

During the experiment, we will refer to earnings in Experimental Currency Units, or ECU. Your entire income will first be calculated in ECU. The ECU you earn during the experiment will be converted to Swiss francs at the end of the experiment, according to the following conversion rate:

100 ECU = 3 CHF

At the end of today's experiment, you will receive these earnings plus the show-up payment of 10 Swiss francs **in cash**.

At no point, during or after the experiment, will you learn the identities of the people with whom you interact during the experiment, nor will these people learn your identity.

The Experiment

The experiment consists of several parts. At the beginning of each part you will receive instructions that explain that part of the experiment. The earnings that you will receive for the experiment consist of the sum of your earnings in the individual parts in addition to the fee for showing up.

Part I

Group Membership

At the beginning of Part I, the computer will assign you at random to a group consisting of **two participants**. All interactions during Part I take place within the group to which you are assigned.

Part I consists of two phases. In all phases you will make decisions related to a basic task. Before explaining the two phases in more detail, we first explain the basic task to you.

The Basic Task of Part I

At the beginning, each group member is randomly assigned to one of two roles: One is in the role of the **Sender** and the other in the role of the **Receiver.**

Each group member is endowed with 20 tokens.

Decision of Sender and Receiver

Sender and Receiver sequentially make one decision each. First, the Sender makes a decision. Thereafter, after having observed the decision made by the Sender, the Receiver makes a decision. In the following, we explain the two decisions:

The Sender decides how many of his endowment of 20 tokens to send to the Receiver and how many to keep to himself. Importantly, any tokens that the Sender sends are tripled before the Receiver gets them. In other words, the Receiver gets three times as many tokens as the Sender sends.

EXAMPLE: If the Sender sends 1 token, the Receiver gets 3 tokens; if the Sender sends 2 tokens, the Receiver gets 6 tokens, and so on. If the Sender sends the maximum of 20 tokens, the Receiver gets 60 tokens.

After learning how many tokens the Sender has sent and how many tokens have been received, the Receiver decides how many of the received tokens to send back to the Sender. Tokens that are sent back are not tripled, i.e., for every 1 token the Receiver sends back, the Sender gets exactly 1 token.

The Sender's income

The Sender's income from the basic task equals the initial endowment of 20 tokens minus the number of tokens sent to the Receiver plus the number of tokens the Receiver sends back.

Sender's income = 20 – # of tokens sent to Receiver + # of tokens sent back by Receiver

The Receiver's income

The Receiver's income from the basic task equals the initial endowment of 20 tokens plus three times the number of tokens that the Sender sent minus the number of tokens sent back to the Sender.

Receiver's income = 20 + 3 * # of tokens sent by Sender - # of tokens sent back to Sender

EXAMPLE: Imagine the Sender sends 10 tokens. In this case, the Receiver gets 30 tokens and can decide to send between 0 and 30 tokens back to the Sender. Imagine the Receiver sends 10 tokens back. In this case, the Sender's income is 20 tokens (=20-10+10) and the Receiver's income is 40 tokens (=20+30-10).

Part I of the experiment consists of two phases. In the <u>first phase</u> you decide in the **role of the Sender** about how many tokens you send to the Receiver. Then, you decide in the **role of the Receiver** how many tokens you will send back to the Sender, for every possible amount that the Sender could send. In the <u>second phase</u> you are asked to indicate your belief about how many tokens you think a Receiver would send back in case that a Sender sent the maximum 20 tokens. In the following, we describe the two phases in more detail.

a) Phase 1: Unconditional decision as Sender and conditional decision as Receiver

In this phase you will make two types of decisions: an **unconditional** decision in the role of the Sender and a **conditional** decision in the role of the Receiver.

- In the **unconditional** decision, you decide in the role of the Sender about the amount you send to the Receiver. You have 20 tokens and you can choose to send any of these tokens to the Receiver. You will enter your decision as a single number between 0 and 20.

- In the **conditional** decision, you will decide in the role of the Receiver about the amount you send back to the Sender for each possible amount the Sender may send. You may send back different amounts for each possible amount that the Sender can send. That is, you have to specify how much you want to send back if the Sender sent you 1 token, 2 tokens, etc., up to 20 tokens. You will see a table, with all possible integer values from 0 to 20, corresponding to the possible amounts sent by the Sender. For the case that the Sender sent you 0 tokens, you cannot send back any tokens and therefore there is no decision to be made.

Importantly, only the decision that coincides with **your actual role** will count. However, because you will not know which role you have until the end of the experiment you should treat each decision as if it is the one that determines your earnings from Phase 1. If your actual role will be a Receiver, then the only decision that counts will be your conditional decision that corresponds to the actual chosen amount sent by the Sender in your group.

b) Phase 2: Estimate of the number of tokens that Receivers send back

In Phase 2, we ask you to give your best estimate of how many tokens the average Receiver sends back, in case that the Sender sent the maximum of 20 tokens (and the Receiver received 60 tokens). Recall that, in this case, the Receiver can send back any amount from 0 to 60 tokens. Specifically, we ask you to provide **a range of values** that you believe will contain the <u>average number of tokens</u> that the Receivers sent back. You will enter your estimate as two integers: one number for the lower end of the range and another for the higher end of the range.

In the conditional decision of Phase 1 of Part I, all participants indicated how much they would sent back if they were in the role of Receiver and the Sender sent 20 tokens. To calculate how many tokens a Receiver actually sends back on average, we will round the average amount sent back by <u>all other</u> participants (i.e., excluding your own decision) to the nearest integer, and compare it to the estimated range you specified. You will earn ECU only if the range you specify includes the (rounded) actual average amount sent back. Furthermore, the wider the range you indicate the smaller are your potential earnings. More precisely, the exact amount you earn is calculated according to the following rules:

- If the range you specify does not include the actual (rounded) average you earn 0 ECU.

- The maximum you can earn is 20 ECU. You earn 20 ECU if you (a) specify only a single value – that is, if the lower number and the higher number you specify are the same – and (b) this value is equal to the (rounded) average amount sent back by the other participants. So, for example, if you are certain that the average amount sent back by the others will be 15 then you should enter 15 for both the lower number and the higher number. If the (rounded) average amount sent back by others is actually 15 you will earn 20 ECU; otherwise you will earn 0 ECU.

- As the range you specify becomes wider, you earn **less** money for a correct estimate. Specifically, for every unit that your range increases in width, your potential income decreases by 1/3 ECU. So, for example, if you enter 28 for the lower end and 40 for the higher end of the range (i.e., your range has a width of 12) and the (rounded) average amount sent back by others is 35 tokens (and is thus within your specified range), then you will earn 20 – 1/3 * 12 = 16 ECU. You earn more than you would earn if you had entered a wider range, say from 25 to 40 (income = 20 – 1/3 * 15 = 15 ECU), but you earn less than you would earn if you had entered a narrower range, say from 33 to 36 (income = 20 – 1/3 * 3 = 19 ECU) or if you had entered a range consisting only of 35 (income = 20 – 0 = 20 ECU).

If you enter 0 for the lower end and 60 for the higher end, your range covers all possible average token amounts and the actual (rounded) average of others' returned tokens is thus guaranteed to lie in your specified range. In this case, you earn nothing (income = 20 – 1/3 * 60 = 0 ECU).

To summarize, the rule is that you earn money for specifying a range that contains the (rounded) average amount sent back by the other participants, but the amount you earn for such a correct estimate is smaller the wider the range you indicate.

Earnings from Part I

After all participants have made all decisions in Part I, your earnings from Part I will be determined as follows.

- First, the computer will randomly determine who in a given group acts in the role of Sender and who in the role of Receiver. The respective decisions that the group members indicated for their role in Phase 1 will then be implemented. Each token of your income in Phase 1 is worth 1 ECU of earnings.
- Second, the computer will compare the range you provided as an estimate for the average amount sent back by <u>all other</u> participants to their actual average amount sent back. This will determine your earnings from Phase 2.

Your total earnings (in ECU) from Part 1 equals the sum of your earnings in Phase 1 and Phase 2.

EXAMPLE: Phase 1: Assume that the computer randomly assigns you to the role of Sender and the other group member to the role of Receiver. Imagine that you indicated in Phase 1 that you would send 5 tokens in the role of Sender. Imagine further that the other group member indicated that, in this case, he would send back 10 tokens. Hence, you will earn 25 ECU and the other group member will earn 25 ECU from Phase 1.

*Phase 2: Assume that all other participants indicated that they would send back, on average, 40 tokens if the Sender sent them 20 tokens. Imagine that you indicated a range from 35 to 45 tokens. Your earnings from Phase 2 are thus 16,67 ECU (= 20 – 1/3 * 10=16,67 ECU).*

Your total earnings from Part I are thus 41,67 ECU (= 25 + 16,67).

You will <u>make these decisions only once</u> in Part I. You will be informed about your actual role and the decisions of the other participants and your payoff from Part I at the end of the experiment, after everyone has made all decisions in the experiment.

Do you have any questions? If yes, please raise your hand. We will then come to you at your workplace. If not, please click "Continue" on your computer screen.

Once we have answered all questions, we will ask you to answer some comprehension questions on your computer screen. These questions will ensure that everyone understands the instructions for Part I.

Decision screens for Part I - Trust treatments

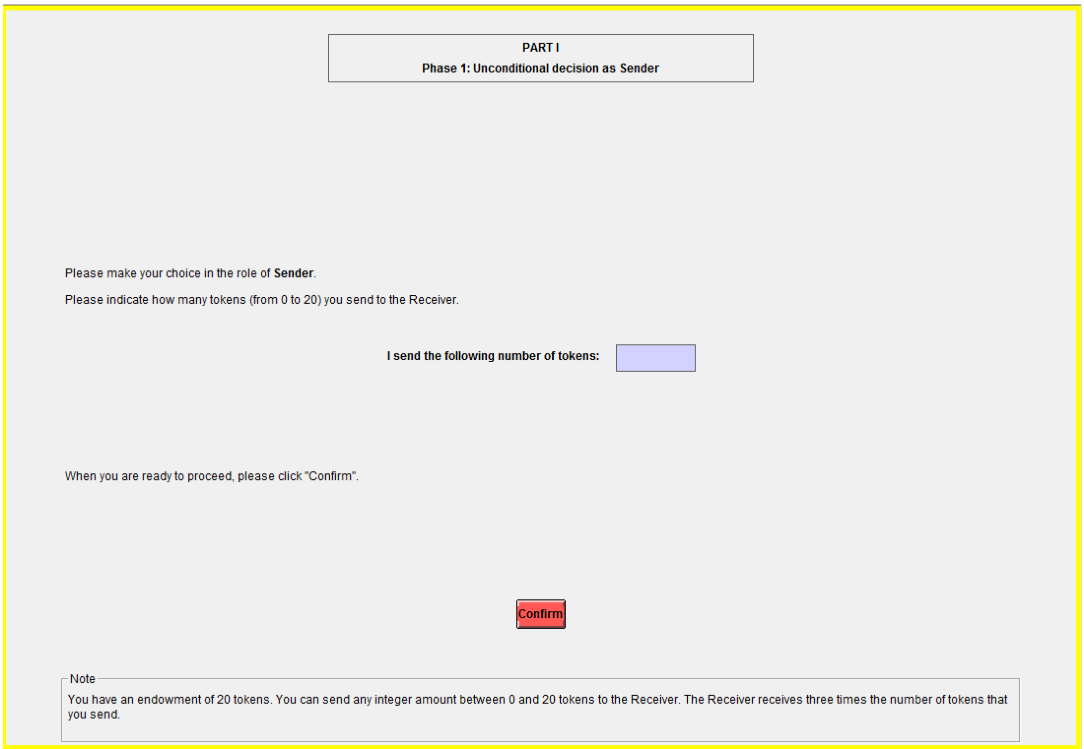


Figure B.16: Unconditional decision as Sender.

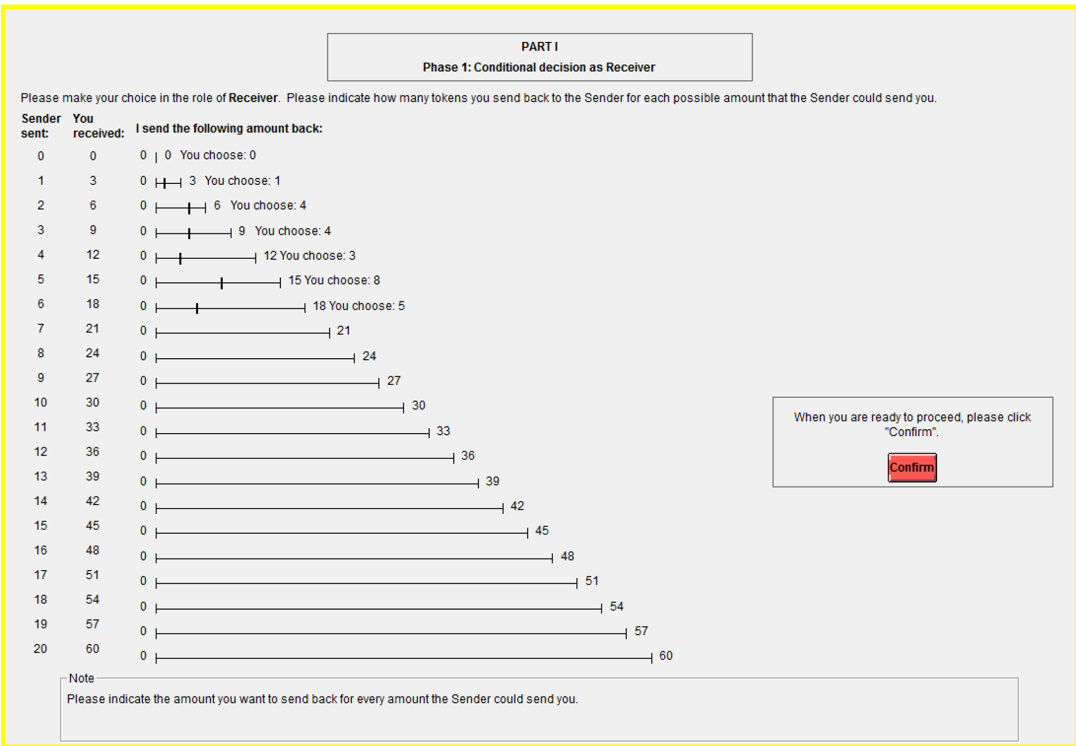
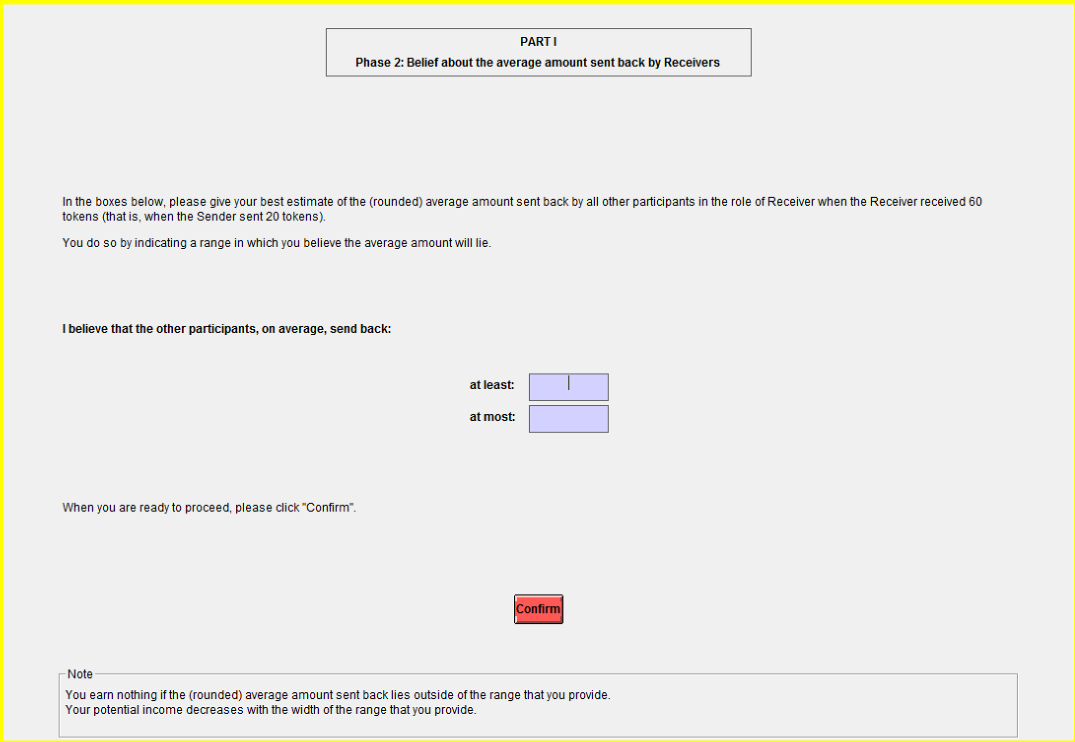


Figure B.17: Conditional decision as Receiver.



PART I

Phase 2: Belief about the average amount sent back by Receivers

In the boxes below, please give your best estimate of the (rounded) average amount sent back by all other participants in the role of Receiver when the Receiver received 60 tokens (that is, when the Sender sent 20 tokens).

You do so by indicating a range in which you believe the average amount will lie.

I believe that the other participants, on average, send back:

at least:

at most:

When you are ready to proceed, please click "Confirm".

Confirm

Note

You earn nothing if the (rounded) average amount sent back lies outside of the range that you provide.
Your potential income decreases with the width of the range that you provide.

Figure B.18: Beliefs about amount sent back.

Instructions for Part II - "Trust no institution" treatment

Part II

Group membership

At the beginning of Part II, the computer will assign you at random to a group consisting of **four participants that you have not interacted with before**. Part II consists of 20 periods and all interactions during Part II take place **with the same group members**. In all periods you will make decisions related to a basic task. Before explaining Part II in more detail, we first explain the basic task to you.

The Basic Task of Part II

Each of the four members of your group is endowed with 20 tokens. Each member of the group decides how many of the 20 tokens to put in a private account and how many to contribute to a group account. Any tokens you put in the private account cannot be contributed to the group account and vice versa. You can earn income from the private account as well as from the group account.

Your income from the private account

For each token you put in your private account you earn an income of one ECU. Nobody except you earns anything from tokens you put in your private account.

EXAMPLE: If you put 6 tokens in your private account, you earn 6 ECU from the private account.

Your income from the group account

For each token you contribute to the group account you and the other three group members each receive 0.5 ECU. Note that you will also earn income from the tokens that other group members contribute to the group account. For each group member the income from the group account will be determined as follows:

Each group member's income from the group account

= 0.5 * sum of all tokens contributed to the group account

Put differently, the total number of tokens in the group account will be doubled and then equally distributed among all four group members. This yields, for each group member, 0.5 times the total number of tokens contributed. Suppose you contribute one token to the group account. The sum of tokens in the group account would then rise by one token. Your income from the group account would, thus, rise by 0.5 * 1 = 0.5 ECU. The income of each other group member would also rise by 0.5 ECU. So, contributing one token to the group account generates total income for the group of 4 * 0.5 ECU = 2 ECU.

*EXAMPLE: If the sum of tokens in the group account is 60 tokens, then you and all other group members each earn an income of 0.5 * 60 = 30 ECU from the group account. The total income for the group from the group account is 4 * 30 ECU = 120 ECU.*

Your total income

Your total income equals the sum of your income from the private account and your income from the group account.

Total income = Income from the private account + Income from the group account

= <u>(20 – tokens you contribute to the group account) + (0.5 * sum of tokens in the group account)</u>

In each of the 20 periods of Part II, you will simultaneously participate in two tasks. Each task is similar to the basic tasked described above. They will be displayed next to each other on the same computer screen and we will, thus, refer to these as **Task Left** and **Task Right**.

For each task, you have a separate endowment of 20 tokens that you can contribute to a group account or put in your private account. You will enter, separately, the number of tokens you decide to contribute to the group account in Task Left and in Task Right.

Task Left

<u>On the left side of the computer screen</u>, you will decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. Your income from Task Left is calculated in the same way as described for the basic task and, thus, depends on your contribution and the contributions of the other three members of your group.

Task Right

<u>On the right side of the computer screen</u>, you will also decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. Your income from Task Right is calculated in the same way as described for the basic task and, thus, depends on your contribution and the contributions of the other three members of your group.

A participant's income in Task Left is not affected by anything that happens in Task Right and vice versa.

EXAMPLE: Group member A contributes 5, member B 15, member C 20, and member D 20 tokens to the group account in Task Right. The total contributions are thus 60 tokens. Member A earns 45 ECU, member B earns 35 ECU, member C earns 30 ECU and member D earns 30 ECU from Task Right. Note that all group members also earn money based on what happens in Task Left, which is independent of Task Right.

Before you make your contribution decisions in Task Left and Task Right, we will ask you about your belief about the other group members' average contribution in Task Left and Task Right. Contrary to Part I, you will enter your (rounded) belief as a single number. So, for example, if you believe that the (rounded) average contribution is 12 in Task Left and 8 in Task Right, you should enter the numbers 12 and 8 in the respective input boxes on the screen. Whether your beliefs are correct or not does not impact your payoff. Please enter your best estimates.

After that you will make your contribution decisions in Task Left and Task Right.

Summary
You will make the following decisions in Part II:

- You will enter your beliefs about the average contribution of the other group members in Task Left and Task Right.
- You will then make two contribution decisions, one in Task Left and one in Task Right.

Total income in each period
Your total income in each period is equal to the sum of your incomes in the two tasks. So, for example, if you earn 30 ECU from Task Left and 10 ECU from Task Right, your total income in that period will be 40 ECU. At the end of each period all group members will be informed about their incomes in Task Left and Task Right and the respective contributions of all group members. The contributions will be presented in descending order and it is not possible to identify which member of the group contributed which number of tokens to the group accounts in Task Left and Task Right.

Earnings from Part II

At the end of the experiment, one out of the twenty periods from Part II will be randomly selected to count for payment. Your decisions and those of your group members in that period will then be implemented and will determine your earnings from Part II. Specifically, **your payoff for the randomly selected period will be multiplied by 20, so that it counts for all 20 periods.** Note that every decision in each of the twenty periods can be relevant for your payoff. It is therefore important that you make your decisions in every period as if it would be the period that determines your actual payoff.

Do you have any questions? If yes, please raise your hand. We will then come to you at your workplace. Once we have answered all questions, we will ask you to answer some comprehension questions on your computer screen. These questions will ensure that everyone understands the instructions for Part II.

Instructions for Part II - “Trust endogeneous institution” treatment

Part II

Group membership

At the beginning of Part II, the computer will assign you at random to a group consisting of **four participants that you have not interacted with before**. Part II consists of 20 periods and all interactions during Part II take place **with the same group members**. In all periods you will make decisions related to a basic task. Before explaining Part II in more detail, we first explain the basic task to you.

The Basic Task of Part II

Each of the four members of your group is endowed with 20 tokens. Each member of the group decides how many of the 20 tokens to put in a private account and how many to contribute to a group account. Any tokens you put in the private account cannot be contributed to the group account and vice versa. You can earn income from the private account as well as from the group account.

Your income from the private account

For each token you put in your private account you earn an income of one ECU. Nobody except you earns anything from tokens you put in your private account.

EXAMPLE: If you put 6 tokens in your private account, you earn 6 ECU from the private account.

Your income from the group account

For each token you contribute to the group account you and the other three group members each receive 0.5 ECU. Note that you will also earn income from the tokens that other group members contribute to the group account. For each group member the income from the group account will be determined as follows:

Each group member’s income from the group account

= 0.5 * sum of all tokens contributed to the group account

Put differently, the total number of tokens in the group account will be doubled and then equally distributed among all four group members. This yields, for each group member, 0.5 times the total number of tokens contributed. Suppose you contribute one token to the group account. The sum of tokens in the group account would then rise by one token. Your income from the group account would, thus, rise by 0.5 * 1 = 0.5 ECU. The income of each other group member would also rise by 0.5 ECU. So, contributing one token to the group account generates total income for the group of 4 * 0.5 ECU = 2 ECU.

*EXAMPLE: If the sum of tokens in the group account is 60 tokens, then you and all other group members each earn an income of 0.5 * 60 = 30 ECU from the group account. The total income for the group from the group account is 4 * 30 ECU = 120 ECU.*

Your total income

Your total income equals the sum of your income from the private account and your income from the group account.

Total income = Income from the private account + Income from the group account

= <u>(20 – tokens you contribute to the group account) + (0.5 * sum of tokens in the group account)</u>

In each of the 20 periods of Part II, you will simultaneously participate in two tasks. Each task is similar to the basic tasked described above. They will be displayed next to each other on the same computer screen and we will, thus, refer to these as **Task Left** and **Task Right**.

For each task, you have a separate endowment of 20 tokens that you can contribute to a group account or put in your private account. You will enter, separately, the number of tokens you decide to contribute to the group account in Task Left and in Task Right.

Task Left

<u>On the left side of the computer screen</u>, you will decide how many of your endowment of 20 tokens to contribute to the group account and how many to put in your private account. You can enter any integer from 0 to 20. Your income from Task Left is calculated in the same way as described for the basic task and, thus, depends on your contribution and the contributions of the other three members of your group.

Task Right

<u>On the right side of the computer screen</u>, your group will, at the beginning of each period (and thus before a decision in Task Left can be made), first vote on a "**contribution threshold.**" The contribution threshold specifies a minimum level of contribution to the group account in Task Right for each group member. The contribution threshold can be any value between 0 and 20.

The contribution threshold affects the income of group members from Task Right, depending on whether they contribute at least as many or fewer tokens to the group account than specified by the contribution threshold. Specifically:

- The income from Task Right of any group member who contributes **at least as many** tokens to the group account as specified by the contribution threshold is **not affected** by the contribution threshold. The income from Task Right is then determined as described for the basic task.

- Any group member who contributes **fewer** tokens to the group account than the minimum level specified by the contribution threshold **loses any income** from Task Right. That is, a group member that contributes less than the contribution threshold receives an income of 0 for Task Right, regardless of how much this group member or other group members contributed. Thus, there is a penalty for contributing fewer tokens to the group account than the contribution threshold, and the penalty is the loss of all income for that period in Task Right. **A participant's income in Task Left is not affected by anything that happens in Task Right and vice versa.** Similarly, if one participant is penalized for contributing less than the contribution threshold in Task Right, the incomes of other participants are not affected. Thus, the other group members still benefit from any contributions made by any group member in Task Right.

*EXAMPLE: The contribution threshold is set to 15 in Task Right. Group member A contributes 5, member B 15, member C 20, and member D 20 tokens to the group account in Task Right. The total contributions are thus 60 tokens. Member A earns 0 ECU from Task Right, because he contributed less than the "contribution threshold" of 15 tokens. Member B earns 5 ECU from the private account plus an income of 0.5 * 60 = 30 ECU from the group account from Task Right. Member C and Member D earn 0 ECU from the private account plus 30* ECU *from the group account in Task Right. Note that all group members also earn money based on what happens in Task Left, which is independent of Task Right.*

How the contribution threshold for Task Right is determined:

At the beginning of every period, before any contribution decisions are made, all four members of a group vote on the contribution threshold for Task Right for that period. Every member votes for a desired contribution threshold, by specifying an integer value between 0 and 20.

The implemented contribution threshold for Task Right for that period is the <u>lowest value</u> voted for by any group member.

EXAMPLE: Assume that group member A votes for 7, group member B for 12, group member C for 18, and group member D for 10. The implemented contribution threshold for Task Right in that period is 7, the lowest vote in the group. Any group member who contributes less than 7 tokens in that period in Task Right then earns 0 ECU from Task Right.

After the voting takes place, all group members are informed about the implemented contribution threshold and about all of the separate votes cast by members of the group. The votes will be presented in descending order and it is not possible to identify which member of the group voted for which value of the contribution threshold.

Before you make your contribution decisions in Task Left and Task Right, we will ask you about your belief about the other group members' average contribution in Task Left and Task Right. Contrary to Part I, you will enter your (rounded) belief as a single number. So, for example, if you believe that the (rounded) average contribution is 12 in Task Left and 8 in Task Right, you should enter the numbers 12 and 8 in the respective input boxes on the screen. Whether your beliefs are correct or not does not impact your payoff. Please enter your best estimates.

After that you will make your contribution decisions in Task Left and Task Right.

Summary

You will make the following decisions in Part II:

- You will vote on a contribution threshold for Task Right. The contribution threshold changes the potential payoffs only in Task Right. It has no effect on the payoffs from Task Left.
- You will enter your beliefs about the average contribution of the other group members in Task Left and Task Right.
- You will then make two contribution decisions, one in Task Left and one in Task Right.

Total income in each period

Your total income in each period is equal to the sum of your incomes in the two tasks. So, for example, if you earn 30 ECU from Task Left and 10 ECU from Task Right, your total income in that period will be 40 ECU. At the end of each period all group members will be informed about their incomes in Task Left and Task Right and the respective contributions of all group members. The contributions will be presented in descending order and it is not possible to identify which member of the group contributed which number of tokens to the group accounts in Task Left and Task Right.

Earnings from Part II

At the end of the experiment, one out of the twenty periods from Part II will be randomly selected to count for payment. Your decisions and those of your group members in that period will then be implemented and will determine your earnings from Part II. Specifically, **your payoff for the randomly selected period will be multiplied by 20, so that it counts for all 20 periods.** Note that every decision in each of the twenty periods can be relevant for your payoff. It is therefore important that you make your decisions in every period as if it would be the period that determines your actual payoff.

Do you have any questions? If yes, please raise your hand. We will then come to you at your workplace. Once we have answered all questions, we will ask you to answer some comprehension questions on your computer screen. These questions will ensure that everyone understands the instructions for Part II.

Instructions for Part III - Trust treatments

Part III

[These instructions are displayed on the computer screen and read aloud but not printed.]

“On the next screen, we will start with Part III.

Part III is identical to Part I. You will face the same decision situation as in Part I and your earnings will be determined in the same way as in Part I.

As in Part I you will be in a group with one other group member. **The other group member will be one of the three group members that you interacted with in Part II.**

As in Part I, you will make your decisions only once.

You will again make an "unconditional decision" in the role of Sender and a "conditional decision” in the role of Receiver.

Which role you actually have in Part III will be determined at the end of the experiment. This means that you should make each decision as if it determines your earnings in this part.

Also, you will again indicate a range in which you believe the average amount sent back by all other participants will lie, conditional on the Sender sending 20 tokens.

Your decisions will affect your final earnings form this part and the final earnings of the other participant with whom you interact in this part.

Therefore, please consider your decisions carefully.

If you have questions, please consult the instructions for Part I or raise your hand.

When you are ready to proceed, please click "Continue”.”

Instructions for Part IV - Trust treatments

Part IV

[These instructions are displayed on the computer screen and read aloud but not printed.]

"Part III of the experiment is now concluded. You will learn the results and your earnings from Part III at the end of the experiment.

On the next screen, we will start with Part IV.

Part IV is identical to Part I. You will face the same decision situation as in Part I and your earnings will be determined in the same way as in Part I.

As in Part I you will be in a group with one other group member.

However, **contrary to Part III**, at the beginning of Part IV, the computer will assign you a participant **that you have not interacted with before**.

As in Part I, you will make your decisions only once.

You will again make an "unconditional decision" in the role of Sender and a "conditional decision" in the role of Receiver.

Which role you actually have in Part IV will be determined at the end of the experiment. This means that you should make each decision as if it determines your earnings in this part.

Also, you will again indicate a range in which you believe the average amount sent back by all other participants will lie, conditional on the Sender sending 20 tokens.

Your decisions will affect your final earnings from this part and the final earnings of the other participant with whom you interact in this part.

Therefore, please consider your decisions carefully.

If you have questions, please consult the instructions for Part I or raise your hand.

When you are ready to proceed, please click "Continue"."