

Online Resource to “The evolution of sanctioning institutions: an experimental approach to the social contract”

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The experiment took place in a computer lab of the Vienna University of Economics and Business (WU) on six days. On three days, the first-order treatment was played, and on the other three days the second-order treatment. The lab has 50 computers and for each of the six sessions, some 40 students (3 groups) played together. The interactions were anonymous, and via PCs. Cardboard dividers ensured that the students could not see each other. Players were not allowed to communicate. They were also not allowed to ask questions during the experiment, but they could ask before the experiment (only four or five did).

Table S1

Group size in the first-order and the second-order treatment

Group sizes in the first-order treatment									
group 1	group 2	group 3	group 4	group 5	group 6	group 7	group 8	group 9	Total
13	13	13	13	13	13	14	14	14	120

Group sizes in the second-order treatment									
group10	group11	group12	group13	group14	group15	group16	group17	group18	Total
14	14	13	12	12	12	14	14	13	118

The practice rounds lasted about 45 min, almost for as long as the subsequent experiment (students knew that the sessions would last at most for two hours, but were not told the number of rounds, so as to avoid end round effects). All players were given the same instructions (in German, see screen shots). The groups were then re-shuffled before the actual experiment started, and remained unchanged for its entire duration. The translation of the instructions for the practice rounds and the experiment can be found at the end of the Online Resource. The average income was 19.6 euro (minimum 15.3, maximum 24.9). All steps were time-limited. Players knew that if they did not decide within 15 seconds, they would be allocated a random decision. Since the players had familiarized themselves with each game,

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during the practice rounds, this happened only 9 times in 11900 decisions, and is omitted from the statistics.

In the groups 1-9, which offered the first-order treatment of pool punishment, peer punishment was preferred, as can be seen in Figure S1a and Table S2a. In the following tables S2a and S2b, the standard error is based on individual decisions (not on the groups).

Table S2a

Decisions in the first-order treatment

Groups 1-9: votes for the different games (including non-participation)

Decisions	Number of times	Percentage	Average payoff	Standard error
(No) non-participation	754	0.126	3.500	0
(NoPun) no-punishment game	701	0.117	3.342	0.0299
(Peer) peer punishment game	3330	0.556	4.299	0.0164
(Pool) pool punishment game	1208	0.202	3.492	0.0250
Total	5993	1	3.924	0.0126

After including among non-participants those players who found no partners

Decisions	Number of times	Percentage	Average payoff	Standard error
(No) non-participation	926	0.155	3.500	0
(NoPun) no-punishment game	618	0.103	3.32	0.0339
(Peer) peer punishment game	3300	0.551	4.31	0.0165
(Pool) pool punishment game	1149	0.192	3.49	0.0262

Decisions within each game

Decisions	Number of times	Percentage	Average payoff	Standard error
contribution in no-punishment game	99	0.017	2.601	0.1094
non-contribution in no-punishment game	519	0.087	3.458	0.0311
contribution, but no punishing, in peer punishment games	2049	0.342	4.636	0.0150
non-contribution in peer punishment games	859	0.143	3.614	0.0297
peer-punishment and contribution	392	0.065	4.100	0.0681
contribution, but no punishing, in pool punishment games	338	0.056	3.486	0.0522
non-contribution in pool punishment games	757	0.126	3.566	0.0295
pool-punishment and contribution	54	0.009	2.477	0.1189

In the first-order pool punishment games, neither contributions to the Mutual Aid nor to the sanctioning took off. Only a tiny fraction of the decisions in this group (54 out of 1149)

favored investing into the punishment pool. The large majority seems to have sensed that the punishment threat would not be carried out, and defected. Defection was the most profitable decision in the pool punishment game, but the average payoff (3.566 MU) was only slightly higher than what non-participants obtained. (This difference was not significant). Peer punishment was clearly preferred. The average payoff obtained by opting for the peer punishment game was 4.3 MU, higher (not significant) than for opting for a pool punishment game (3.49 MU, Mann-Whitney U-test, $n_1=9$, $n_2=9$, $p=0.11$) or the game without punishment (3.34 MU, Mann-Whitney U-test, $n_1=9$, $n_2=9$, $p=0.03$). Indeed, the average payoff values in the pool punishment or no-punishment games were lower than the non-participation payoff of 3.5 MU. A majority (62 percent) of players opting for the peer punishment game contributed to the Mutual Aid game, but did not choose the punishment option. All in all, 48.9 percent of all decisions were in favor of contributing to the Mutual Aid game, rather than defecting (35.6 percent) or abstaining from the game (15.5 percent). The frequency of cooperative decisions in the (Peer) game is significant higher than that of the (Pool) game (74% vs 34.1%, Mann-Whitney U-test, $n_1=9$, $n_2=9$, $p<0.0001$) and the (NoPun) game (74% vs 16%, Mann-Whitney U-test, $n_1=9$, $n_2=9$, $p<0.0001$). But as mentioned in the main text, the time evolution over the fifty rounds shows a clear decline in contributions over time (See Table S3b). We also note that free-riding was the most frequent and most successful behavior in the pool punishment game, but that the average payoff (3.566 MU) was only insignificantly higher than what non-participants obtained. Remarkably, the payoff for defecting in the games without punishment was almost the same (3.458 MU).

In the groups 10 to 18, pool-punishment was offered in the second-order treatment, i.e., it included punishing those who contributed to the Mutual Aid but not to the punishment pool. This time, pool punishment was preferred, as can be seen in Figure S1b and Table S2b. Almost all decisions in the (Pool) game are cooperative (contributions to both pools or only to the Mutual Aid), which is significant higher than for the (Peer) game (99.7% vs 83.5%, Mann-Whitney U-test, $n_1=9$, $n_2=9$, $p<0.0001$) or the (NoPun) game (99.7% vs 23.8%, Mann-Whitney U-test, $n_1=9$, $n_2=9$, $p<0.0001$). Only 4.5 percent of all decisions were in favor of game (NoPun). The free-riders, in that case, did about as poorly as in the (Peer) game (3.696 MU vs 3.689 MU), since they found only few to exploit. Very few decision was in favor of non-participation. In many more cases, non-participation was the unintended consequence of choosing a game that was not chosen by anyone else in the group. Second-order free-riding (i.e., to opt for the peer punishment game, and contribute, but not punish) achieved the highest payoff, 4.77 MU (see Figure 3c).

The time-evolution in the different groups is interesting (see Figures S1 and S2). In seven of the nine groups where pool punishment was offered in the first-order treatment, the initial majority voted for peer punishment and in the other two groups, the initial majority voted for pool punishment. Three groups (3, 4 and 6) quickly reached consensus on peer punishment but all other groups went to chaos. During fifty rounds, players persisted in switching from one game to another. We note that in the three groups leading to peer punishment, two-thirds of the players, in each round, decided not to actually punish. The threat of the remaining third sufficed to ensure co-operation, although that threat had rarely to be carried out.

Table S2b

Decisions in the second-order treatment

Groups 10-18: votes for the different treatments (including non-participation)

Decisions	Number of times	Percentage	Average payoff	Standard error
(No) non-participation	23	0.004	3.500	0
(NoPun) no-punishment game	265	0.045	3.483	0.057
(Peer) peer punishment game	2421	0.410	4.490	0.018
(Pool) pool punishment game	3189	0.541	4.459	0.009
Total	5898	1	4.424	0.010

After including among the non-participants those players who found no partners:

Decisions	Number of times	Percentage	Average payoff	Standard error
(No) non-participation	154	0.026	3.500	0
(NoPun) no-punishment game	181	0.031	3.475	0.0836
(Peer) peer punishment game	2389	0.405	4.503	0.0178
(Pool) pool punishment game	3174	0.538	4.464	0.0094

Decisions in each treatment:

Decisions	Number of times	Percentage	Average payoff	Standard error
contribution in no-punishment games	43	0.007	2.767	0.1791
non-contribution in no-punishment games	138	0.023	3.696	0.0866
contribution, but no punishing, in peer punishment games	1781	0.302	4.770	0.0123
non-contribution in peer punishing games	393	0.067	3.689	0.0516
peer-punishment and contribution	215	0.036	3.776	0.0946
contribution, but no punishing, in pool punishment games	11	0.002	-0.955	1.3659
non-contribution in pool punishment games	8	0.001	0.313	1.8094

pool-punishment and contribution	3155	0.535	4.493	0.0017
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There was not much switching in the groups where the second-order treatment of pool punishment was played. Despite the fact that in the first round, more players voted for (Peer) than for (Pool) punishment (65 vs. 43), pool-punishment emerged in six of the nine groups as consensus solution. In three groups (13, 17 and 18), the initial majority for peer punishers was large enough to ensure the fixation of peer punishment within a few rounds. However, group 17 collapsed eventually, since the threat of peer punishment was not actually carried out. The players then turned to the (Pool) game. A switch in the opposite direction occurred in group 15. After some initial oscillations, the pool-punishment game emerged as the majority choice, but it was never unanimous, and eventually became replaced by (Peer).

Table S3

Regression lines

Table S3a: Voting for different games

	Regression line (50 rounds)	R ²	P-value
First-order peer game	$y = 0.6347 - 0.0031x$	0.4761	P-value < 0.001
First-order pool game	$y = 0.2749 - 0.0029x$	0.4362	P-value < 0.001
Second-order peer game	$y = 0.5220 - 0.0044x$	0.6671	P-value < 0.001
second-order pool game	$y = 0.4325 + 0.0042x$	0.5939	P-value < 0.001

Table S3b: Frequencies of C (contribute to the Mutual Aid) and D (defect)

	Regression line (50 rounds)	R ²	P-value
First-order C	$y = 0.6689 - 0.0065x$	0.8812	P-value < 0.001
First-order D	$y = 0.3292 - 0.0015x$	0.1761	P-value = 0.024
Second-order C	$y = 0.8783 + 0.001x$	0.1779	P-value = 0.023
second-order D	$y = 0.1164 - 0.001x$	0.1707	P-value = 0.029

Table S3c: Voting for different games in the second-order treatment

	Regression line (first 20 rounds)	R ²	P-value
Second-order peer game	$y = 0.6191 - 0.0136x$	0.8983	P-value < 0.001
Second-order pool game	$y = 0.3262 + 0.0146x$	0.9167	P-value < 0.001

Notes: y represents the frequency and x the round. R² is the coefficient of determination.

There are two related problems in establishing the statistics. One is that players opting for a game may end up with no partners, and thus become non-participants. Their decision was registered, and included in the statistics, but their payoff (3.5 MU) was not included in the average payoff for the game of their choice, since that game was cancelled. If we had added instead their 3.5 MU to the average, not much would have changed. The second

problem is how to count the decisions in favor of peer punishment in those peer punishment games where no defection took place. If a player sees that there is no one to punish, and then chooses ‘peer-punishment’, this can indicate an earnest commitment to uphold the sanctioning system to guarantee cooperation (Maschlet et al. 2003), but it could just as well be a mere cost-free gesture. If conversely a player chooses ‘non-punishment’, this can either indicate a decision for second-order free riding, or merely mean that the player was aware that there was no need for sanctions anyway. There were 108 such rounds (out of 239). The average number of decisions for peer punishment in (Peer) games without defectors was higher than that in (Peer) games with defectors (1.02 vs 0.85), but the difference is not significant, see Table 4S. In computing average payoffs and frequencies, we decided to take the players statements at face value. But we also computed a ‘skeptical’ version (not shown here), where players who actually did not punish were counted as non-punishers, no matter whether they declared themselves to be peer-punishers or not. Frequencies and the average payoffs are different, but the main conclusions remain unaffected.

Table S4

Average number of peer punishers (in both treatments)

Number of defectors in the (Peer) game	0	1	2	3	4	5	6	7	8	9	>0
Number of (Peer) games	239	130	102	84	42	19	26	12	8	4	427
Average number of peer punishers	1.02	1.84	0.47	0.45	0.4	0.37	0.35	0.25	0	0	0.85

The experiment was motivated by a theoretical analysis (Sigmund et al, 2010). This analysis predicts that the emergence of pool punishment is possible only if second-order free-riders are also punished. This is confirmed in our experiment. On the other hand, we expected that peer punishment would be replaced, in that case, by pool punishment. As it turned out, we did not observe this anticipated ‘trading efficiency for stability’. Rather, we found examples for switches in both directions (groups 15 and 17, see Online Resource). A look at the time evolution in each group (see Online Resource, Figures S1 and S2) suggests that in both treatments, peer punishment offered a modicum of stability, but that when it failed, it gave way to asocial behavior (i.e., non-participation or defection) in the first-order treatment, and to pool punishment in the second-order treatment. As a consequence, contributions were stably sustained in the second-order treatment, at a very high level, whereas they declined, and were ultimately overtaken by defections, in the first-order

treatment (see Figure 2). This good performance of peer punishment may be due to the fact that retaliatory punishment was not possible in our design (Cinyabuguma et al. 2006; Nikiforakis 2008). Moreover, pool-punishers could not punish peer-punishers in our experiment. They belonged to different games. It is possible that ‘cross-punishment’ can change this outcome. (In Traulsen et al. 2012, this possibility was offered, but hardly ever used by the players.)

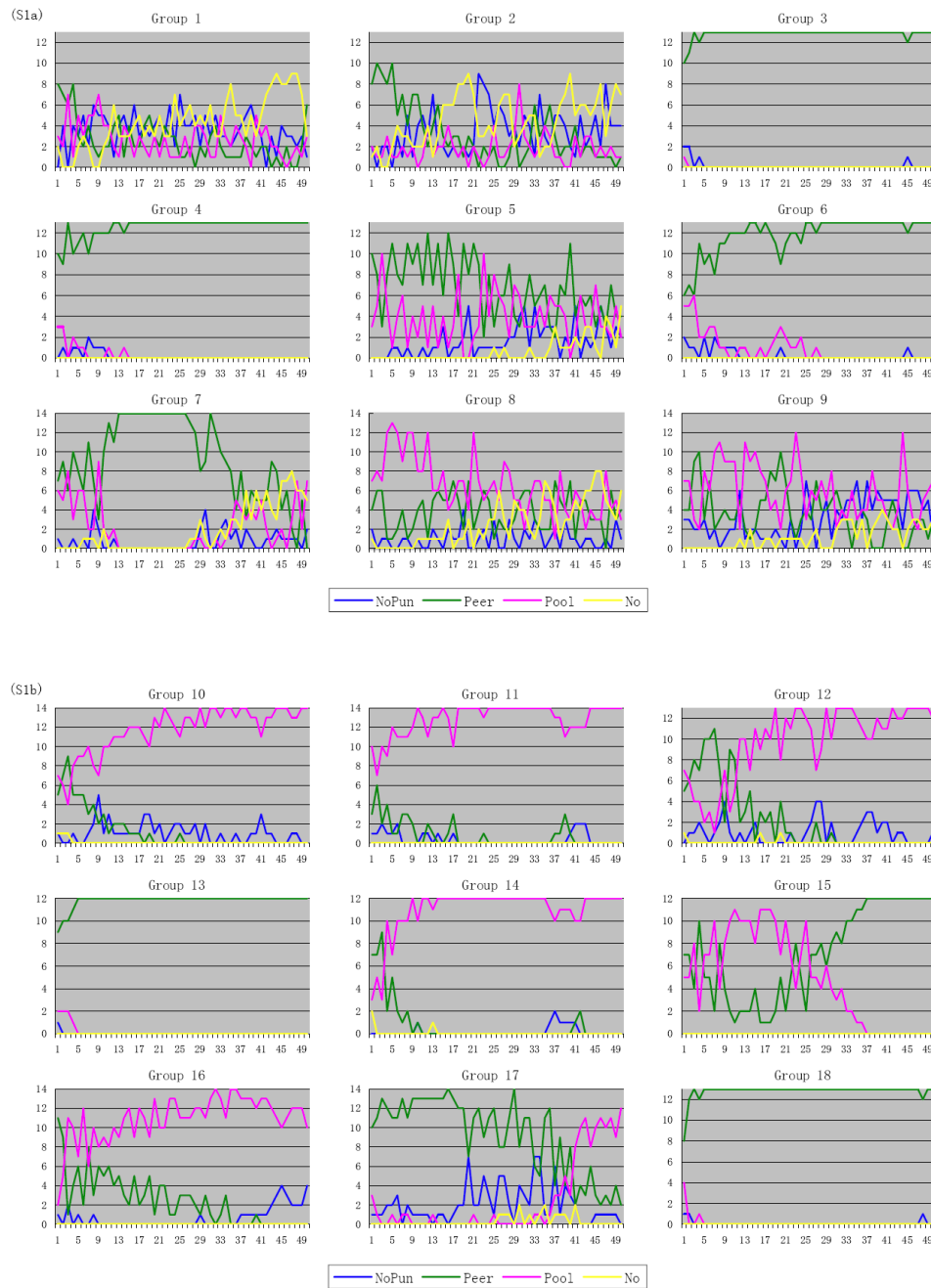
The initial phase of our experiment displayed a high rate of change in behavior in most groups. On average, more than one-fourth of the players switched to another decision between one round and the next, during the first twenty rounds. In the last ten rounds, the average switching rate was only 5.6 percent in the twelve groups that had settled on peer or pool punishment, but 50 percent in the others.

Another question that was not addressed here is whether the option to abstain from the game (‘non-participation’), which is crucial for the theoretical analysis (Sigmund et al, 2010), is also necessary for the experiment. For the theoretical analysis, it was assumed that innovative behavior (‘mutation’) is much rarer than copying behavior. In that case, non-participation is necessary as an escape from the homogeneous state of defection. Since actual human populations display high degrees of polymorphism (Traulsen et al. 2010), non-participation may not be needed. On the other hand, voluntary participation is likely to increase the perceived legitimacy of the sanctioning institution, and hence its efficiency (Tyler and DeGoey 1995; Ertan et al. 2009).

References

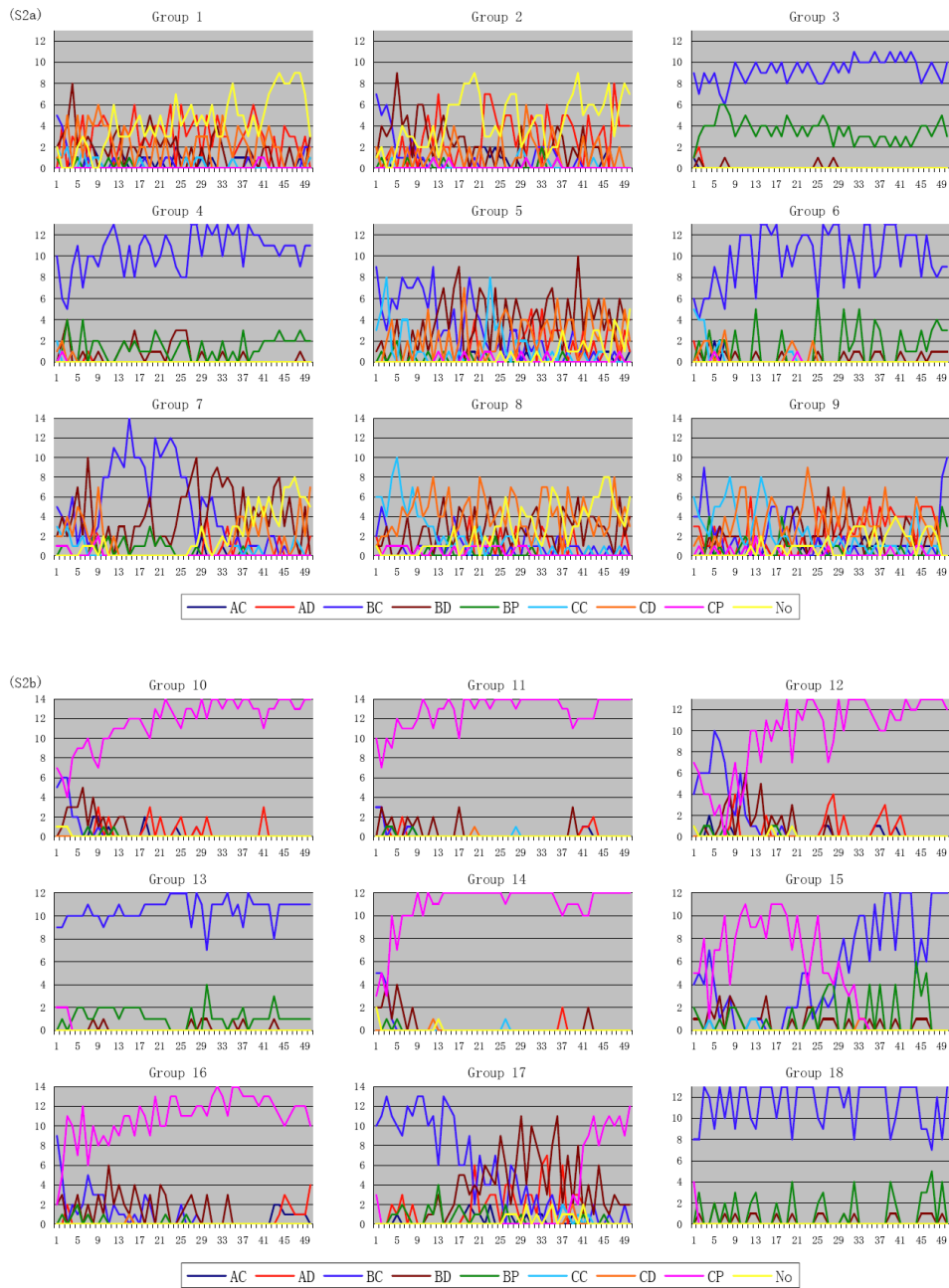
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Figure S1



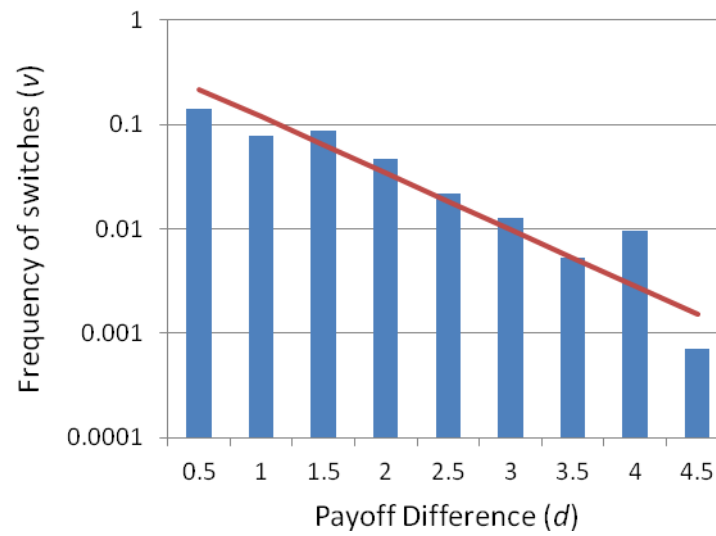
The time-evolution, over fifty rounds, of the frequencies of players voting for the games (NoPun), (Peer), (Pool) or (No). In Figure S1a (the first-order treatment), groups 3, 4 and 6 settled on the peer punishment game, (in the sense that during each of the last 10 rounds, more than half of the players opted for it). The six other groups remained undecided. In Figure S1b (second-order treatment), groups 10, 11, 12, 14, 16, 17 settled on the pool punishment game, and groups 13, 15, 18 settled on the peer punishment game.

Figure S2



The time-evolution, over fifty rounds, of the frequencies of the strategies. Here AC, AD, BC, BD, CC and CD denote contribution resp. defection in (NoPun), (Peer) and (Pool), BP denotes peer-punishment, CP pool-punishment and No non-participation.

Figure S3



The frequency ν of strategy switches failing to imitate the best is measured on a log scale. d denotes the payoff difference between the current optimum and the payoff currently achieved by the strategy which will be adopted after the switch. Blue bars represent the frequency of switches with payoff difference in half-open interval $(d-0.5, d]$. The red line corresponds to the regression curve $\nu = 0.4058 \times 0.2888^d$.

Instructions

1. Instructions for the practice rounds (translated into English).

Welcome and thank you for showing up.

Your minimal payoff will be 10 euros (guaranteed).

We first start with some practice games. These do not count towards your score. You can experiment.

COMMUNITY GAME

In each round, you receive 3 MU and must decide whether or not to contribute 1 MU to your co-players' payoff.

I CONTRIBUTE means: you pay 1 MU and 3 MU will be distributed equally among all your co-players.

I DON'T CONTRIBUTE means: you keep 1 MU. This will not change your co-player's score.

You have 30 seconds for each round to decide and CONFIRM. If you do not decide in time, the computer will make a random decision.

After each round, you will see the scores.

EXAMPLE

If all contribute, all end up with 5 MU.

If no one contributes, all end up with 3 MU.

In mixed groups, contributors always end up with less than the non-contributors.

DO YOU WANT TO CONTRIBUTE TO YOUR GROUP?

YES

NO

The round is played.

The scores are displayed.

This is repeated 5 times, with a reflection time of 30 seconds per round.

COMMUNITY GAME WITH OPTION TO PUNISH

This game consists of 2 stages. At the start of each round you receive 3 units.

The first stage is the community game, as above. You can decide whether or not to contribute 1 unit. You will then see the scores in your group, and how many contributed.

In the second stage, contributors can decide whether or not to punish all those who did not contribute.

If you punish, you have to pay 0.5 MU per non-contributor. Each non-contributor is then fined 1 MU.

You will then see the final score of the round.

EXAMPLE

If 4 players punish a non-contributor, this costs each punisher 0.5 MU, and the punished player 4 MU.

If 3 players punish 2 non-contributors, this costs each punisher 1 MU and each punished player 3 MU.

If 2 players punish 3 non-contributors, this costs each punisher 1.5 MU and each punished player 2 MU.

DO YOU WANT TO CONTRIBUTE TO YOUR GROUP?

YES

NO

x players out of y contributed.

DO YOU WANT TO PUNISH ALL NON-CONTRIBUTORS?

YES

NO

The round is played.

The scores are displayed.

This is repeated 5 times, with a reflection time of 30 seconds for each decision.

COMMUNITY GAME WITH PUNISHMENT DEVICE

At the start of each round you receive 3 MU. Again, you can decide to contribute 1 MU to the group or not. Contributors can additionally decide to pay for a punishment device. This costs the contributor 0.5 MU.

In the first-order treatment: Each punishment device will punish all non-contributors by 1 MU.

In the second-order treatment: Each punishment device will punish all non-punishers by 1 MU (irrespective of whether they contributed or not).

EXAMPLE FOR THE SECOND ORDER TREATMENT

If 3 players chose a punishment mechanism, each pays 0.5 MU and 3 MU will be removed from the account of each player who did not chose the punishment mechanism.

Even if every player choses the punishment mechanism and no-one will be punished, the costs for the punishment mechanism will have to be paid.

DO YOU WANT TO CONTRIBUTE TO THE GROUP? DO YOU WANT A PUNISHMENT DEVICE?

JUST CONTRIBUTE TO THE GROUP

NEITHER, NOR

BOTH

The round is played.

The scores are displayed.

This is repeated 5 times, with 30 seconds per decision.

2. Instructions for the full game with option to choose a game (still in the practice rounds)

You will now have to decide, for each round, which game to play. You will receive 3 units for each round. You can choose to join

A: COMMUNITY GAME WITH NO PUNISHMENT

B: COMMUNITY GAME WITH OPTION TO PUNISH

C: COMMUNITY GAME WITH PUNISHMENT DEVICE

You can also decide not to play the game. In this case, you receive an additional 0.5 MU, but you cannot improve.

13 players participate in each round. But the sizes of the groups playing A, B or C are variable. If no co-player joins your group, you receive 0.5 MU and your game is cancelled.

At the end of each round, you will see the scores.

OPT FOR YOUR GAME:

A: COMMUNITY GAME WITH NO PUNISHMENT

B: COMMUNITY GAME WITH OPTION TO PUNISH

C: COMMUNITY GAME WITH PUNISHMENT DEVICE

D: NO GAME

The round is played.

The scores are displayed.

This is repeated 10 times, with 30 seconds per decision.

3. Instructions for the experiment (after the practice rounds)

Now you will be paid according to your score (1 MU is 10 cents, so that 10 MU = 1 euro).

The average payoff will be around 20 euros.

OPT FOR YOUR GAME:

A: COMMUNITY GAME WITH NO PUNISHMENT

B: COMMUNITY GAME WITH OPTION TO PUNISH

C: COMMUNITY GAME WITH PUNISHMENT DEVICE

D: NO GAME

The round is played

The scores are displayed.

Repeat this for 50 rounds, with 15 seconds per decision

Screen shots

Login page

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Willkommen! Danke, dass Sie mitmachen.
Ihr garantierter Mindestgewinn ist 10 euro.
Login Daten:

Benutzername:
Passwort:
Experiment-Code:
Sprache: deutsch ▾

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Practice rounds, instruction, game (NoPun)

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Willkommen! Dies ist p30 (logout) . Spiel startet um 10:00:00 .

Wir beginnen mit ein paar Übungsspielen. Diese werden Ihre Punktezahl nicht beeinflussen. Sie können also experimentieren.

Spende-Spiel

In jeder Runde bekommen Sie 3 E und können entscheiden, ob Sie davon 1 E Ihren Mitspielern spenden.

ICH SPENDE heißt, Sie zahlen 1 E, und 3 E werden unter Ihren Spielpartnern gleichmäßig aufgeteilt.

ICH SPENDE NICHT heißt, Sie zahlen nichts ein. Die Konten Ihrer Spielpartner werden nicht verändert.

In jeder Runde haben Sie 30 Sekunden Zeit, sich zu entscheiden und **BESTÄTIGUNG** zu drücken. Wenn Sie das nicht zeitgerecht tun, wählt der Computer zufällig eine der beiden Alternativen.

Nach jeder Runde sehen Sie den Punktstand.

Beispiele für das Spende-Spiel


Wenn es keine Spender gibt, bekommt jeder Nichtspender 3E.

Wenn alle spenden, bekommt jeder 5E.

In gemischten Gruppen erhalten die Nicht-Spender immer mehr als die Spender.



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Practice rounds, game (NoPun)



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Willkommen! Dies ist test1 (logout) .
Dies ist die 2. Runde, Ihre Auszahlung ist 3
Bitte treffen Sie Ihre Entscheidung in den nächsten 8 Sekunden

Wählen Sie Ihr Spiel!

Ihre Wahl: **Spende-Spiel ohne Bestrafung.**

An Ihrem Spiel nehmen 3 Spieler teil.

Wollen Sie für Ihre Gruppe spenden?

JA

NEIN

Resultate für Runde 1

Sie wählten: Spende-Spiel mit Strafmechanismus
Sie wählten: Spenden und bestrafen
und erhielten 3 E

	Anzahl der Spieler	Auszahlung
Ohne Bestrafung	0	
<input type="radio"/> Spenden	0	N/A
<input type="radio"/> Nicht spenden	0	N/A
Mit Strafoption	0	
<input type="radio"/> Nur spenden, nicht bestrafen	0	N/A
<input type="radio"/> Weder spenden noch bestrafen	0	N/A
<input type="radio"/> Spenden und bestrafen	0	N/A
Mit Strafmechanismus	3	
<input type="radio"/> Nur spenden, nicht bestrafen	1	2.5
<input type="radio"/> Weder spenden noch bestrafen	1	5
<input type="radio"/> Spenden und bestrafen	1	3
Kein Spiel		
<input type="radio"/> Nicht-Teilnehmer	0	N/A

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Practice rounds, instruction, game (Peer)



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Willkommen! Dies ist p30 (logout) . Spiel startet um 10:00:00 .

Spende-Spiel mit Strafoption

Dieses Spiel ist zweistufig. Am Anfang jeder Runde erhalten Sie wieder 3 E.

Stufe Eins besteht aus dem Spende-Spiel, wie vorher. Sie können 1 E spenden oder nicht. Dann sehen Sie die Auszahlungen in Ihrer Gruppe, und die Anzahl der Spender.

In **Stufe Zwei** kann jeder Spender entscheiden, ob er die Nichtspender bestrafen will oder nicht.

Wer bestrafen will, muss pro Nichtspender 0.5 E zahlen. Jedem Nichtspender werden dann 1 E abgezogen.

Dann sehen Sie die Auszahlung in dieser Runde.

Beispiele für die Strafoption:

Wenn 4 Spieler einen Nichtspender bestrafen, kostet das jeden Bestrafer 0.5E und den Bestraften 4E.


Wenn 3 Spieler 2 Nichtspender bestrafen, kostet das jeden Bestrafer 1E und jeden Bestraften 3E.

Wenn 2 Spieler 3 Nichtspender bestrafen, kostet das jeden Bestrafer 1.5E und jeden Bestraften 2E.

Spender werden nicht bestraft.



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Practice rounds, game (Peer)



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Willkommen! Dies ist test1 (logout) .
Dies ist die 2. Runde, Ihre Auszahlung ist 3
Bitte treffen Sie Ihre Entscheidung in den nächsten 8 Sekunden

Wählen Sie Ihr Spiel!

Ihre Wahl: **Spende-Spiel mit Strafoption**,

An Ihrem Spiel nehmen 3 Spieler teil.

Wollen sie für ihre Gruppe spenden?

Sie haben 1E gespendet.

An Ihrem Spiel nehmen 2 Spender, und 1 Nichtspender teil.

Möchten Sie die Nichtspender bestrafen?

JA
 NEIN

Resultate für Runde 1

Sie wählten: Spende-Spiel mit Strafmechanismus
Sie wählten: Spenden und bestrafen
und erhielten 3 E

	Anzahl der Spieler	Auszahlung
Ohne Bestrafung	0	
<input type="radio"/> Spenden	0	N/A
<input type="radio"/> Nicht spenden	0	N/A
Mit Strafoption	0	
<input type="radio"/> Nur spenden, nicht bestrafen	0	N/A
<input type="radio"/> Weder spenden noch bestrafen	0	N/A
<input type="radio"/> Spenden und bestrafen	0	N/A
Mit Strafmechanismus	3	
<input type="radio"/> Nur spenden, nicht bestrafen	1	2.5
<input type="radio"/> Weder spenden noch bestrafen	1	5
<input type="radio"/> Spenden und bestrafen	1	3
Kein Spiel		
<input type="radio"/> Nicht-Teilnehmer	0	N/A

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Practice rounds, instruction, game (Pool), first-order variant



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Willkommen! Dies ist p30 (logout) . Spiel startet um 10:00:00 .

Spende-Spiel mit Strafmechanismus

Wieder erhalten Sie zu Beginn jeder Runde 3 E, und können entscheiden, ob Sie Spender von 1 E sein wollen oder nicht. Spender können zusätzlich einen Strafmechanismus kaufen. Die Zusatzkosten sind 0.5 E. Jeder Strafmechanismus zieht dann 1 E vom Konto jedes Nichtspenders ab.

Beispiel für den Strafmechanismus,

Wenn sich 2 Spieler für einen Strafmechanismus entscheiden, zahlt jeder 0.5 E und jedem Nichtspender werden 2 E abgezogen.

Wenn sich 3 Spieler für einen Strafmechanismus entscheiden, zahlt jeder 0.5 E und jedem Nichtspender werden 3 E abgezogen.

Die Kosten für den Strafmechanismus sind unabhängig von der Anzahl der Nichtspender. Auch wenn niemand bestraft wird (weil jeder spendet), müssen die Kosten des Strafmechanismus getragen werden.

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Willkommen! Dies ist p30 (logout) . Spiel startet um **10:00:00** .

Spende-Spiel mit Strafmechanismus

Wieder erhalten Sie zu Beginn jeder Runde 3 E, und können entscheiden, ob Sie Spender von 1 E sein wollen oder nicht. Spender können zusätzlich einen Strafmechanismus kaufen. Die Zusatzkosten sind 0.5 E. Jeder Strafmechanismus zieht dann 1 E vom Konto jener Spieler ab, die nicht den Strafmechanismus gewählt haben (egal, ob sie nun gespendet haben oder nicht).

Beispiel für den Strafmechanismus:


Wenn sich 2 Spieler für einen Strafmechanismus entscheiden, zahlt jeder 0.5 E und jedem Spieler, der nicht den Strafmechanismus gewählt hat, werden 2 E abgezogen.

Wenn sich 3 Spieler für einen Strafmechanismus entscheiden, zahlt jeder 0.5 E und jedem Spieler, der nicht den Strafmechanismus gewählt hat, werden 3 E abgezogen.

Auch wenn jeder den Strafmechanismus bezahlt, und daher niemand bestraft wird, müssen die Kosten des Strafmechanismus getragen werden.



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Willkommen! Dies ist test1 (logout) .
Dies ist die 2. Runde, Ihre Auszahlung ist **3**
Bitte treffen Sie Ihre Entscheidung in den nächsten **9 Sekunden**

Wählen Sie Ihr Spiel!

Ihre Wahl: **Spende-Spiel mit Strafmechanismus**,

An Ihrem Spiel nehmen 3 Spieler teil.

Wollen Sie Spender sein? Wollen Sie einen Strafmechanismus?

Nur Spenden
 Weder, noch
 Beides

Resultate für Runde 1

Sie wählen: Spende-Spiel mit Strafmechanismus
Sie wählen: Spenden und bestrafen
und erhielten 3 E

	Anzahl der Spieler	Auszahlung
Ohne Bestrafung	0	
<input type="radio"/> Spenden	0	N/A
<input type="radio"/> Nicht spenden	0	N/A
Mit Strafoption	0	
<input type="radio"/> Nur spenden, nicht bestrafen	0	N/A
<input type="radio"/> Weder spenden noch bestrafen	0	N/A
<input type="radio"/> Spenden und bestrafen	0	N/A
Mit Strafmechanismus	3	
<input type="radio"/> Nur spenden, nicht bestrafen	1	2.5
<input type="radio"/> Weder spenden noch bestrafen	1	5
<input type="radio"/> Spenden und bestrafen	1	3
Kein Spiel		
<input type="radio"/> Nicht-Teilnehmer	0	N/A



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Willkommen! Dies ist p30 (logout) . Spiel startet um **10:00:00** .

Experiment

Sie können sich nun in jeder Runde entscheiden, an welchem Spiel Sie teilnehmen wollen. Sie erhalten **3 E** pro Runde. Sie können wählen:

A: Das Spende-Spiel ohne Bestrafung
B: Das Spende-Spiel mit Strafoption
C: Das Spende-Spiel mit Strafmechanismus

Sie können auch beschließen, an keinem Spiel teilzunehmen. In diesem Fall erhalten Sie **0.5 E** zusätzlich, aber können sich nicht verbessern.


15 Spieler nehmen an jeder Runde teil. Aber die Größe der Gruppen, die A, B oder C spielen, ist veränderlich.

Wenn kein weiterer Spieler ihr Spiel wählt, findet es nicht statt, und Sie erhalten **0.5 E** Entschädigung.

Nach jeder Runde sehen Sie die Ergebnisse.



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Willkommen! Dies ist test1 (logout) .
Dies ist die **2.** Runde, Ihre Auszahlung ist **3**
Bitte treffen Sie Ihre Entscheidung in den nächsten **23 Sekunden**

Wählen Sie Ihr Spiel

Spende-Spiel ohne Bestrafung

Spende-Spiel mit Strafoption

Spende-Spiel mit Strafmechanismus

Kein Spiel


Resultate für Runde 1

Sie wählten: Spende-Spiel mit Strafmechanismus
Sie wählten: Spenden und bestrafen
und erhielten **3 E**

	Anzahl der Spieler	Auszahlung
Ohne Bestrafung	0	
<input type="radio"/> Spenden	0	N/A
<input type="radio"/> Nicht spenden	0	N/A
Mit Strafoption	0	
<input type="radio"/> Nur spenden, nicht bestrafen	0	N/A
<input type="radio"/> Weder spenden noch bestrafen	0	N/A
<input type="radio"/> Spenden und bestrafen	0	N/A
Mit Strafmechanismus	3	
<input type="radio"/> Nur spenden, nicht bestrafen	1	2.5
<input type="radio"/> Weder spenden noch bestrafen	1	5
<input type="radio"/> Spenden und bestrafen	1	3
Kein Spiel		
<input type="radio"/> Nicht-Teilnehmer	0	N/A



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Experiment, instruction



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Willkommen! Dies ist p30 (logout) . Spiel startet um **10:00:00** .

Jetzt werden Sie gemäß Ihrer Punktezahl ausbezahlt (1 Einheit ist zehn Cent wert, also 10E=1euro). Der mittlere Gewinn beträgt etwa 20 euro.



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Experiment, resulting page



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Willkommen! Dies ist p30 (logout) .

Spiel beendet, Ihre Auszahlung beträgt **227.87**

Resultate für Runde 50

Sie wählten: Spende-Spiel mit Strafoption
Sie wählten: Nur spenden, nicht bestrafen
und erhielten 5 E

	Anzahl der Teilnehmer	Mittlerer Gewinn
Ohne Bestrafung	0	N/A
☐ Spenden	0	N/A
☐ Nicht spenden	0	N/A
Mit Strafoption	356	4.51
☐ Nur spenden, nicht bestrafen	265	4.81
☐ Weder-noch	35	3.48
☐ Spenden und bestrafen	56	3.74
Mit Strafmeechanismus	238	4.41
☐ Nur spenden, nicht bestrafen	3	-1.33
☐ Weder-noch	2	5
☐ Spenden und bestrafen	233	4.47
Kein Spiel		
☐ Nicht-Teilnehmer	0	N/A

	Anzahl der Spieler	Auszahlung
Ohne Bestrafung	0	
☐ Spenden	0	N/A
☐ Nicht spenden	0	N/A
Mit Strafoption	12	
☐ Nur spenden, nicht bestrafen	12	5
☐ Weder spenden noch bestrafen	0	N/A
☐ Spenden und bestrafen	0	N/A
Mit Strafmeechanismus	0	
☐ Nur spenden, nicht bestrafen	0	N/A
☐ Weder spenden noch bestrafen	0	N/A
☐ Spenden und bestrafen	0	N/A
Kein Spiel		
☐ Nicht-Teilnehmer	0	N/A

Sie haben **22.8** Euro gewonnen

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