Excluding the Wealthy From Compulsory Solidarity: A Lab Experiment

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Abstract

Compulsory solidarity is imposed in most large modern market economies in various forms, however there still remain instances when the wealthy are (implicitly or explicitly) excluded from such solidarity. In this paper we aim to represent and analyze experimentally the comparison of compulsory solidarity when it is applied generally and when it excludes the wealthy society members. Compulsory solidarity is captured by linear public goods provision with three poorly, two slightly better, and a single very richly endowed society member. All six society members can contribute and gain from the public good in the general condition whereas only the five non-wealthy members can do so in the partial condition. In both conditions after contributing, the single wealthy individual can retrieve costly information on individual contributions and subsequently engage in charitable donations. According to our data including the wealthy does not crowd out charitable giving and, on average, enhances the well-being of all three endowment classes.

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1 Introduction

Capitalistic free-market societies allow for more or less unequal living conditions of its members depending on skill, competence, as well as luck. If the discrepancy seems intolerable, one often relies on compulsory solidarity in the form of (progressive) income and wealth taxation as well as on redistributive tariffs for retirement pensions, health insurance and tax-financed public benefits and services. The focus of this study is on compulsory solidarity when it is applied only partially, specifically when exempting the better-off society members, which still exists in some democratic market economies.

In 2005 member states of the World Health Organization (WHO), for example, pledged to devise their health-care funding systems so that all their citizens have access to health-care without financial hardship. This has become known as universal (health) coverage. WHO's 2010 Report on Health Systems Financing proposes that universal coverage is not possible when enrollment is voluntary. Low-risk individuals have incentives to opt-out, and it is difficult to control contributions of the self-employed. The report further states that a single pool to which all population groups contribute to and by which all are covered improves equity and financial risk protection. This is experimentally represented by our general compulsory solidarity or "reform" condition.

In this paper we aim to stylistically confront partial compulsory solidarity (PCS), where the wealthy are excluded from solidarity, with general compulsory solidarity (GCS), to assess the exclusion effects on different income classes, represented in our experiment through different endowment classes, and the society as a whole. Our experimental workhorse is a linear public good game in which three poorly,

two slightly better, as well as a single very richly endowed society member interact. After contributing, in both conditions, the single wealthy individual can retrieve costly information on individual contributions and subsequently engage in charitable donations. We allow for this as excluding the wealthy from compulsory solidarity if often justified by arguing that including them would crowd-out charitable-giving or drive them out of the country. Both costly information on individual contributions as well as charitable donations are an indicator on how strongly the wealthy identify themselves with the wellbeing of others and society as a whole.

Our stylized experiment does not represent the exact form of partial compulsory solidarity as still applied in the field, however, it captures the crucial aspect that better-off society members may opt out of it. One may object that linear public goods games allow for free-riding and are by definition non-compulsory. But such opting out also applies to the field cases since one can, for instance, opt out of the labor force and thereby avoid paying income tax and health insurance fees. In the partial compulsory (PCS) condition, contributing to the public good and thereby helping the other non-wealthy members is the only possibility for the non-wealthy to improve their wellbeing. The field analogue of such contributing would be to work and earn voluntarily, however voluntariness prevails, as one can choose to not work and earn, which we capture experimentally by allowing for free-riding in public good provision. Compulsory means that, when voluntarily earning (in the field), respectively contributing (in the experiment), the collective reward is redistributed according to the solidarity principles.[1] Unlike in the field, where the focus is on progressive re-distribution we impose equal public rewards, rendering potential positive

[1]For example, the only bread winner of a large family may have to pay the same or less than a single person with the same income.

effects of the reform condition even stronger.

Our main predictions are that partial compulsory solidarity undermines societal concerns and voluntary cooperation, i.e. enhances inequality of wealth in the society, and the procedurally fairer general compulsory solidarity neither substitutes nor crowds out charitable giving. Three income classes, poor, slightly better off and wealthy, further allow for the class-wise comparison of contributions and payoffs. We predict less voluntary cooperation of the non-wealthy than usual due to arbitrarily exempting the wealthy from public good provision. While extreme asymmetry in initial endowments prevails in both conditions, neither condition resembles a society with equal living standards, we expect GCS to lead to societies that are slightly more equal. This would be a particularly strong result given that in GCS the wealthy have an additional means of earning, through the public good game, which is not available in PCS. We also expect generosity of the wealthy to promote contributions by those favored by donations, similar to a bonus system in corporate governance, and specifically explore how donations by the wealthy condition on how much the non-wealthy contribute, whether differences in contributions across endowment classes evolve, and how the group as a whole evolves across periods.

Subsection 1.1 reports on different countries' institutions, based on such partial compulsory solidarity. There, of course, exist countries without any compulsory solidarity, typically "tax-heaven" countries with a small population size and high living standards, as well as countries without discrimination in imposing compulsory solidarity. Our list of partial compulsory solidarity institutions in the field is far from exhaustive. We mainly demonstrate that the topic is not purely of academic interest but also field relevant. Section 3 describes the experimental scenario and

protocol. After describing and statistically confirming our findings, Section 4, we conclude in Section 6.

1.1 Examples of partial compulsory solidarity

The main argument for partial compulsory solidarity is that, historically, including a few wealthy individuals would not justify the trouble coming along with it: the wealthy were rare and had different income sources so that including them requires special legal regulation with very little effect. Such claims have lost validity now: while extremely wealthy individuals are still rare and inequality is rising, many can afford to cover all expenditures caused by health risks and a long life after retirement. However, one argument which still applies is that status-quo institutions are not easily reformed.[2]

Quite naturally compulsory solidarity only applies to major risks in life like (costly) health risks and old-age living costs. Traditionally, when becoming economically dependent, one either could rely on family support or on charity which has more recently been substituted by compulsory risk sharing like mandatory health insurance and public pension schemes. Often such compulsory solidarity schemes are subsidized or financed by tax-like (payroll and earmarked) contributions paid by the beneficiaries and to some extent by their employers. Additionally, bankruptcy of such solidarity systems would be prevented by government intervention.

Unlike income or wealth taxes, individual contributions do not increase monotonically but increase up to a finite upper bound, i.e. compulsory individual contri-

[2]The status quo does not bear the burden of proving its justification, which reform initiatives encounter.

butions are bound from above. Since even the largest individual contributions would be a tiny proportion of what the truly wealthy society members own, including them would hardly qualify as a major burden. In this paper we do not focus on the financing side of compulsory solidarity but on whether compulsory solidarity rules apply generally (i.e. every individual contributes to and benefits from a single pool), or only partially in the specific form of excluding the wealthier society members, and the effects od such exclusion.

For compulsory health insurance in the field one can partly rely on the report on "Industrial Profiles of Health Case Systems", edited by E. Mossaialos et al. (2016) which covers 18 countries and provides details on how they differ in financing health costs by tax(-like) contributions or privately contracted insurance fees.

One example applies to the former health-care system of The Netherlands: From 1941 to 2006, there were separate public and private systems of short-term health insurance. The public insurance system was implemented by non-profit health funds, and financed by premiums taken directly out of the wages (together with income taxes). Everyone earning less than a certain threshold was automatically included in the public insurance system. Those with income exceeding the threshold were obliged to buy private insurance which, as private enterprises also allow for collective action (mutual sharing of health risks) but without imposing solidarity. More recently The Netherlands have implemented a statutory health insurance system with universally mandated and government regulated private insurance, i.e. one has substituted, in our terminology, partial by general compulsory solidarity by not allowing only one group to opt out (see Mossialos et al., 2016 report mentioned above).

Germany: If the yearly gross salary is less than €56,250 (€4,688 p.m.) reg-

istering with one of the governmentally controlled health insurances is mandatory whereas opting out is possible for those above the threshold[3]. When earning more than the threshold and staying in the public health systems, one does not have to pay more, i.e. insurance fees are bound from above. Due to the aging population and decreasing wage-linked health fees the German government has increased its cost share, i.e the system became slightly more tax supported (see also World Health Organization's 2010 Report on Health Systems Financing).

Also, regarding old-age living costs Germany provides an example of partial compulsory solidarity by imposing compulsory contributions by the beneficiaries and their employers, again up to a certain income level which excludes only self-employed individuals. Additionally public employees partly receive tax-financed pensions which are usually far more generous than what others receive.

Switzerland: Wealthy immigrants can be granted a tax deal, e.g.negotiate fixed yearly tax amounts, exempting them from general compulsory (income and wealth) taxation. Of course, such deals are rare.

Compulsory health and pension schemes are not the only examples with partial incidence. Tax financed education and cultural government expenditures usually favor the more wealthy society members, whereas, low income support and other social benefits help the relatively poor families and individuals. Only the latter qualifies as this is what solidarity in general tries to guarantee, namely that everybody can satisfy their most basic needs like life saving health care, food and shelter. We feel compelled to such solidarity even when economic dependence is self-inflicted

[3]Traditionally both employer and employee contributed the same. Recently the employer share is frozen. The insurance also covers health costs of non-employed family members without adjusting the premia according to standards in private health insurance. It costs an employee about 15% of the taxable income with a 1.1% supplemental rate for special care when needed.

which we concede that it might imply perverse incentives for inducing own economic dependence (see Buitrago, Güth, W and Levati, 2009).

The list of few field cases, which explicitly discriminate, may be far from exhaustive but should suffice to confirm the economic importance of partial compulsory solidarity. Its consequences can extend beyond its direct economic implications. Arbitrary procedural discrimination may not only crowd out intrinsic solidarity concerns but also question the stability of democratic societies. Ultimately, though, our setup not only relates to the economics effects of explicit discrimination in solidarity, but more broadly, it studies the effects of having all participants contribute to and benefit from a single pool.

2 On the related literature

As we mainly want to shed light on an institutional reform we briefly mention literature related to some of our various design aspects.

Ever since Isaac and Walker (1988), wealth asymmetry via heterogeneous endowments[4] has been frequently explored experimentally (e.g. Kachelmeier and Shehata, 1997, Chan et al., 1996 and 1999; Buckley and Croson, 2006). Another extensively studied aspect is group size effects (see the surveys of Ledyard, 1995; Ostrom et al., 1994). This, however, has not been done by including a previously excluded group member as a contributor when substituting our baseline by its reform condition (see Kölle, 2015).

[4]There exist, of course, other forms of asymmetry in linear public good experiments, e.g., by how much one gains or suffers from contributing, e.g., Kölle, 2015, via composing groups or members with different pre-experimental background, e.g., Smith, 2011, or asymmetry via income effects exploring altruism, e.g. Chowdhury and Jeon, 2014

In the baseline condition the single wealthy society member can only engage in philanthropy by charitable donations (see Bekkers and Wiepking, 2011; Wiepking and Bekkers, 2012 for surveys), possibly after retrieving costly information about individual contributions by the less affluent. The reform condition allows the wealthy to participate in public good provision and to donate and is therefore comparable to experiments in which individuals do not only contribute but can reward (or sanction) others, for example Fehr and Gächter (2000, 2002), Andreoni et al. (2003), Masclet et al. (2003), Sefton et al. (2007), or Sutter et al. (2010). Although one often refers to such behavior as altruistic, for instance Fehr and Gächter (2000), one may want to distinguish altruistic rewards from philanthropy. In our setup, the wealthy can also use their charitable donations to self-servingly influence public good contributions of the non-wealthy, expecting this to lead to more profitable outcome in the long run. However, they can also engage in charity which would lead to no increase in future income for themselves, but rather only that this inspires voluntary cooperation and wellbeing of the others.

In experimental research the frequently used workhorse for investing generosity is dictatorial reward allocation, as early studied in social psychology (e.g. Mikula, 1972, and Shapiro, 1975) and later via impunity and dictator games (for instance List, 2007). The final donations by the wealthy in both our conditions resemble a dictator game in which the single wealthy individual faces five recipients, which renders both conditions rather unusual (see Engels, 2011, for a meta study).[5] Due to the nearly exclusive focus on dyadic interaction (e.g. Forsythe et al., 1994, Eckel and Grossman, 1996, Englemann and Strobel, 2004) dictatorial reward allocation

[5]Some field studies address the issue related to the group size of recipients and its relation to donations, e.g. Scharf, and Smith (2016).

experiments with more than one recipient are not very common (see Bolton et al., 1998; Selten and Ockenfels, 1998; Engelmann and Strobel, 2004 and 2007).

Both, our baseline as well as our reform condition, qualify as heterogeneous groups in public good provision to which different fairness norms can apply and, in the absence of a contribution norm and without punishment possibilities, low levels of contribution are expected (Reuben and Riedl, 2013). Since the reform condition is procedurally fairer (less discriminatory), it should trigger stronger solidarity concerns and render it, on average, the better institutional condition for all three endowment classes. It achieves this without influencing the contribution norm by deliberately increasing the contribution requirements (Keser et al., 2017). One may compare wealthy individuals in either of our conditions to the privileged groups of Reuben and Riedl, (2009) who have no freeriding incentive so that fully contributing means no sacrifice. Whereas, in our study only this group member can donate to others, with or without costly information retrieval, whereas Reuben and Riedl (2009) allow for altruistic punishment by all group members and vary efficiency in public good provision by rendering a given group member much more productive.

3 Experimental Protocols

Rather than trying to realistically capture one truly important field situation we assess the behavioral effects of partial compulsory solidarity by implementing a stylized and - for participants - easily understood scenario. Partial Compulsory Solidarity (PCS hereafter) excludes the wealthy from providing and enjoying the public good. Another experimental condition General Compulsory Solidarity (GCS here-

after), differs from PCS by including the wealthy in public good provision. In both conditions only the wealthy group members can retrieve information about individual contributions by other members and improve their situation by donating. Including the wealthy in GCS increases the number of contributors and thus the efficiency of contributing without changing the freeriding incentives. Although the two conditions imply different welfare effects of individual contributions, GCS qualifies as provides the obvious alternative to partial compulsory solidarity in the field by avoiding arbitrary discrimination.

For the sake of independent observations an experimental society includes only six members, one wealthy (r,), three poor (p_1, p_2, p_3) and two (m_1, m_2), worse off than r but better off than p-members. The non-wealthy members engage in collective action by voluntarily contributing to a linear public good: in PCS "public" applies only to p_1, p_2, p_3, m_1 and m_2 but not to r. The 6 group members $r; m_1; m_2; p_1; p_2; p_3$ receive class specific individual endowment $R = 560$, $M = 60$ and $P = 20$ ECU (experimental currency unit such that 100 ECU=€8), respectively, yielding the total endowment to $560 + 2 \cdot 60 + 3 \cdot 20 = 740$. Since 75% is given to r, the endowment of r is 15 times larger than the average endowment of the 5 other members. In the following we refer to members by r; m_1, m_2 and p_1, p_2, p_3 as "wealthy"; "middle" and "poor" and collectively to $m_1; m_2; p_1; p_2; p_3$ as "non-wealthy".

In PCS, but not in GCS, only the non-wealthy voluntarily contribute c_{m1}, c_{m2}, c_{p1}, c_{p2} and c_{p3}, which generates a public good from which in PCS only the non-wealthy, and, in GCS, all gain equally. All non-negative integer contributions cannot exceed 20 ECU meaning that "middle" can contribute only up to one third of their endowment and in GCS wealthy only 1/28 of $R = 560$. Payoffs of the public good

game are based on constant MPCR of 0.4.

Even when the wealthy society member r is not engaged in public good provision, r is informed about its rules and about the total contribution $C = c_{m1} + c_{m2} + c_{p1} + c_{p2} + c_{p3}$ in PCS and $C + c_r$ in GCS. Before possibly donating the wealthy can purchase information about individual contributions, c_{p1}, c_{p2}, c_{p3}, c_{m1} and c_{m2}. Then, r decides how much of his remaining endowment (560 minus the sum of information cost) to donate to m_1, m_2, p_1, p_2 and p_3, respectively. So the decision process involves three successive stages:

In Stage 1, of PCS the non-wealthy (in GCS also r) $v = m_1, m_2, p_1, p_2, p_3(, r)$ determine their contribution c_v with $0 \leqslant c_v \leqslant 20$ resulting in the total contribution $C = c_{p1} + c_{p2} + c_{p3} + c_{m1} + c_{m2}$; in GCS the total contribution includes also the r contribution $C + c_r$.

In Stage 2, the public good level becomes commonly known and $i = 1, 2$, respectively and $j = 1, 2, 3$ learn about their payoff (without donations):

- $P - c_{pj} + 0.4C$ for p_1, p_2 and p_3 in PCS; $P - c_{pj} + 0.4(C + c_r)$ for p_1, p_2 and p_3 in GCS,
- $M - c_{mi} + 0.4C$ for m_1 and m_2 in PCS; $M - c_{mi} + 0.4(C + c_r)$ for m_1 and m_2 in GCS,
- $R - c_r + 0.4(C + c_r)$ in GCS

In Stage 3, the wealthy r can buy information about individual contributions at a cost of $e = 10ECU$ each. Given the costly retrieved information r finally decides how much of $560 - n \cdot e$, integer n ($0 \leqslant n \leqslant 5$) denoting the number of information

retrievals, to donate to p_j, d_{pj} for $j = 1, 2, 3$ and to donate to m_i denoted by d_{mi} for $i = 1, 2$. Earnings are:

- $P - c_{pj} + 0.4C + d_{pj}$ for p_j in PCS; $P - c_{pj} + 0.4(C + c_r) + d_{pj}$ for p_j in GCS,
- $M - c_{mi} + 0.4C + d_{mi}$ for m_i in PCS; $M - c_{mi} + 0.4(C + c_r) + d_{mi}$ for m_i in GCS,
- $R - \sum_{j=1}^{3} d_{pj} - \sum_{i=1}^{2} d_{mi} - n \cdot e$ for r in PCS; $R - \sum_{j=1}^{3} d_{pj} - \sum_{i=1}^{2} d_{mi} - n \cdot e - c_r + 0.4(C + c_r)$ in GCS.[6]

Societies usually involve repeated interaction of their members which is captured experimentally by relying on a partners design: specifically in one phase the same six participants interact across 12 periods constantly assigned to a specific role. When retrieving information repeatedly, wealthy participants r can identify other group members as m_i or p_j. So, for instance, an r-participant could verify whether an m_i or p_j-participant increases its voluntary contribution after receiving a substantial donation by consecutively purchasing the relevant information. A new phase with 12 periods starts with randomly formed new societies but constant roles as r, m or p across phases, i.e. r remains r and m and p remain m and p, respectively.

In total, participants repeat the same task for 24 successive periods, grouped in two phases of 12 periods with constant group composition; group members do not vary across the periods of the same phase[7] and one rematching occurred after

[6] Of course, $n = 4$ suffices to infer all 5 individual contributes but we did not rule out that participants retrieve all 5 individual contributions.

[7] Furthermore, r was informed that experimental names for other group members are kept constant within the same phase.

the 12th period. Participants were informed about this random rematching at the beginning of the experiment.

Final payments are based on one random period of one random phase. We ran 13 sessions at CESARE laboratory of University Luiss with 288 students, recruited using Orsee (Greiner, 2015) (we ran 11 sessions with 24 subjects and 2 sessions with 12 subjects each); 192 subjects in PCS and 96 in GCS. Subjects were provided with a hard copy of the instructions, which were read aloud by the experimental proctor (for an English translation of the instructions see Appendix). The experiment was fully computerized using z-Tree (Fischbacher, 2007). Overall, subjects spent about 80 minutes in the laboratory, and earned on average €14.30 (s.d. 15.20). The altogether 24 participants of each session were restricted to two groups and random rematching after the first phase was done only within the same subgroup: participants were not informed about this restricted rematching.

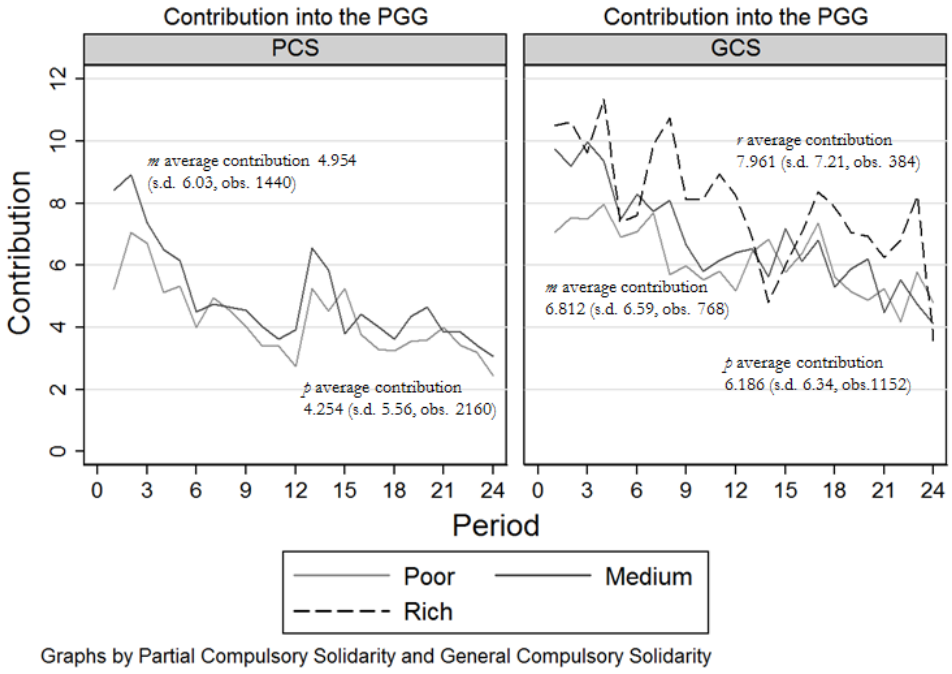
4 Results

We start with contributions by p, m (both in PCS and GCS) and r (in GCS) and the information requests and donations by r. Then, we compare "blind" in the sense of no information retrievals and non-blind donors. Finally, we address the policy implication of our results.

4.1 Contribution behavior

The average contribution dynamics in Figure 1 for p, m and, in GCS, r are consistent with the usual decline observed in other public good experiments. When r is

Figure 1: Contributions by conditions and role



included in the solidarity system, average contributions of p (4.25 in PCS vs. 6.19 in GCS) and m (4.95 in PCS vs. 6.81 in GCS) participants are significantly higher (Wilcoxon Rank-Sum test, WRST hereafter, p-value<0.001). There are two main explanations: due to the increased efficiency of an individual contribution one more easily overcomes the same freeriding incentive in PCS and GCS; and that procedural fairness due to no discrimination in GCS crowds in and strengthens solidarity concerns. In PCS the average m-contribution significantly exceeds the p-one (4.95 vs. 4.25, respectively with WRST p-value=0.013). In GCS this difference is (weakly) significantly and positive (6.81 for m vs. 6.19 for p, WRST p-value=0.07) but r contributes significantly more than the others (7.96, with WRST p-value<0.001 com-

pared to both p and m).

Result 1 *m-members, in PCS (r-participants in GCS) contribute significantly more than p-members (m-members).*

Next, we aim to answer whether contributions of p and m are boosted by donations and (in GCS by) contributions of r. We distinguish only no and positive donations and plot individual contributions after (not) having received a donation in the previous period. Figure 2 clearly reveals that beneficiaries contribute more, both in PCS and GCS (see top section of Table 1). The result is significant for p and m in both conditions (WRST p-values<0.001).

Table 1: Average contribution by donation received in previous period

	Treatment PCS			Treatment GCS				Treatment PCS			Treatment GCS			
	p average contribution							m average contribution						
	Obs	Mean	Std.Dev.	Obs	Mean	Std.Dev.	WRST	Obs	Mean	Std.Dev.	Obs	Mean	Std.Dev.	WRST
Non-beneficiary	1,394	3.846	5.44	594	4.860	5.58	0.000	936	3.942	5.51	416	5.481	6.20	0.000
Beneficiary	586	4.918	5.76	462	7.773	6.89	0.000	384	6.630	6.42	288	8.441	6.57	0.000
WRST		0.000			0.000				0.000			0.000		
Beneficiary by:	Obs	Mean	Std.Dev.	Obs	Mean	Std.Dev.	WRST	Obs	Mean	Std.Dev.	Obs	Mean	Std.Dev.	WRST
Informed r	335	5.896	6.07	175	8.886	6.86	0.000	221	7.647	6.60	113	9.664	5.96	0.002
Blind r	251	3.614	5.03	287	7.094	6.84	0.000	163	5.252	5.91	175	7.651	6.84	0.000
WRST		0.000			0.004				0.000			0.003		
WRST p vs. m beneficiary						PCS	0.995	WRST p vs. m non-beneficiary					PCS	0.000
						GCS	0.470						GCS	0.089

Notes: We report the p-values of the average condition effect computed by Wilcoxon Rank-Sum test (WRST). "Informed" defines those r-participants retrieving at least one information related to one member of the group, i.e., we include in the group "beneficiary by informed r" all members of the group where r has bought one/some/all information in the period before.

Given that contributions to the PG by the non-wealthy are affected by r-donations, we further explore whether r-participants, who retrieve costly information about individual contributions, affect non-wealthy contributions differently. Although non-wealthy participants are unaware whether being observed by r over time p and m may infer this from r's changing donation which they receive.

Figure 2: Contribution by donation received in previous period

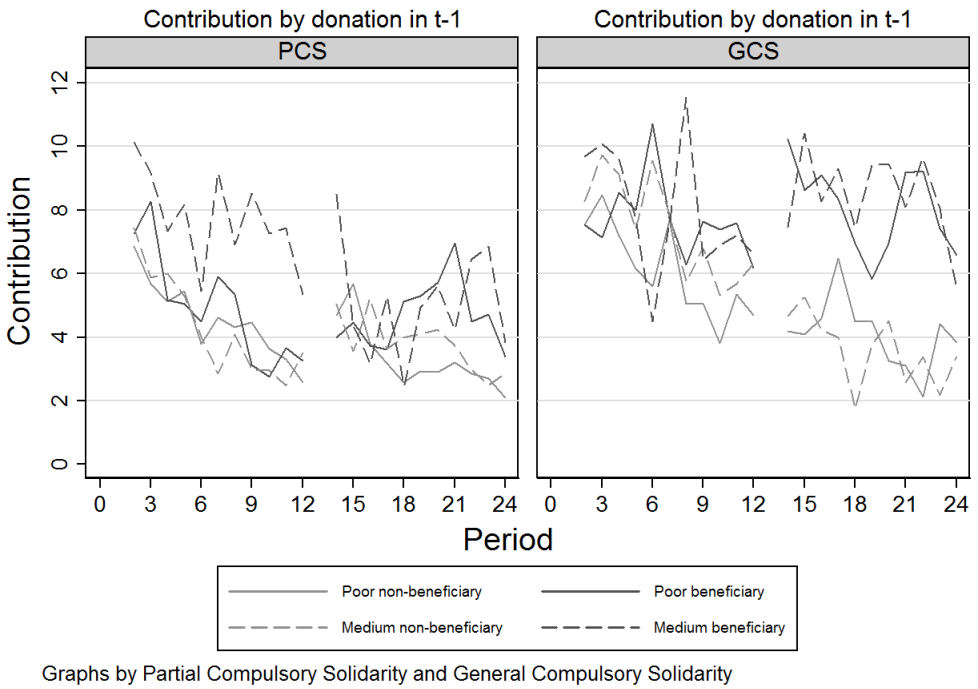
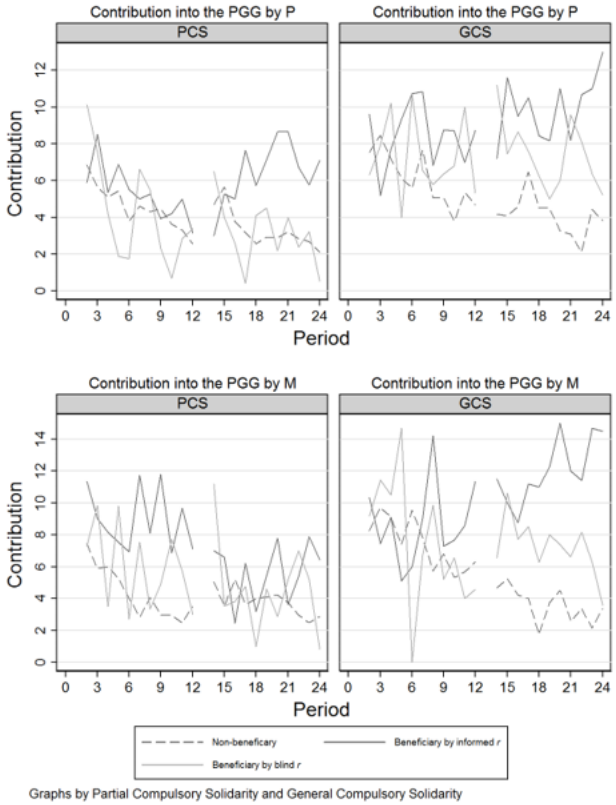


Figure 3 displays the dynamics of p and m-contributions across time when they face uninformed versus (more or less) informed r-participants, separately for PCS (left chart) and GCS (right chart).[8] It shows that p and m contributions are lower when r donates blindly than when having purchased information in $t-1$ (see bottom section of Table 1). The non-wealthy seem surprisingly aware that r conditions donations on information about individual donations and whether they are being monitored, even though they receive no such information.

[8] "Informed" defines those r-participants retrieving at least one information related to one member of the group, i.e., we include in the group "beneficiary by informed r" all members of the group where r has bought one/some/all information in the period before.

Figure 3: p and m contributions by blind and non-blind r



Result 2 *Voluntary donations of informed r-participants boost especially voluntary cooperation by the non-wealthy.*

Result 2 suggests that at least some non-wealthy seem to view r-donations as a bonus system according to which r partly monitors individual contributions and conditions donations on such information. According to Table 2, p and m contributions are positively correlated to past contribution sum and the donation received. Although both p and m are unaware of r's information retrievals, p contributions react more strongly to donations by (partially) informed donors (see the negative

Table 2: Random-effects tobit model regression on p and m-individuals' contribution

Dependent variable	p-contribution (1)		m-contribution (2)	
	β	s.e.	β	s.e.
Treatment: GCS	1.823*	(1.06)	0.987	(1.30)
Sum Contribution (t-1)	0.088***	(0.01)	0.110***	(0.01)
Donation Received (t-1)	0.247***	(0.05)	0.071	(0.06)
Uninformed r (t-1)	-0.149	(0.44)	-1.111**	(0.56)
Donation Received (t-1) * Uninformed r (t-1)	-0.211***	(0.06)	-0.031	(0.07)
Female	-0.068	(1.00)	3.330***	(1.23)
Phase	-1.020***	(0.26)	-1.754***	(0.34)
Period	-0.323***	(0.04)	-0.348***	(0.06)
Constant	1.469	(1.70)	2.913	(2.02)
σ_u	5.640***	(0.41)	5.573***	(0.50)
σ_e	6.177***	(0.11)	6.734***	(0.15)
N	3036		2024	
χ^2	330.759		270.519	
df	8.000		8.000	

Notes: Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

and significant interaction term in Table 2[9]).

4.2 Social behavior of the wealthy

Participants r donate on average less than 10ECU in total (Table 3). While r donations start off significantly higher in PCS, they significantly drop below these in GCS in the second phase.[10]

The decrease from phase 1 to phase 2 of r-donations applies across conditions, however is weakly significant in both of them (see WSRST tests in Table 3). Even though the wealthy in GCS can more efficiently display solidarity via contributing rather than donating, this does not crowd out voluntarily donating. Actually,

[9] When separating the analysis by conditions, we find that the interaction result holds only for PCS

[10] Figure 12 (in Appendix) displays some outliers, in particular one wealthy individual who donates most of his endowment, ID=44. We remove this wealthy participant and his group from the analysis (including all previous results of Section 4.1).

Table 3: r-individuals average donations to the group, to p-members, to m-members

	Treatment PCS (720 obs.)		**Treatment GCS** (384 obs.)		
	Donation				
	Mean	Std.Dev.	Mean	Std.Dev.	WRST
Phases 1 & 2	9.810	28.29	9.549	12.59	0.000
Phase 1	11.486	35.10	10.625	13.83	0.000
Phase 2	8.133	19.12	8.474	11.15	0.001
WSRST	0.072		0.059		
	Donation to p-individuals				
	Mean	Std.Dev.	Mean	Std.Dev.	WRST
Phases 1 & 2	5.663	16.79	5.719	8.48	0.000
Phase 1	6.514	20.63	6.630	9.72	0.000
Phase 2	4.811	11.73	4.807	6.93	0.002
WSRST	0.395		0.076		
	Donation to m-individuals				
	Mean	Std.Dev.	Mean	Std.Dev.	WRST
Phases 1 & 2	4.147	12.80	3.831	5.75	0.000
Phase 1	4.972	14.94	3.995	6.04	0.043
Phase 2	3.322	10.17	3.667	5.45	0.000
WSRST	0.085		0.735		

Notes: We report the p-values of the average condition effect computed by Wilcoxon Rank-Sum test (WRST) and the average phase effect computed by Wilcoxon Signed Rank Sum test (WSRST).

r-participants in GCS donate more often than in PCS (WRST p-value<0.001): r participants in GCS (PCS) donate 57.6 (39.6) percent of the time but average donations in GCS are smaller (Table 3). One explanation is that voluntary donations can be efficiently substituted by voluntary contributions in GCS. But do some r-participants substitute donations by contributions? The answer is no: r-participants, who donate, contribute on average 10.27 whereas those not donating contribute only 4.83 (WRST p-value=0.000).

Table 4: Frequency of Donor Types

	Treatment PCS		Treatment GCS	
Donor Type	Frequency	%	Frequency	%
Non-Donors	28	46.67%	9	28.13%
Small Donors	21	45.00%	14	43.75%
Substantial Donors	11	18.33%	9	28.13%
	60	100%	32	100%

Notes: Classification is based on the sum of the 5 donations per period. The categories represent the average donations in 12 periods of a phase. Non-Donors: <1 ECU; Low Donors: 1-15 ECU; High Donors: > 15 ECU

Table 4 distinguishes three categories of r-participants, based on the average donation in each phase: those donating virtually nothing, and those who, on average, donate either very small or substantial amounts. The share of r-participants not donating is 46.67% in PCS larger than 28.13% in GCS, whereas the share of "Substantial Donors" is larger in GCS than in PCS (28.13% vs. 18.13%). This even suggests a crowding-in effect: r-participants more frequently decide to donate to the non-wealthy members when involved in compulsory solidarity they than when they are excluded.

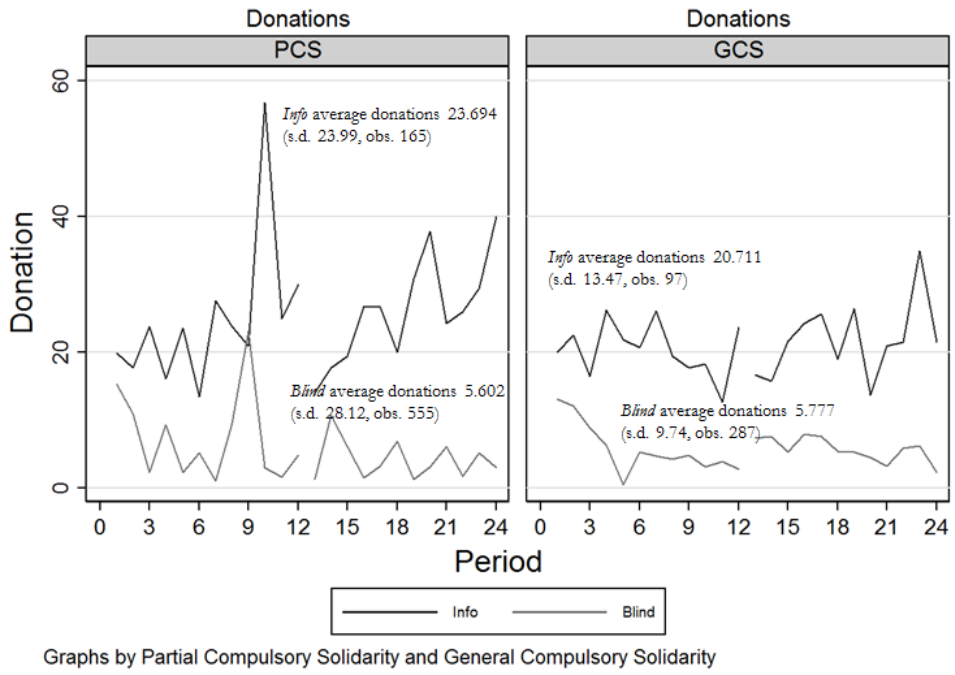
Figure 4 distinguishes average donations of r-participants without any and with at least partly some information retrieval (Figure 13 in Appendix excludes non-donors). The positive difference in information retrieval between the two conditions in phase 1 is (weakly) significant, (WRST p-value=0.09) with GCS being higher, see Figure 5.

In both conditions, the donation dynamics of r-participants with information (referred to as "info") lie always above the ones of those without (referred to as "blind") with the differences being strikingly large, see Figure 4. Apparently (not) investing in information goes hand in hand with (not) donating: greedy r participants prefer to keep their eyes closed whereas generous ones apparently want to learn how of the non-wealthy could be encouraged.

Result 3 *Information retrieval goes along with donating: those of the altogether 46 r-participants with information costs donate significantly more.*

Figures 6 and 7 display how frequency shares of the different r types evolve over time. In Figure 6 for PCS the percentage of r-participants with at least minimally

Figure 4: Donation from blind and non-blind r



positive donations starts off above the 60 percent mark. After the first half of the first phase [11] most r participants do not donate anymore. For GCS, Figure 7 distinguishes "blind" and "non-blind"; most, especially the non-blind, r participants engages in both, donating and contributing. Blind ones are often only contributing: 90% of the r participants, who invest in information, donate and contribute.

Result 4 *In GCS r-participants, overwhelmingly (90%), reveal social concerns via costly information retrieval, voluntarily contributing and donating.*

[11] Remember that one phase lasts 12 periods and then groups are reshuffled, but types remain constant. Period 13 in Figures 6 and 7 marks the start of a new phase after the reshuffling, yet we find no restart effect.

Figure 5: Information purchased for p and m

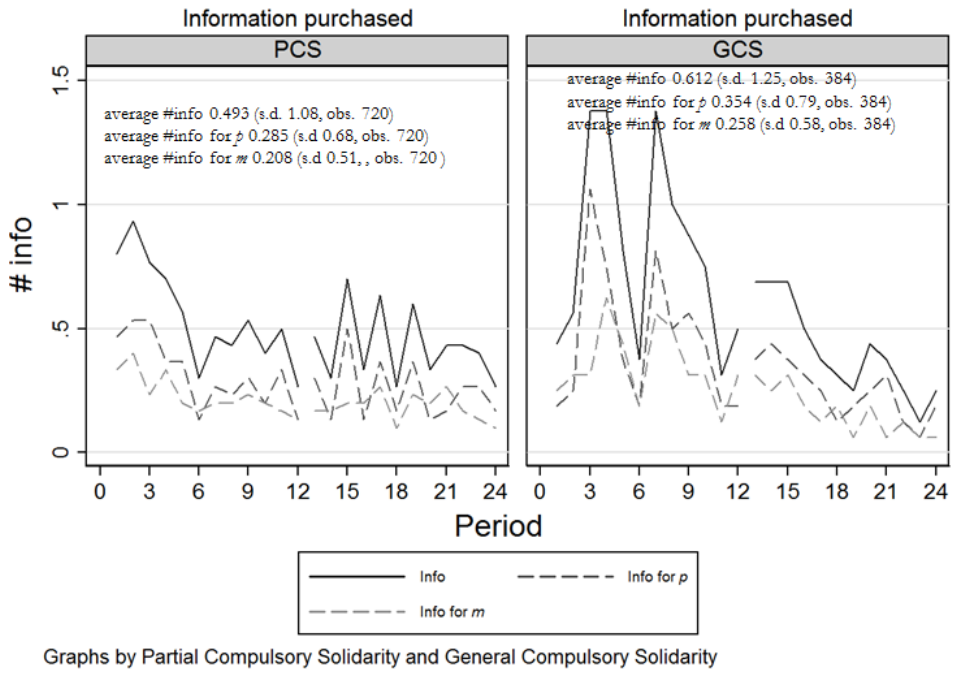
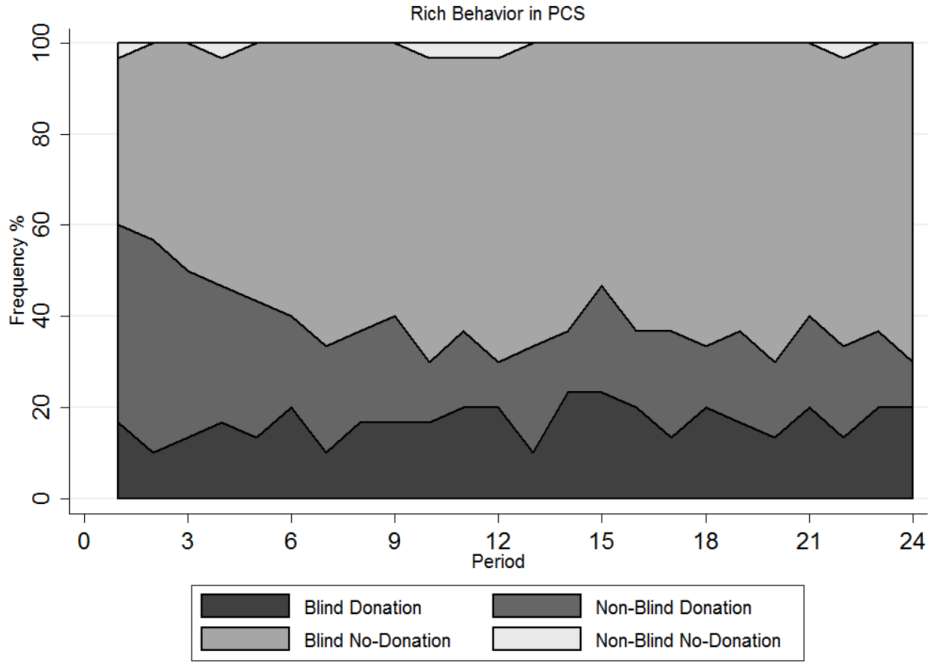


Table 5 on r-donations in GCS (Model 1) rejects the crowding out or substitution hypothesis and confirm a positive effect of own contribution, of own past donations and also of contribution sum (Models 1 and 4 for GCS, Model 3 for PCS and Model 2 for pooled data). Information retrieval enhances voluntary cooperation of the non-wealthy in GCS but not in PCS. Only the few, who are substantioally donating in PCS, try to reward higher contributions (Table 4), i.e. try to inspire voluntary cooperation of the non-wealthy.

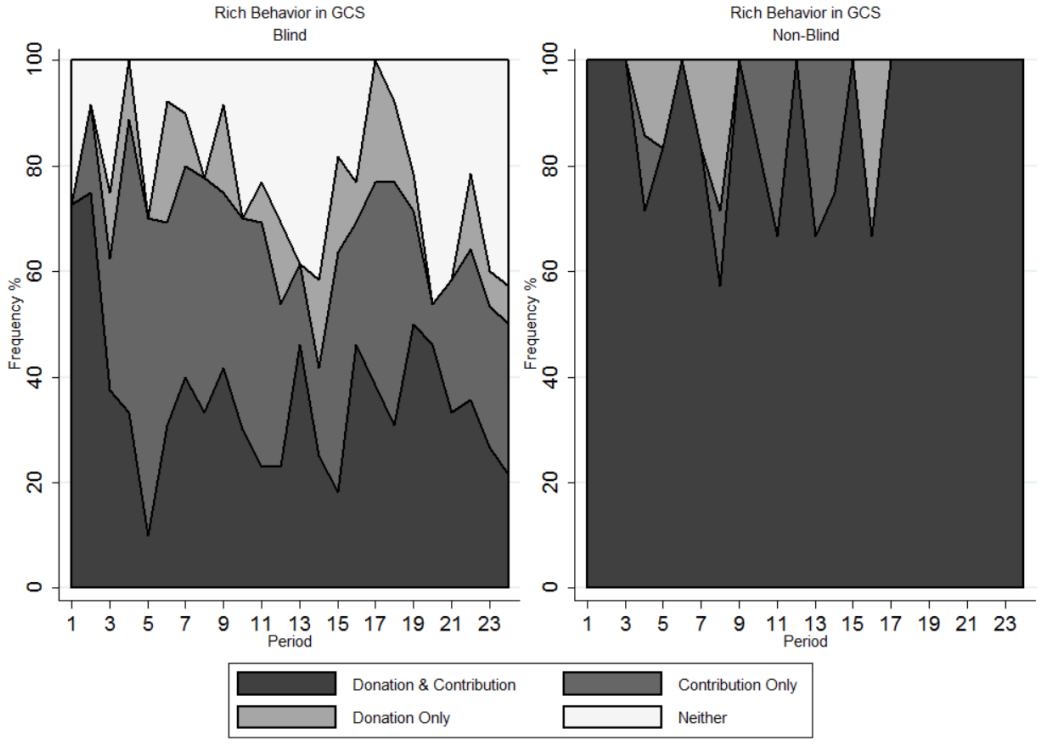
Table 6, using a random-effects tobit model, reveals how r contributions in GCS are significantly related to own previous contribution (Model 1), past donations, as well as to past contribution sum (Model 2). The finding that previous own donations and contributions positively affect present contributions suggest that r-participants,

Figure 6: Frequency of r donation (>1 ECU) to p or m and contribution into the public good in PCS



who care for the non-wealthy, do not merely substitute donations by more efficient contributions but rather employ both ways to improve the wellbeing of their group members, especially when also retrieving information about individual contributions.[12] Table 6 reveals lower r-contributions in the second phase but not across periods within a phase although the sum of contributions decreases across periods.

Figure 7: Frequency of r donation (>1 ECU) to p or m and contribution into the public good in GCS



5 Payoff analysis

An important aspect of our experiment refers to the final payoff earned by p,m and r-participants, whether they are better or worse off in GCS and who gains or loses the most from this reform condition. Figure 8 compares the average payoffs for the three groups across time between GCS and PCS. Although average p-payoff (top-left graph in Figure 8) is smoothly decreasing in both conditions, it is significantly higher in GCS than PCS. This latter result holds also for m-participants (top-right

[12]Due to high correlation between donations and information purchased, we find that the latter is significant only when we run the same model without donation covariate.

Table 5: Random-effects tobit model regression on r-individuals' donation

	Dependent: r-donation			
	GCS	Pool	PCS	GCS
	(1)	(2)	(3)	(4)
Own Contribution	0.272**			
	(0.12)			
Sum Contribution		0.221***	0.077	0.254***
		(0.09)	(0.16)	(0.04)
Donation (t-1)	0.435***	0.477***	0.478***	0.336***
	(0.07)	(0.04)	(0.06)	(0.07)
Information acquired	0.337***	0.088	-0.076	0.303***
	(0.06)	(0.11)	(0.21)	(0.06)
Female	-0.064	-0.489	1.898	-0.508
	(4.79)	(9.71)	(17.84)	(5.22)
Phase	0.513	-2.619	-5.377	1.119
	(1.31)	(2.33)	(3.98)	(1.24)
Period	-0.573***	-0.912**	-1.371**	-0.364*
	(0.21)	(0.37)	(0.65)	(0.20)
Treatment		9.224		
		(9.91)		
Constant	-1.833	-30.428*	-22.075	-10.908**
	(3.97)	(15.76)	(15.10)	(4.39)
σ_u	8.393***	29.593***	44.546***	9.263***
	(2.07)	(4.38)	(8.42)	(2.20)
σ_e	9.953***	27.140***	35.033***	9.327***
	(0.52)	(0.93)	(1.61)	(0.48)
N	352	1012	660	352
χ^2	138.879	150.216	75.732	185.224
df	6.000	7.000	6.000	6.000
ρ	0.416	0.543	0.618	0.497

Notes: Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

graph in Figure 8). Most strikingly, r-members are better off in GCS than in PCS. On average, no participant type, p, m and r, is losing. One might object that these findings might be driven by the higher efficiency of public good provision when r is included. But this is exactly the reason why one engages in collective action and why one renders collective solidarity compulsory. The larger the pool of those included in compulsory solidarity the lower the risks, for example, of health and old age income. Therefore, it is realistic that including the wealthy renders compulsory solidarity more efficient, partly by direct contributions of the wealthy but also by them enhancing the contributions of the non-wealthy.

Table 6: Random-effects tobit model regression on r-individuals' contribution

	Dependent: r-contribution in GCS			
	(1)		(2)	
Own Contribution (t-1)	0.179**	(0.08)		
Sum Contribution (t-1)			0.096***	(0.03)
Donation (t-1)	0.292***	(0.05)	0.256***	(0.06)
Information acquired (t-1)	-0.045	(0.05)	-0.038	(0.05)
Female	4.094	(2.88)	4.066	(2.82)
Phase	-2.783***	(0.94)	-2.366**	(0.97)
Period	-0.012	(0.15)	0.078	(0.15)
Constant	5.246**	(2.62)	1.841	(3.04)
σ_u	4.994***	(1.21)	4.881***	(1.17)
σ_e	7.892***	(0.42)	7.873***	(0.42)
N	352		352	
χ^2	59.318		63.170	
df	6.000		6.000	
ρ	0.286		0.278	

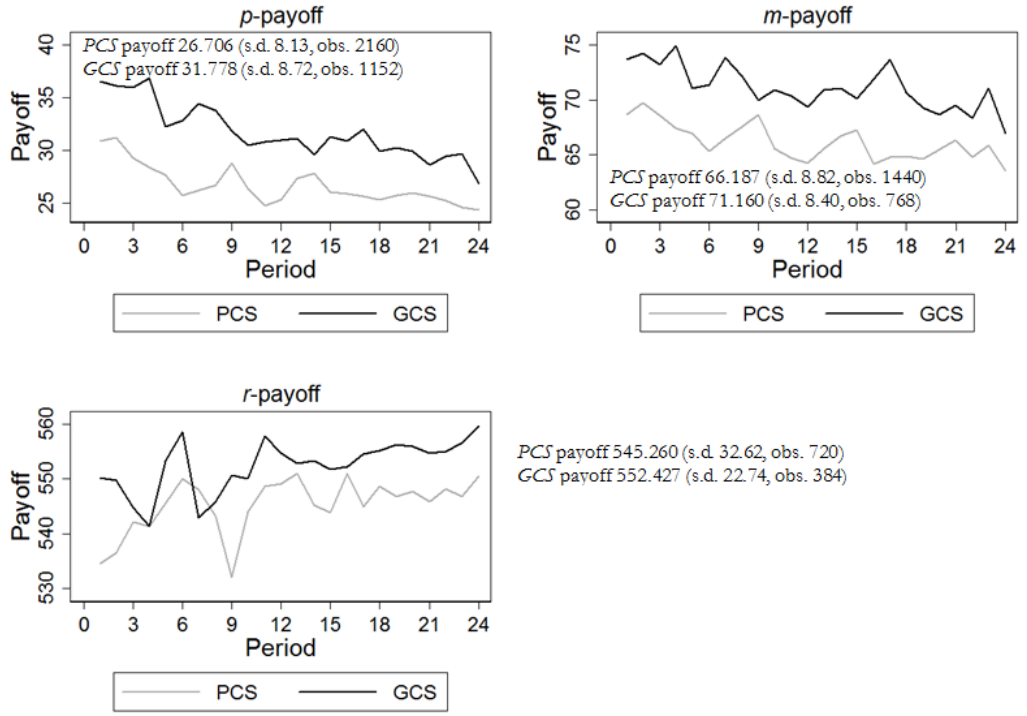
Notes: Standard errors in parentheses. We control the results also by Arellano-Bond (1991) model estimating the GMM model usign xtabond with one lag period. The results are consistent with the tobit model.
*** p<0.01, ** p<0.05, * p<0.1.

In order to avoid the effects of r-contributions when comparing GCS with PCS we (simulate) efficiency by neglecting contributions of r-members. Figure 9 displays the average (simulated) payoff across periods for p-members (top-left graph) and m members (top-right graph) when the public good level excludes r-provision.[13]

The results confirm those of Figure 8 even when r contributions are excluded: average p and m-payoffs are significantly higher in (simulated) GCS than in PCS. The bottom graph in Figure 9 reports simulated r-payoffs for GCS when neglecting their contribution costs and benefits but including donations and information costs: the average individual payoff is significantly lower in GCS, partly due to the significantly higher information in GCS than in PCS (see Figure 5). Of course, buying information in our setup is essentially burning money, whereas in the field it would also have redistributional effects.

[13]This implies that we simulate the same efficiency level of PCS.

Figure 8: Payoff by role and condition



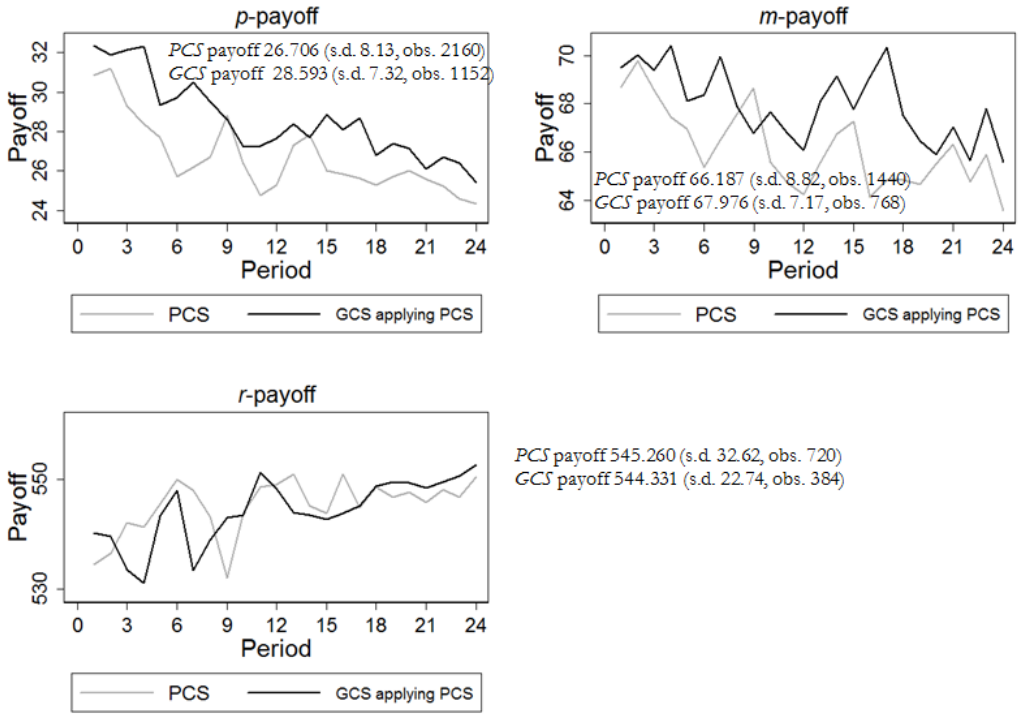
Notes: We perform WRST on the average payoff by role checking for significance difference between condition PCS and GCS: for all pairwise comparisons (GCS vs. PCS) p-values are <0.001

Result 5 *Reform condition, GCS, is universally preferable to PCS.*

This result is supported by the analysis of the dispersion of the distribution of payoff. We consider the Gini index[14] comparing the variation from the initial dispersion of endowment provision (the same in both PCS and GCS) and the final social condition in terms of inequality level.

[14]We adopt the geometrical approach to compute the Gini index as the sum of the individual fraction geometrical areas in the unit box: each area is based on the wealth of the fraction of population considered and its "wealth ranking" among group members. See Xu (2003) for details on the different Gini index approaches.

Figure 9: Payoff by role and condition, when excluding r-member from public provision in GCS

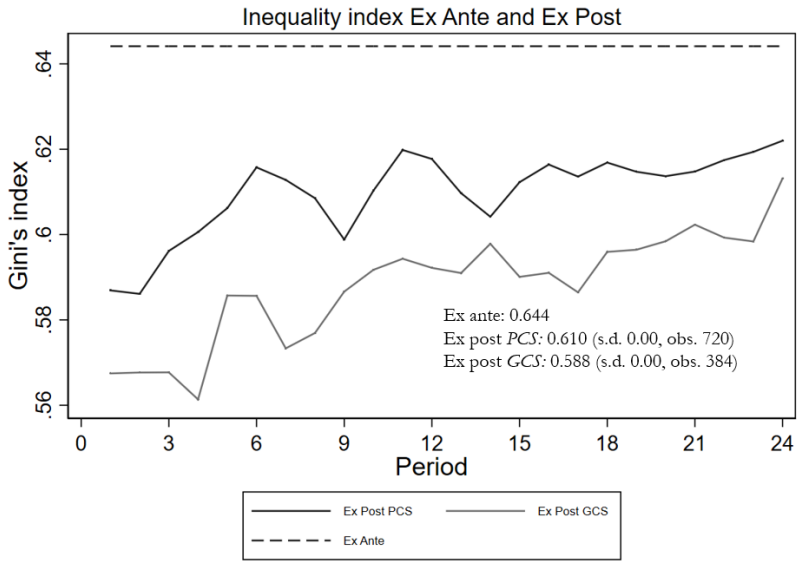


Notes: We perfomr WRST on the average payoff by role checking for significance difference between condition PCS and GCS: for all pairwise comparisons (GCS vs. PCS) p-values are <0.001

Figure 10 shows that the inequality level is significantly lower in all periods in the GCS condition: the inequality level seems to converge to the highest (ex-ante) index through time, although we notice there are considerable differences in the groups where r-members are more involved.

Figure 11 analyzes the index dynamics in the groups according to the certain r-member type (Non-Donor, Small Donor, or Substantial Donor), as defined in Table 4. Clearly, the redistribution effect of a generous donor decreases the inequality

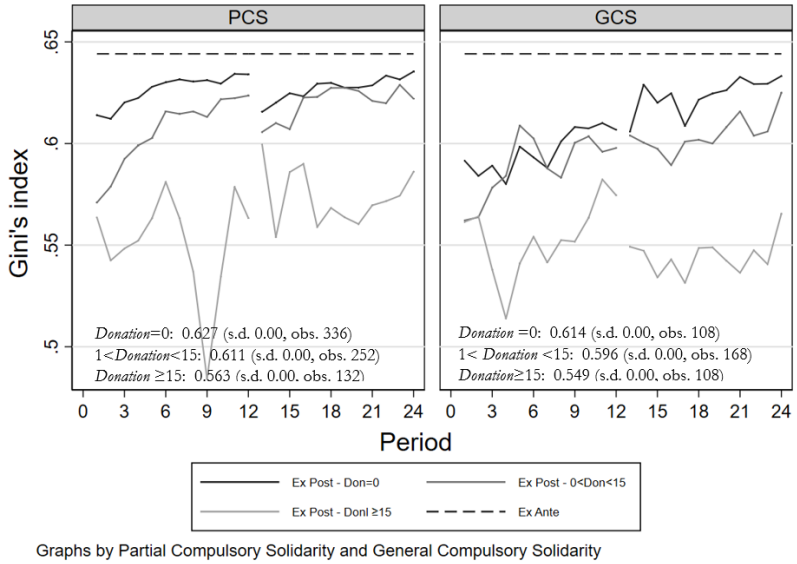
Figure 10: Gini Index in PCS and GCS



Notes: We perform WRST on the average index checking for significance difference between condition PCS and GCS: p-values is <0.001

index of his group, although here we may focus on the significant differences shown by the average group dynamics. In particular, the inequality index is rising among those groups where the donor shows little social interest while it is stable across periods when the r member is a substantial donor.

Figure 11: Gini Index by donor types



Notes: We perform WRST on the average index (within treatment) checking for significance difference across donor types: p-values is <0.001

6 Conclusions

Our study tries to compare partial compulsory solidarity with its obvious reform alternative obliging all society members. Partial compulsory solidarity may became rare but still exists and is partly economically important where it is maintained. It may have been justifiable once by reasons which now do not apply anymore, for instance in Germany. In our view, social policy should aim at reforming compulsory solidarity institutionally by including all society members rather then trying to render partial compulsory solidarity mechanisms more acceptable by piecemeal interventions and tax subsidies. Partial compulsory solidarity is ethically questionable and even seems unlawful.[15] As we have shown above, it is also economically

[15]For instance in the form of violating human rights, especially of treating all citizens equally.

undesirable.

For the time being, our results support the institutional reform which substitutes PCS by GCS: it renders voluntary cooperation more efficient and allows all endowment classes to gain on average. In our view, it also crowds-in stronger solidarity and society concerns due to the procedural fairness of GCS. Specifically, the non-wealthy contribute more in GCS and only few wealthy participants react to compulsory solidarity by neither contributing nor donating. Most r-members retrieve costly information about individual contributions by the non-wealthy and try to help of the non-wealthy by contributing and donating. In summary, experimental societies fare better economically and have lower inequality[16] in GCS than in PCS.

From a methodological perspective the two comparison between PCS and GCS is confounded as including r increases the number of contributors to public good provision and renders, due to the same free riding incentive, individual contributions more efficient. But rather than comparing treatments differing in only one element we wanted to compare institutional conditions and shed light on an a logical institutional reform which changes in more than one aspect.[17] Obviously only the wealthy would be more directly affected by the reform substituting PCS with GCS and may reject it. But, as in our experimental societies they would not lose much. In line with the still existing PCS-cases we have improved the same upper bound for individual contributions by all group members, i.e. wealthy do not suffer

[16]This is of particular importance to poorer countries, whose high-income individuals are more likely to opt out of the public service, yet they rely more on redistribution in-kind (see Bearse et al., 2000).

[17]One may object that only the wealthy can retrieve information about individual contributions and engage in donating. Allowing this for all society members would complicate the instructions and probably matter much as the low endowments of the non-wealthy hardly encourage such expenditures. Furthermore, these are voluntary expenditures of the wealthy and an aspect of compulsory solidarity.

much from compulsory solidarity in our experiment and probably also would not suffer much by reforms in the field.

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7 Appendix - Instructions

INSTRUCTIONS TO PARTICIPANTS

Introduction

PCS − this was not part of the instructions

Welcome to our experiment!

During this experiment you will be asked to make several decisions, and so will the other participants. Your decisions, as well as the decisions of the other participants will determine your payoff according to rules, which will be explained shortly. What you earn during the experiment will be converted to euros at the rate of ECU (Experimental Currency Unit) 10 ECU= 80cent. In addition to the earnings from your decisions over the course of the experiment, you will receive a show-up fee of €4.00.

Please note that hereafter any form of communication between the participants is strictly prohibited. If you violate this rule, you will be excluded from the experiment with no payment. If you have any questions, please raise your hand. The experimenter will come to you and answer your questions individually.

Description of the Experiment

This experiment is fully computerized. The experiment is composed by two phases (Phase 1, Phase 2). Each phase consists of 12 identical periods, in which you will be required to perform a Task as explained below.

During the experiment, groups of 6 participants will be randomly formed, and in every period of the same Phase you will be interacting with the same group of anonymous participants (how to interact with the other will be explained shortly). At the

end of each phase, the computer will randomly form new groups.

Description of the Task

At the beginning of the experiment, the computer will select your role. There are three possible roles; you can be P type, M type or R type. Your role will never change through the experiment.

In each phase a group of 6 participants is formed: the group is formed by 1 participant R type, 2 participants M type and 3 participants P type.

The task played by each participant type is different:

- Description of the Task for P

  In each period, you and the other P type individuals are endowed with 20 ECU.

  Firstly, participants P type (and participants M type) of your group have to decide, individually and independently, how much of their endowment they want to contribute to a project (from 0 to 20 ECU).

  Given the amount you contribute c_p, your payoff from the project is determined in each period according to the following formula:

$$20 - c_p + 0.4(\text{Total Contribution}) \tag{1}$$

  Where Total Contribution is the sum of the individual contributions by 3 participants P type and 2 participants M type of your group, that is Total Contribution=$c_{p1} + c_{p2} + c_{p3} + c_{m1} + c_{m2}$.

  After all participants decide their contribution, the computer will communicate you the Total Contribution and your individual payoff.

- Description of the Task for M

  In each period, you and the other M type individual are endowed with 60 ECU.

  Firstly, participants M type (and participants P type) of your group have to decide, individually and independently, how much of their endowment they want to contribute to a project (from 0 to 20 ECU). This implies you cannot contribute your full endowment, but up to one third of your total endowment.

  Given the amount you contribute c_m, your payoff from the project is determined in each period according to the following formula:

$$60 - c_m + 0.4(\text{Total Contribution}) \tag{2}$$

  Where Total Contribution=$c_{p1} + c_{p2} + c_{p3} + c_{m1} + c_{m2}$.

  After all participants decide their contribution, the computer will communicate you the Total Contribution and you individual payoff.

- Description of the Task for R

  In each period, you are endowed with 560 ECU.

  Firstly, participants M type and participants P type of your group have to decide, individually and independently, how much of their endowment they want to contribute to a project.

  After all participants decide their contribution, the computer will communicate you the Total Contribution of their project. The project result does not have any effect on your situation.

Secondly, a screen with 5 buttons appears on your screen; there are three buttons for players P and two buttons for players M. The buttons represent a single information on each group member individual contributions. You can decide to collect information about none/some/all individual contributions clicking on each button.

Revealing the information is costly: each button costs you 10ECU.

After collecting information on other group members contributions, a new screen will appear. Under each button, for each player in your group, there is an empty text cell, where you can write, for each group member, how much of your endowment you want to devote to them.

You can donate from 0 to the maximum you are left with to a single participant, you cannot donate more than the ECU you are left with, after purchasing information.

Your payoff is:

560 − sum of information cost − sum of donations to group members

Note that participant will be associated to the same name through the entire phase, so the button of c_{p1} is always associated to the same participant all periods of the same phase.

Information Feedback

Before proceeding to the next period, the computer will inform each group member P and M on their final payoff, the sum of the project payoff plus donations.
Summing up, your payoff for each period will depend:

- If you are P type or M type, on your initial decision to contribute and the donations received by R type participant;
- If you are R type, on how many information you purchase and donations to other group members.

End of the Experiment

After completing the experiment, that is when the 2 phases will be over, a lottery administrated by the computer will randomly select one phase and one period of it to be considered for payment and will display it on your screen numbers with the corresponding payoff you made in that period.
Your total payoff from the experiment will be equal to the sum of:

- the payoff that you realised in the selected period of a selected phase
- €4 of show up fee.

A summary screen will display the total points you have accumulated and the corresponding earnings in euros. Please remain at your cubicle until asked to come forward and receive payment for the experiment.
After having finished the experiment, but before receiving your payoff, you will be asked also to fill up a short questionnaire about your demographics and other few questions.

INSTRUCTIONS TO PARTICIPANTS

Introduction

GCS − this was not part of the instructions

Welcome to our experiment!

During this experiment you will be asked to make several decisions, and so will the other participants. Your decisions, as well as the decisions of the other participants will determine your payoff according to rules, which will be explained shortly. What you earn during the experiment will be converted to euros at the rate of ECU (Experimental Currency Unit) 10 ECU= 80cent. In addition to the earnings from your decisions over the course of the experiment, you will receive a show-up fee of €4.00.

Please note that hereafter any form of communication between the participants is strictly prohibited. If you violate this rule, you will be excluded from the experiment with no payment. If you have any questions, please raise your hand. The experimenter will come to you and answer your questions individually.

Description of the Experiment

This experiment is fully computerized. The experiment is composed by two phases (Phase 1, Phase 2). Each phase consists of 12 identical periods, in which you will be required to perform a Task as explained below.

During the experiment, groups of 6 participants will be randomly formed, and in every period of the same Phase you will be interacting with the same group of anonymous participants (how to interact with the other will be explained shortly). At the end of each phase, the computer will randomly form new groups.

Description of the Task

At the beginning of the experiment, the computer will select your role. There are three possible roles; you can be P type, M type or R type. Your role will never

change through the experiment.

In each phase a group of 6 participants is formed: the group is formed by 1 participant R type, 2 participants M type and 3 participants P type.

The task played by each participant type is different:

- Description of the Task for P

  In each period, you and the other P type individuals are endowed with 20 ECU.

  Firstly, participants P type (and participants M and R type) of your group have to decide, individually and independently, how much of their endowment they want to contribute to a project (from 0 to 20 ECU).

  Given the amount you contribute c_p, your payoff from the project is determined in each period according to the following formula:

$$20 - c_p + 0.4(\text{Total Contribution}) \tag{3}$$

  Where Total Contribution is the sum of the individual contributions by 3 participants P type, 2 participants M type and participant R type of your group, that is Total Contribution=$c_{p1} + c_{p2} + c_{p3} + c_{m1} + c_{m2} + c_r$.

  After all participants decide their contribution, the computer will communicate you the Total Contribution and your individual payoff.

- Description of the Task for M

  In each period, you and the other M type individual are endowed with 60 ECU.

  Firstly, participants M type (and participants P and R type) of your group have to decide, individually and independently, how much of their endowment they

want to contribute to a project (from 0 to 20 ECU). This implies you cannot contribute your full endowment, but up to one third of your total endowment.

Given the amount you contribute c_m, your payoff from the project is determined in each period according to the following formula:

$$60 - c_m + 0.4(\text{Total Contribution}) \tag{4}$$

Where Total Contribution=$c_{p1} + c_{p2} + c_{p3} + c_{m1} + c_{m2}$.

After all participants decide their contribution, the computer will communicate you the Total Contribution and you individual payoff.

- Description of the Task for R

  In each period, you are endowed with 560 ECU.

  Firstly, participants R type (and participants P and M type) of your group have to decide, individually and independently, how much of their endowment they want to contribute to a project (from 0 to 20 ECU). This implies you cannot contribute your full endowment.

  Given the amount you contribute c_r, your payoff from the project is determined in each period according to the following formula:

$$560 - c_r + 0.4(\text{Total Contribution}) \tag{5}$$

  Where Total Contribution=$c_{p1} + c_{p2} + c_{p3} + c_{m1} + c_{m2}$. After all participants decide their contribution, the computer will communicate you the Total

Contribution and you individual payoff.

Secondly, a screen with 5 buttons appears on your screen; there are three buttons for players P (button names are c_{p1}, c_{p2} and c_{p3}) and two buttons for players M (button names are c_{m1} and c_{m2}). The buttons represent a single information on each group member individual contributions. You can decide to collect information about none/some/all individual contributions clicking on each button.

Revealing the information is costly: each button costs you 10ECU which is detracted from your endowment when you click on the information button.

After collecting information on other group members contributions, a new screen will appear. Under each button, for each player in your group, there is an empty text cell, where you can write, for each group member, how much of your endowment you want to devote to them.

You can donate from 0 to the maximum you are left with to a single participant, you cannot donate more than the ECU you are left with, after purchasing information.

Your payoff is:

$560 - c_r + 0.4(\text{Total Contribution}) -$ sum of information cost $-$ sum of donations to group members

Note that participant will be associated to the same name through the entire phase, so the button of c_{p1} is always associated to the same participant all periods of the same phase.

Information Feedback

Before proceeding to the next period, the computer will inform each group member P and M on their final payoff, the sum of the project payoff plus donations.
Summing up, your payoff for each period will depend:

- If you are P type or M type, on your initial decision to contribute and the donations received by R type participant;
- If you are R type, on your initial decision to contribute , on how many information you purchase and donations to other group members.

End of the Experiment

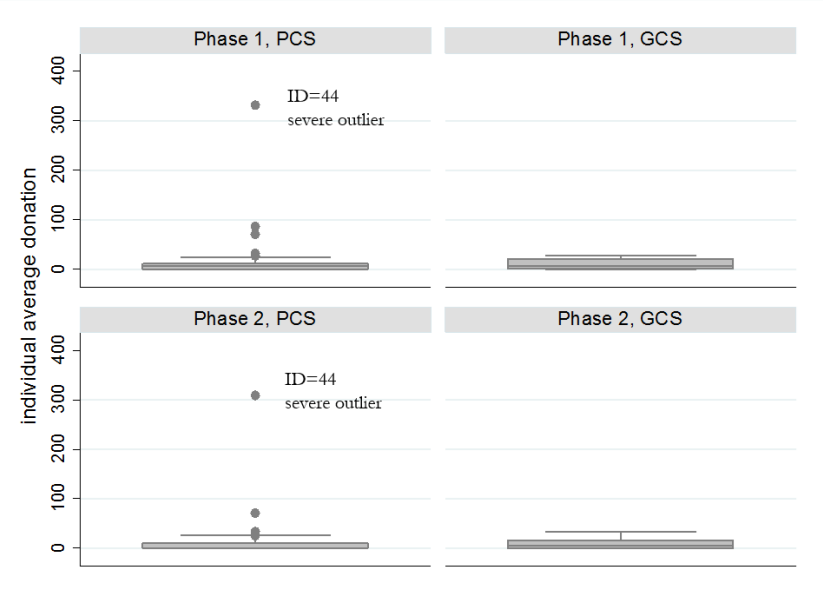
After completing the experiment, that is when the 2 phases will be over, a lottery administrated by the computer will randomly select one phase and one period of it to be considered for payment and will display it on your screen numbers with the corresponding payoff you made in that period.
Your total payoff from the experiment will be equal to the sum of:

- the payoff that you realised in the selected period of a selected phase
- €4 of show up fee.

A summary screen will display the total points you have accumulated and the corresponding earnings in euros. Please remain at your cubicle until asked to come forward and receive payment for the experiment.
After having finished the experiment, but before receiving your payoff, you will be asked also to fill up a short questionnaire about your demographics and other few questions.

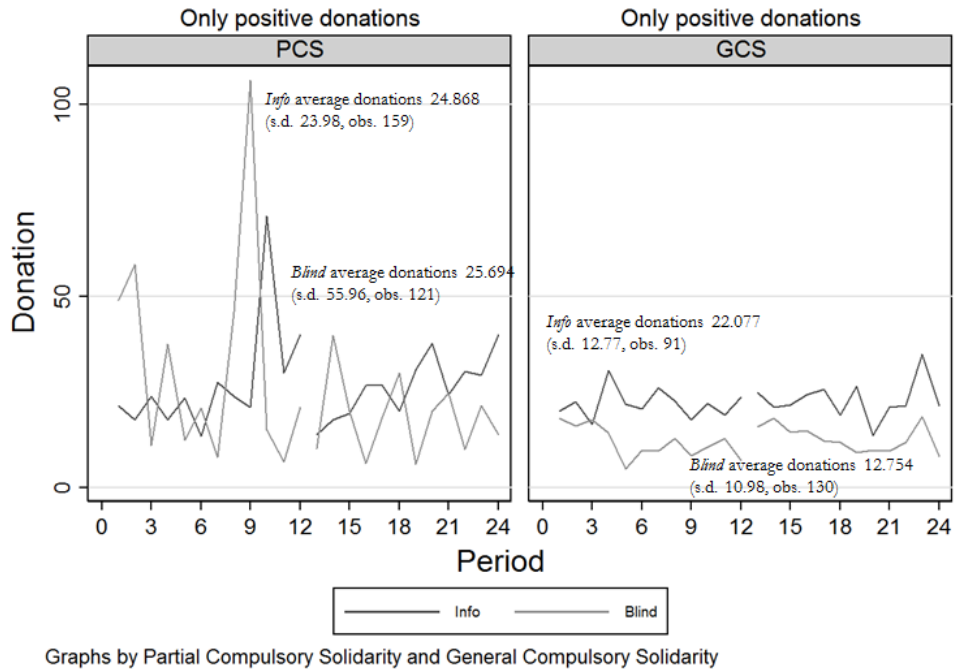
8 Appendix - Tables and Figures

Figure 12: Average individual donation by phase



Notes: Individual average donations by phase and condition

Figure 13: Average (positive) donation for blind and non-blind donors in the group



Notes: We include the wealthy which have donated at least one ECU to at least one member of the group.