Subjects in the Lab, Activists in the Field: Public Goods and Punishment[*]

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Abstract

We compare standard (laboratory) and non-standard (field) subject pool behavior in an extensive form public goods game with random punishment. Our experimental investigation is motivated by real-world 'Activists' in assisting local public goods provision by Firms; an activity known as corporate social responsibility (Benabou and Tirole (2010), Baron (2001)). We find that relative to lab subjects, real-world activists in Mumbai, India are more willing to settle at the Nash equilibrium of the game (which entails increased provision of public goods) and are more willing to punish non-cooperative behavior on the part of firms even if such punishment hurts their own payoffs.

Keywords: Public goods, punishment, non-standard subject pool

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1. Introduction

In socio-economic contexts self-styled 'Activists' push for greater involvement of private sector actors in public sector processes and outcomes. For example, Activists may push for legal reforms via private sector lobbying, alternate systems of governance drawn from the corporate sector and myriad related rules that govern an implicit social contract. In economic contexts one finds Activists pushing for something essential that girds any socio-political order: the private provision of local public goods over and above that which governments may provide. In low income countries, such activities translate into Activists pushing for increased Corporate Social Responsibility (CSR). For example, India has a law requiring corporations to spend 2% of revenue on CSR activities, something that Activists can try to enforce or reinforce depending on the underlying economic tension at play.[1][2]

We focus on a particular tension between Activists and Firms in fulfilling the requirements of CSR laws in particular, and the private provision of public goods by firms in general. The import of such laws boil down to mandatory public goods provision by private firms, reinforced by NGO activists who attempt to have firms increase such provision beyond the mandatory amount. We explore the topic with a unique experimental design, implemented on a standard subject pool as well as real-world Activists recruited via the Blue Ribbon Movement in Mumbai, India.[3] Our

[1] Kitzmueller and Shimshack (2012) define CSR as any voluntary social activity manifesting itself in some observable behavior or output by firms that exceeds levels set by legal regulation.
[2] Section 135 of India's Companies Act of 2013 requires on a "comply-or-explain" basis that firms satisfying specific size/profit thresholds spend a minimum of 2% of their net profit on CSR.
[3] This organization is a social movement/youth empowerment oriented network; detailed information is available at http://brmworld.org/.

design and results therefore complement that of Charness et al (2016) who also take an experimental approach to CSR albeit in a very different gift-exchange context.[4]

Baron's (2001) model of CSR motivates our experimental design. It assumes a firm producing a differentiated product with a linear inverse demand and constant marginal costs. Such a firm has the choice to additionally expend a set of resources out of profits on activities such as improving the environment (i.e. a CSR activity). The next step is key, the assumption that consumers can 'reward' a firm for its CSR behavior by purchasing more of its product if that firm does engage in CSR activities. As such, this aspect of the model is similar to models of advertising with a critical difference: when a firm engages in CSR it improves the social environment in which consumers live by providing a public good or mitigating a negative externality. This avoids the assumption that the firm engages in CSR for purely altruistic reasons and so the model limits itself to the strategic aspects of CSR (see Benabou and Tirole (2010)). Next, the model assumes the existence of an Activist who can try to force the firm to increase its' level of CSR beyond the profit maximizing amount using 'boycotts'. This sets up an extensive form game between the firm and the activist with specific payoffs and an endogenous probability that an activist will boycott a firm. Baron (2001) then uses standard equilibrium concepts to sort through the predictions on offer for activist/firm behavior.

Our takeaway from the above analyses, including critically the model of Baron (2001), is that beginning from a point where a firm is already providing some level of a public good, the

[4] Benabou and Tirole (2010) identify three CSR channels: a long term perspective on profitability being adopted by firms who engage in CSR versus those who do not, that firms engage in CSR due to shareholder concerns and that firms engage in CSR due to the concerns of corporate insiders and managers.

Activist employs the threat of a boycott to have the firm provide even more of the public good.[5] However, this boycott (or 'punishment') outcome is random in that there is positive probability that it will not succeed. Thus the specific context of CSR suggests a more general context: starting from the point where there is public goods provision, can those who tend to contribute more to public goods try to get others to increase their contribution (in an environment best described as an extensive form (i.e. 'Stage') game as in Baron (2001)) using the threat of random punishment? This is the tension we instantiate in our design described below and we do so with a standard subject pool as well as real-world Activists who constitute a unique non-standard subject pool in developing country contexts.

Our findings include conclusions about not only the progress of the Stage game but also about treatment differences. Particularly we find that contributions fall as the Stage game progresses and that punishment is effective. In other words, the Activists we observe in the field willingly settle for an increase in contributions in the VCM. However, when Firms do not choose to cooperate, these Activists willingly punish others despite the fact that it hurts themselves. Further, we find evidence for inequity aversion. Finally, the higher the MPCR for both real world and lab subjects, the more likely they are to reach the Nature node.[6]

The paper is organized as follows. In Section 2 we review literature relevant to the topic and to our design. That design for the laboratory with standard subjects, and the field for the

[5] Due to the nature of endogenous probabilities that determine equilibrium in Baron (2001), it is not possible to design an experiment that would exactly replicate the model. Additionally, given our focus on standard vs. non-standard subject pool behavior, we chose instead to experimentally instantiate a main tension of CSR.

[6] Both the established laboratory and field pools understand the environment in so far as they react in the standard theoretically predicted direction as the MPCR of the VCM is varied.

Activists that form our non-standard subject pool, is described in Section 3. Results are presented in Section 4 and Section 5 concludes.

2. Literature Review

We begin with a review of the management literature that provides motivation for our analysis of economic tensions underlying CSR activities. Activists play a key role in the provision of public goods by firms and when activists pressure less, firms tend to have a lower output of CSR (Bansal, Jiang, and Jung, 2015).[7] In terms of answering the question of activists' effectiveness, the literature has been clear. Evidence-based activism is more effective in fostering an environment where firms can conduct more CSR activities (Briscoe, Gupta, and Anner, 2015). Further, when activists pressure firms, they become more open to subsequent public pressure. This implies that firms become more accustomed, as activists' operations proceed, and that a virtuous cycle of increased CSR takes place once a pivotal amount of activists are involved.

When firms compete for socially responsible customers, these firms often produce branded public goods (Bagnoli and Watts 2003). Branded public goods are products or services that promote the improvement of the environment or society while simultaneously identifiable with the operations of a particular firm. Again, incentives to follow the goading of activists are generally positive for CSR output of firms.

[7] A differentiation of activists' operations exists, but scholars emphasize that activists' operations may not constitute institutional change (den Hond and de Bakker, 2007). We do not expect fundamental changes in the structure of our experiment to result from activists. Instead, we find consequences of the actions of players assigned the Activist role to determine payoffs for all players.

An emerging experimental literature has also explored issues related to CSR, e.g. Charness et al (2016). In that analysis, workers' effort in a gift-exchange game correlates with the giver's CSR contributions. Workers' effort was higher when the giver and receiver's preferred charities matched and CSR levels were high. Nevertheless, firms continue to promote CSR at similar levels during subsequent rounds (Koppel and Regner, 2014). In addition, information about CSR initiatives published through internal sources has higher impact on consumer attributions than negative sources (Groza, Pronschinske, and Walker, 2011). We further explore an activist's role in influencing a firm to conduct CSR and analyze inequity aversion as a mechanism for increasing CSR promoting activities. Inequity aversion has been found to appropriately explain behavior in public good contexts (Nikiforakis, Oechssler and Shah 2014; Bolle, Breitmoser, and Schlächter 2011). Moreover, the cooperation that we observe in the game can be due to inequity aversion (Fischbacher, Gachter and Fehr, 2001; Fischbacher and Gachter, 2010).

We think of our experimental CSR design as a public good in a game theoretic setting: the well-known Voluntary Contribution Mechanism (VCM).[8] Thus we find it pertinent to discuss the experimental literature associated with sequential-move public good games, random punishment in public goods games and passive players in public goods games. These three topics relate directly to our design, discussed in detail in further sections.

Scholars observe a difference between sequential and simultaneous contributions to a public good. Particularly, they find lower contributions in sequential games (Gächter, Nosenzo,

[8] In a VCM, individuals i with an endowment of points (E_i) must decide how many they wish to contribute toward the provision of a hypothetical public good vs. own contributions (C_i). The payoff for individual i if given by $E_i - C_i + MPCR \times Total\ Contributions$.

Renner, and Sefton, 2010). In our design, the initial contribution to the public good is simultaneous but the subsequent contributions are sequential. It can also be said that the second contribution follows the initial one. That said, we can expect lower contributions in our "Stage" game, or part three of the experiment. Our findings follow the literature in this sense because we find that contributions fall as the "Stage" game progresses.

In contrast to our findings, the literature often points out the ineffectiveness of punishment. For example, random punishment, has been found to have no impact, or even a negative impact, on the behavior of subjects with respect to imposing sanctions (Walker and Halloran, 2004; Houser, Xiao, McCabe and Smith, 2008). This is encouraging for our design because it implies that subjects will make decisions with respect to their willingness to impose sanctions on the other player due to their commitment to increasing public goods contributions and not due to the nature of the punishment as it is designed.[9]

In our design, we have two active and two passive players. The research on passive players in VCM contexts again finds that passive players increase contributions to a public good (Blanco, Haller, and Walker, 2017; Cox and Stoddard 2018). This ought to be approached with caution however because given large externalities, active players may be indifferent to the fate of passive players (Bland and Nikiforakis 2015). Nevertheless, in our design, we model public goods contribution as CSR in which activists are encouraged by the fact that contributions assist passive players.

3. Experimental Design

[9] See also Normann and Rau (2015).

3.1 Laboratory Implementation

Our laboratory design with a standard undergraduate subject pool consists of three distinct parts that are revealed sequentially.[10] Subjects first perform individual real effort tasks (RET) which consist of typing character strings, to earn an endowment of points for subsequent parts of the experiment. These tasks are designed so that subjects have a sense of an earned endowment leading to increased engagement with the subsequent experimental environment. Moreover, these tasks are designed so that it is rare that subjects do not earn the same endowment. In so doing we provide the best possible chance for subjects to not only feel engaged but start off subsequent parts of the experiment with a uniform distribution of endowments. Subjects do not know that the tasks have been designed so as to have no variation in endowments, as a result in this part of our design we are looking for subjects to have perfect real effort task scores as a measure of design success. Having earned their endowments, subjects are then placed randomly in groups of four by our software for the second part of the experiment.

In the second part of the experiment subjects play a VCM with their earned endowment of points in groups of four. Subjects see the endowments of the other three people in their group before making their allocation decision. The MPCR is either 0.30 or 0.75, depending on the session-level treatment. Subjects play the VCM for ten rounds with random re-matching of groups between each round. Having completed the 10 rounds, in each group of four, our software computes each subject's average percent contribution to the public good. Subjects are then classified as follows: based on the average percent contribution to the public good, subjects

[10] All standard subject pool sessions were conducted at the Social Science Experimental Laboratory (SSEL) at New York University Abu Dhabi (NYUAD).

are divided into the top 50% contributors and the bottom 50% contributors in terms of magnitude of the contributions. Those in the top 50% are denoted as "A" (or Activist) and those in the bottom 50% are denoted as "F" (or Firm). Subjects are then told their role (A or F) however they are not told how that role was assigned. In this part of our design we expect that as rounds progress, group contributions decrease and that there are treatment differences across the two MPCR's we have employed (the higher the MPCR, the higher the group contributions since the choice of going to the random punishment node in the stage game below is more costly in terms of expected payoffs).

Our matching method is purposeful. An alternative would be to match an 'A' player randomly with an 'F' player. There are several possible conjectures about what might drive the behavior of an 'A' player (altruism, inequity aversion, reciprocity etc.). We wanted to give the best possible chance that some form of pro-social preferences would drive behavior so that any deviation from classical own-profit maximizing theory would be clearly identified in the stage game part of the experiment described below, hence our choice of matching technology described above.

In the third and final part of the experiment, each 'A' subject is matched with an 'F' subject. After matching is completed, each pair plays the extensive form game, described in Figure 1, ten times using the strategy method. Table 1 provides the payoffs associated with each terminal node.

With this game tree and payoffs table in hand, we now describe how the tree unfolds. An Activist (player 'A') chooses between actions A1 or A2. If the Activist selects A1 the game ends;

this represents the Activist accepting that the Firm maintains its original contribution to the public good. Node A1 represents the Nash Equilibrium of the game. In other words, the status quo, according to the payoff structure, is the dominant strategy for both players. The payoffs associated with choosing A1 are the payoffs of a VCM game in which Player A contributes 15 to the public good and keeps 5, Player F contributes 5 to the public good and keeps 15, and two other 'passive players' each contribute 20 to the public good. With an MPCR of 0.30, A earns 23, F earns 33, and each passive player earns 18. With an MPCR of 0.75, A earns 50, F earns 60, and each passive player earns 45. We present the various payoffs in Table 1 above and reiterate that while the second part of the experiment allows us to classify subjects, this third part of the experiment is focused on the stage game illustrated in Figure 1.

Next, the selection of A2 by the Activist represents a demand for a higher contribution from the Firm. If the Activist selects A2 the game continues and the Firm selects between F1 and F2. Should the Firm select F1 the games ends; this outcome represents the Firm accepting the Activist's demand, and increasing their public good contribution by 3 times, from 5 to 15. The payoff for the Activist should the Firm select F1 is the payoff associated with the Firm's additional contribution (as demanded by the Activist). Thus, the payoff for the Activist is higher in F1 than in A1 and the payoff for the Firm is lower in F1 than in A1 (see Table 1).

The selection of F2 by the firm represents the Firm rejecting the demand of the Activist for a higher contribution by the Firm. If the Firm selects F2, the game continues and the Activist selects between A3 and A4. Should the activist select A3 the game ends; this represents the Activist accepting the Firm maintaining her or his original contribution. The payoff for A3 is

equivalent to the payoff from A1 for both the Activist and the Firm. Because of this, it serves as the Sub-game perfect Nash Equilibrium of the game.

The selection of A4 by the Activist represents the Activist demanding a higher contribution from the Firm. In the case of the Activist selecting A4, the game goes into the 'boycott'/punishment stage.[11] The subjects do not know that this stage represents a boycott per se. The results of the next stage are determined by Nature.

If Nature selects N1 the boycott succeeds (with probability p = 0.75), the Firm accepts the Activist's demand. The payoff for the Firm is the same as in F1. However, due to the costs associated with holding a boycott, the Activist's contribution is that of F1 reduced by a fixed cost (of 10 points). If Nature selects N2 the boycott fails (with probability 1-p), the Firm rejects the Activist's demand. Thus, the payoff for the Activist is the same as in A1 (and A3) reduced by a fixed cost associated with holding a boycott. The payoff for the Firm associated with N2 is the same as in A1 (and A3). Finally, when players are passive agents in a dyadic stage game interaction, they are paid accordingly (see Table 1). We note that since we employ the strategy method, subjects earn both as passive players and as active players.

3.2 Field Implementation

Our laboratory-in-the-field design with real-world activists in Mumbai, India was a modified version of the design described in section 3.1. We first describe our recruitment of this

[11] The CSR analog behind this is that once the Firm rejects the Activist's demand, the Activist attempts a boycott against the Firm's products.

non-standard subject pool and then describe how the design implemented with that pool differed from that implemented with the standard pool at the SSEL at NYUAD.

3.2.1. Recruitment of Activists

We contacted the Blue Ribbon Movement (BRM) in Mumbai, India; an NGO that attempts to "harness the power of collective action through an evolving ecosystem of projects aimed at personal growth and social transformation." In particular, they are "building a movement of individuals, projects, organizations, and networks that can create impactful social change and make the world a better place."

We requested and obtained access to the network of self-reported social movement activists that comprise this organization. This network then became the universe from which we drew samples for our lab-in-the-field work. Officials from the BRM helped us to get access to local computer labs and recruit subjects using NYUAD IRB approved methods. We conducted several sessions over three trips to Mumbai, India and these sessions were conducted in randomly selected neighborhoods (some middle class areas and some slum areas) with neighborhood selection being entirely driven by BRM's ability to book computer labs with at least 14 computers.

The 84 field subjects had a median year of birth of 1997, with 32.14% being female. All subjects had a high school degree or more (36.90% having had an undergraduate education), with a household median income of INR 47,597.20 and had worked with the Blue Ribbon Movement for an average of about ¾ of a year by volunteering on average for 2.70 hours a week. These statistics are conservative in that non-responses are not included; the response rate was above 80%.

3.2.2. Field Design Differences

With our field subjects, the main differences in design were as follows. First, 'Firms' (F) were represented by automated bots who contributed according to levels that were observed in the laboratory sessions.[12] This was known by field subjects who all played the role of 'Activists' (A).

4. Results

We first report the results from laboratory sessions with the standard undergraduate subject pool, we then discuss results from lab-in-the-field implementation.

4.1 Standard Subject Pool Results

We conducted two sessions at the SSEL of NYUAD with 58 subjects in total. For the RET, all except one subject earned the maximum of 20 points. Since our measure of success at this stage of the design was a degenerate distribution of scores, given success, we focus on results from the second and third parts of the experiment.

In the second part of the experiment, we first examine the amount subjects contributed to the group exchange in the VCM. Figure 2 below plots the individual and group contributions by the main treatment variable (MPCR).

Figure 2 illustrates that as the MPCR rises, from the left panels of Figure 2 to the right, contributions to the group exchange rise. Further, there is variation in group exchange contributions among subjects: some contribute the minimum of 5%, others the maximum of 95%

[12] All code for the laboratory and field designs as well as data are available upon request.

with variation in between. Since the three parts of our design are revealed sequentially, and in this second part of the design our objective was to ensure that subjects were behaving as is already documented in the voluminous literature on VCM's, we see success in Figure 2. Subjects behave in the right direction as incentives (MPCR) change and, as is usual, there is variation in subject behavior.

Next, since the VCM was repeated 10 times in this the second part of our overall design, we need to ensure that contributions fall as rounds progress. Figure 3 below demonstrates this fact.

Recall, we classified subjects to be A or F players according to their contribution to the Group Exchange in the VCM as described above. We now turn to the results from the third part of our design, the Stage Game. We begin by describing the terminal node choice made by dyads, in Figure 4 below. Note that theoretically the expected node choices do not change as a function of treatment (MPCR) and so we begin by first noting what part of the data come to rest at node A1, A3 or Nature.

In Figure 4, we see that some subjects chose the Nature node. The majority of dyads do go to the Nash Equilibrium, however. Nevertheless, it is interesting to see that some do deviate. In terms of the F1 node, it is interesting why Firms would choose it. Perhaps they feel like this would be a fair division of the joint funds. We explore this question using regressions below. Figure 5 visually confirms a certain temporal stability of node choices across rounds, however controlling for variation also involves examining the data across our treatment variable, MPCR. Figure 5 below illustrates those data.

Figure 5 suggests that as MPCR rises, dyads choose to settle at the A1 node of the stage game more often across rounds. This behavior is clearly at the expense of the A3 node. Recall from the design description that actions in the Stage game were elicited via the strategy method. For example, even if A1 was selected by the role A player, Role F would still be asked what they would choose if A had chosen A2 previously. At the end of each round, the terminal node and payoffs were revealed to both players; and the next round began with the strategy method again. We illustrate the resulting choices in Figure 6.

While these figures suggest differences across the treatment variable, using Wilcoxon rank sum tests we only found a statistical difference across the two MPCR's in terms of reaching node A3 (p-value = 0.01032). So what explains the variation between node choices if it is not the main treatment we instituted? Intuition would suggest inequality aversion and so in Figure 7 we plot the distribution of these two-player-group differences in public good contributions for each terminal node selected. A large difference implies one player contributed a lot more to the public good relative to the other, while a small difference means the two players contributed at similar rates. The plot above labeled "Average Group Exchange from VCM" shows the public good contributions of each group in the stage game. The plot shows that F1 tended to be selected where public good contribution differences were the smallest within groups; while players tended to reach the nature node where differences in group exchange contributions were the highest.

Figure 7 then raises the possibility that each of the node choices is a statistically significant function of the difference between group exchange contributions and not the treatment variable (MPCR). We therefore regressed the percentage of the time a group (g) reached a particular

terminal node (e.g. N_g for the percentage of time the Nature node was reached) on a constant, the dichotomous treatment variable ($MPCR_g$) and the natural logarithm of a group's difference between players average public good contribution rates in the VCM game ($GEDIFF_g$).

The larger the estimated coefficient on $GEDIFF_g$ in any given regression, the more the effects of the group difference as defined above determining the percentage of the time groups reached a particular node. Table 2 provides regression results with columns corresponding to the different dependent variables (i.e. N_g, $F1_g$, $A1_g$ and $A3_g$). Table 2 clearly shows that groups reach the Nature node much more often due to inequality aversion, as proxied by $GEDIFF_g$, and that only the A3 node is affected by the treatment variable (MPCR).

Finally, we control for the possibility of negative reciprocity influencing the behavior of our subjects. We do so by introducing another variable in the regression specification that accounts for the percent of the time that a Role F player selected F2 in rounds 2 through 10 ($NegRecip$) with the specification estimated as a probit. This represents negative reciprocity since we expect Role A players to select Nature due to negative reciprocity only when Role F players select F2, otherwise Role A player's selection of Nature is due to the perception that the Role F players contribution to the group exchange was unequal. We note the insignificance of the coefficient on $NegRecip$.

4.2 Non-Standard Subject Pool Results

We begin with the distribution of VCM contributions by non-standard subject pool ("Field") subjects relative to results reported above. Figure 8 plots that distribution across MPCR treatments and Field vs Lab participants.

The general pattern of contributions of field subjects does not in the raw look very different from that of laboratory subjects. However, Figure 9 looks at the differences as fractions over rounds and we see that field subjects tended to contribute the "fair" amount of 50% more often irrespective of the MPCR condition.

Our next step is to regress the individual contributions as a fraction of endowments earned, a variable we term VCMRATE, on whether subjects were in the lab or in the field and the MPCR treatment, results are provided in Table 4.[13]

The regressions reported in Table 4 all control for session effects and proceed as follows. In the first column we note that a subject being a field participant lowers their VCMRATE by -0.10 rather significantly and that the coefficient on MPCR is both significant and positively signed as would be predicted by standard theory. The second column reports the same regression as in the first column but restricts itself to the last round, where the effects of being a field participant are now negligible. In the third column we focus exclusively on field subjects and find that relative to laboratory subjects the effects of the MPCR treatment are larger. Given this observation we further investigate behavior by MPCR treatment in Table 5.

In the first two columns of Table 5 we restrict data to the high MPCR condition (the second column presents regression results from the last round only). Again we see that being a real-world Activist reduces VCMRATE and the effect is negligible in the last round. However,

[13] We chose to create the VCMRATE variable since there was more variation in RET scores amongst field subjects. Thus the VCMRATE variable "deflates" contributions by earned endowments.

participating in the low MPCR condition (the third and fourth conditions) results in field subjects giving more than lab subjects.

Next we turn to terminal node behavior with the non-standard subject pool. Figure 10 presents the results of the strategy method we employed across subject pool (field vs. lab) and across the MPCR treatments. Note first that the given the design differences from the lab, field subjects were playing against firm "bots", there is understandably no data for the terminal node choice F1. However, in the field there was a higher frequency of subjects going to the A1 node and the Nature (N) node. Figures 11 and 12 below present data across rounds for the low and the high MPCR condition respectively. In percentage terms the field subjects seem to either consistently stick to the A1 node or the N node. Plots aside, we investigate behavior using regressions in Table 6.

Table 6 shows uniformly that subjects in the non-standard subject pool, self-styled "Activists", tend to the A1 and N nodes more than the usual standard laboratory subjects. They not only settle more often at the Nash equilibrium, but punish more when settlement is not reached. To put it differently, self-styled real-world Activists are happy to settle for increased public goods contributions but when "good behavior" is not forthcoming, they are happy to punish others even if it hurts themselves. Indeed, when real-world people say they are "Activists" firms should take them at their word and simply cooperate and provide more public goods.

4.3 Discussion

We expect a certain level of altruism from the Activist in the environments we designed. Because the activists consistently put more of their endowment into the Group Exchange, we

hypothesize that Activists are more altruistic than Firms. In order to test this hypothesis, we wanted to verify that Activists will sacrifice their earnings (by bearing a fixed boycott cost) in order to ensure that passive players are remunerated more. This can be disentangled in two ways. Firstly, it could be that Activists go to the Nature node in order to punish Firms. However, this is unlikely because this is a costly punishment with random probability of success. A more feasible, second, explanation is that Activists want to encourage firms to contribute more because this is socially optimal behavior.

While we expect behavior to deviate from that consistent with Nash equilibrium play, we expect that Inequity Aversion has a role to play: the bigger the difference in public good contributions between Activists and Firms players (which motivated our particular matching mechanism described above), the more likely a Nature terminal node is reached.

Finally, we expect that as the MPCR is increased (across treatments in our design) that subjects will tend to reach the Nature node in the stage game more often. We note that, by design, going to the punishment node is not particularly attractive for the A types, should they actually do so suggests exactly the sort of behavior we wish to investigate as it would be the result of non-classical preferences holding sway: attempting to punish F for not contributing more to the public good.

With respect to each of the above hypotheses, given the results, we can conclude altruism on the part of subjects in both pools, that interestingly enough Field subjects deviate less from Nash predictions in the Stage game and that otherwise the usual incentives at play in VCMs apply. A key difference between pools is that Field subjects can be said to be more altruistic.

5. Conclusion

Activists, using various techniques to have their demands met, can accelerate the real-world private provision of local public goods; especially in developing country contexts where there is a paucity of government provided public goods. In this paper we design and implement an experiment, guided by a model of corporate social responsibility (Baron (2001)) with standard laboratory and non-standard field subjects (real-world "Activists"). The experimental design is unique in that it features an extensive form game embedded within an otherwise standard VCM but with random punishment. We find first that subjects in both pools react to incentives in the same manner. Second, real-world Activists, who comprise our non-standard subject pool, tend to punish more even if it hurts their own payoffs.

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Tables

Table 1. Stage Game Payoffs

Node		Player	PG Contrib.	Cost	MPCR 0.30	MPCR 0.75
A1		A	15		23	50
		F	5		33	60
		Ea. P	20		18	45
F1		A	15		26	57.5
		F	15		26	57.5
		Ea. P	20		21	52.5
A3		A	15		23	50
		F	5		33	60
		Ea. P	20		18	45
N1	$p = 0.75$	A	15	10	16	47.5
		F	15		26	57.5
		Ea. P	20		21	52.5
N2	$p = 0.25$	A	15	10	13	40
		F	5		33	60
		Ea. P	20		18	45

Notes: In column 3, "Ea. P" represents payoffs to "Each Passive Player", "PG Contrib." refers to "Public Good Contribution" and "Cost" to the "Boycott Cost" as it applies to the two Nature nodes in the game tree.

Table 2. Regression Results I

Dep. Var.	N_g	$F1_g$	$A1_g$	$A3_g$
	Est.	Est.	Est.	Est.
Constant	0.29***	0.11	0.53***	0.07
$MPCR_g$	-0.04	-0.11	0.13	0.29*
$GEDIFF_g$	0.07*	0.05	0.08	-0.09
Adj. R^2	0.12	0.05	0.04	0.27

Notes: *** indicates significance at 1%, ** at 5% and * at 10%.

Table 3. Regression Results II

Dep. Var.	N_g
	Est.
Constant	-0.78*
$MPCR_g$	-0.10
$GEDIFF_g$	0.27*
$NegRecip_g$	0.03
Pseudo. R^2	0.13

Notes: *** indicates significance at 1%, ** at 5% and * at 10%.

Table 4. Socially Responsible Contribution Analysis

	(1)	(2)	(3)
Constant	0.31**	0.22**	-0.08
Field	-0.10***	0.03	×
MPCR	0.34***	0.24	0.67***
No. Obs.	1120	112	84
Adj. R^2	0.11	0.15	0.22

Notes: ***, ** and * indicate significance at 1%, 5% and 10% respectively.

Table 5. Field vs. Lab

	(1)	(2)	(3)	(4)
Constant	0.62***	0.40***	0.55***	0.29***
Field	-0.10***	0.03	0.16***	0.28***
Round	-0.01**		-0.03***	
No. Obs.	580	58	540	54
Adj. R^2	0.05	0.02	0.24	0.24

Notes: ***, ** and * indicate significance at 1%, 5% and 10% respectively.

Table 6. Terminal Node Behavior

	A1		A3		N	
	All	Last round	All	Last round	All	Last round
Field	0.19***	0.24*	-0.16***	-0.42***	0.11***	0.22**
Constant	0.32***	0.43***	0.40***	0.46***	0.15***	0.07
No. Obs.	1,120	112	1,120	112	1,120	112
R^2	0.06	0.11	0.05	0.24	0.01	0.07

Notes: ***, ** and * indicate significance at 1%, 5% and 10% respectively.

Figures

Figure 1. Stage Game

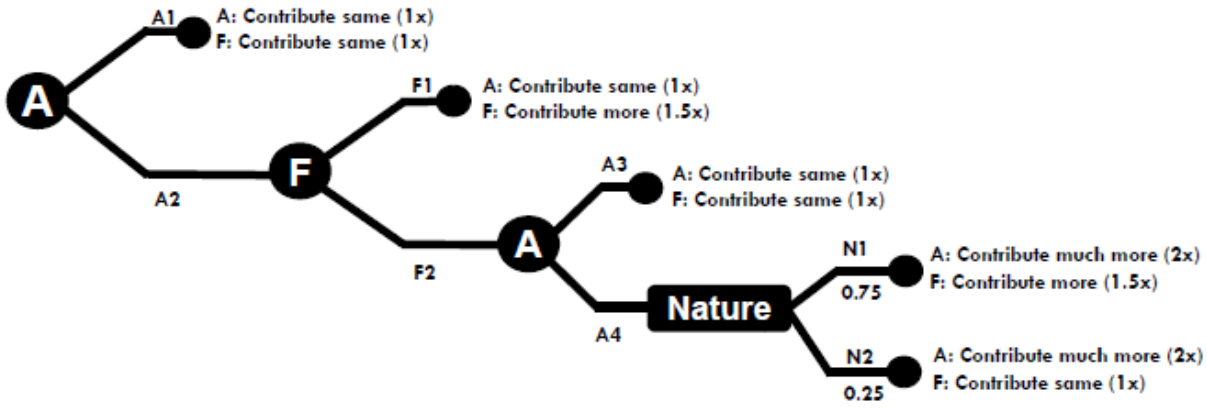

Figure 2. Distribution of Individual and Group Contributions

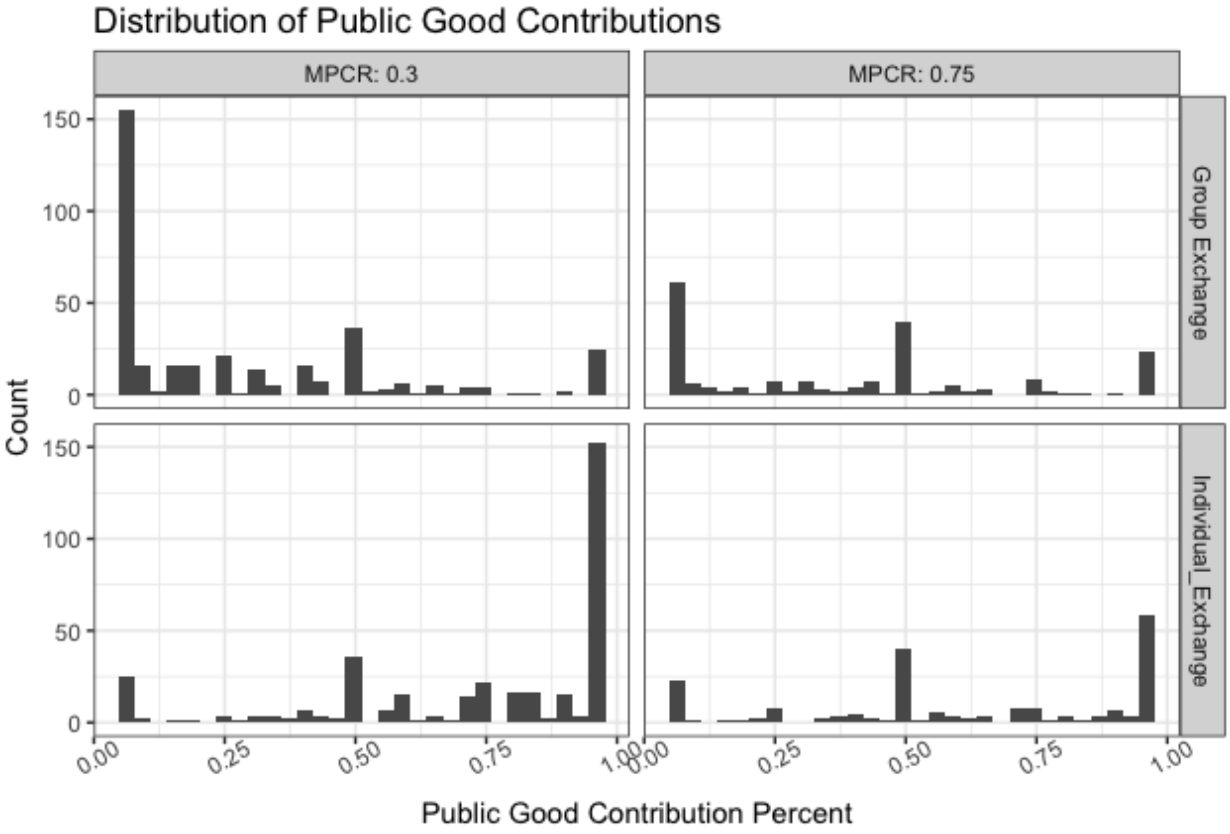

Figure 3. VCM Behavior Across Rounds

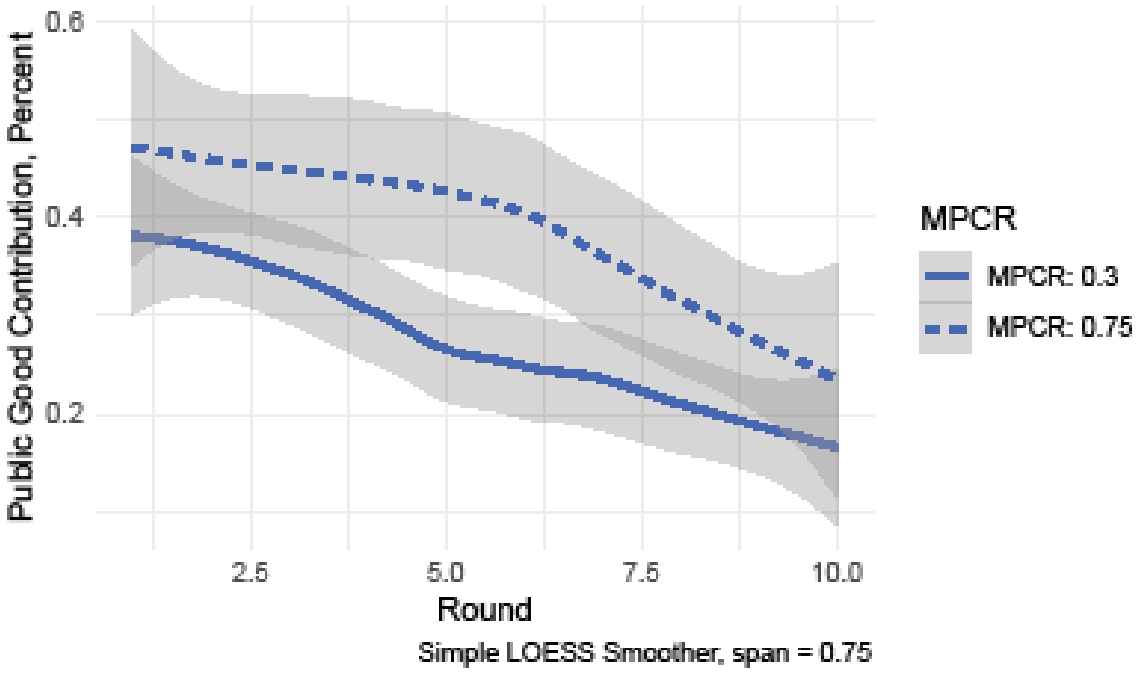

Figure 4. Terminal Node Choices

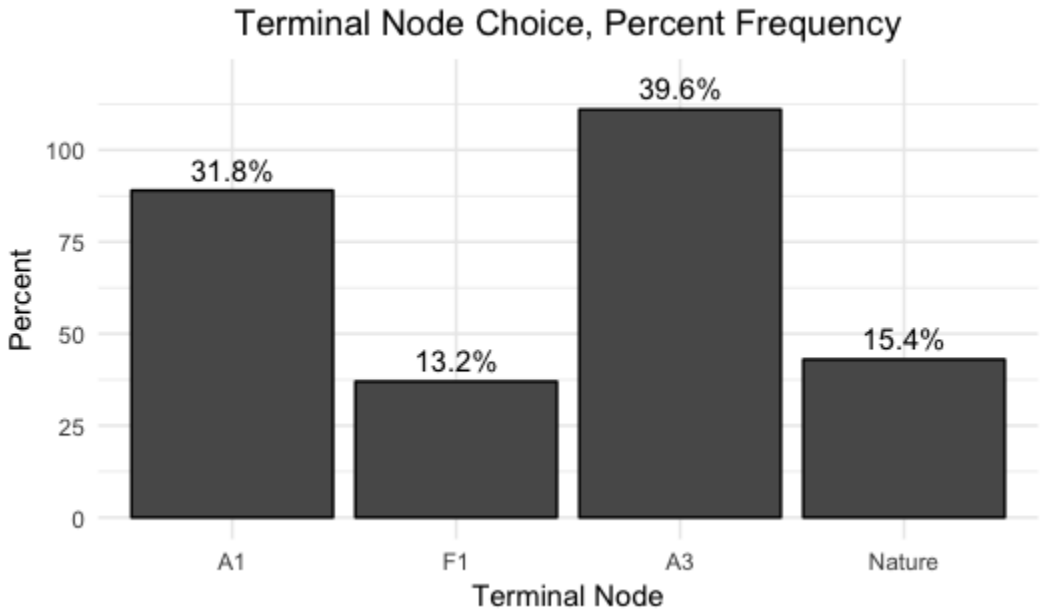

Figure 5. Node Choices by Treatment

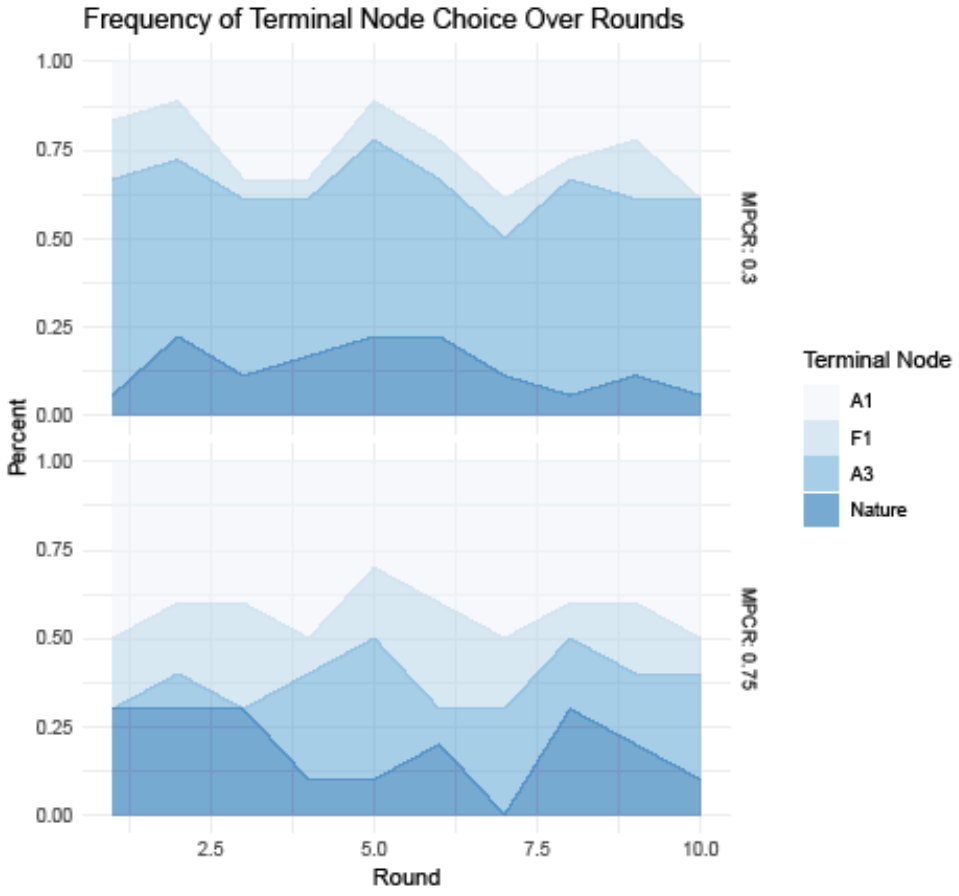

Figure 6. Frequency of Node Choice by MPCR

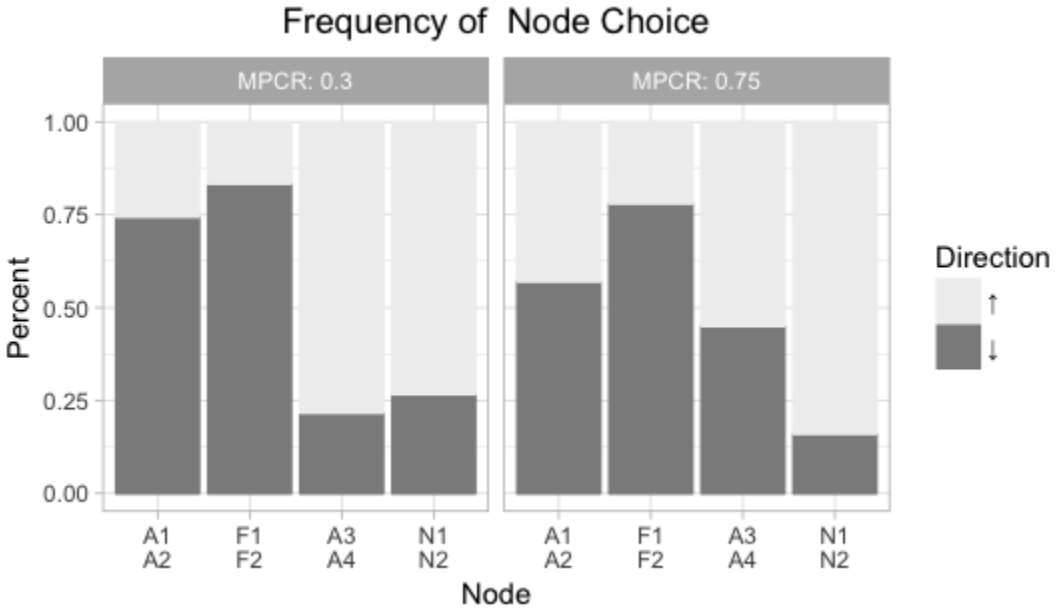

Figure 7. Variation in Node Choices

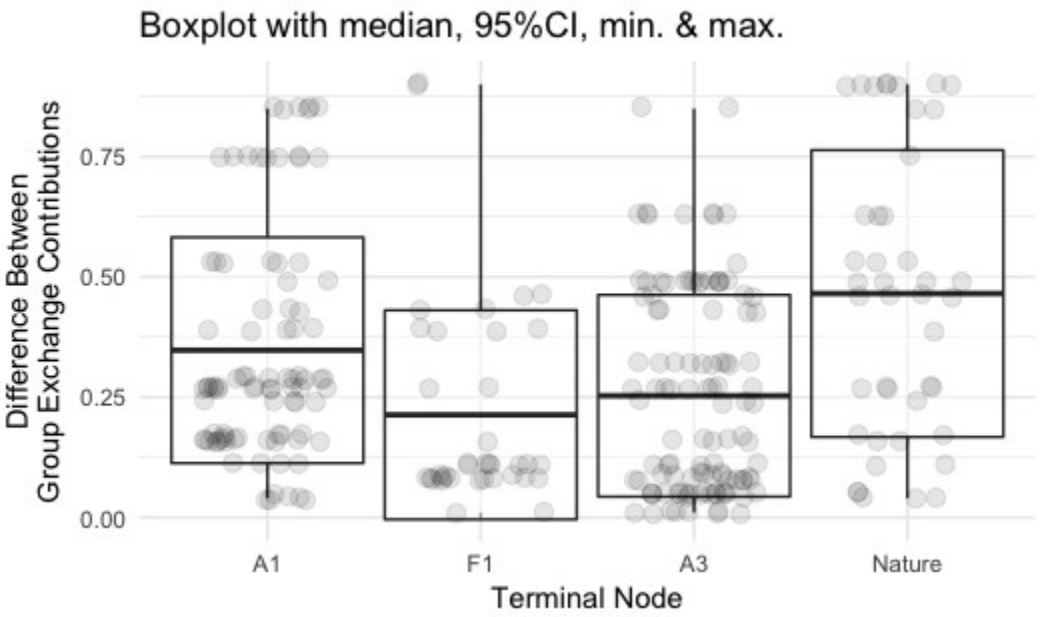

Figure 8. VCM Contributions Lab vs. Field

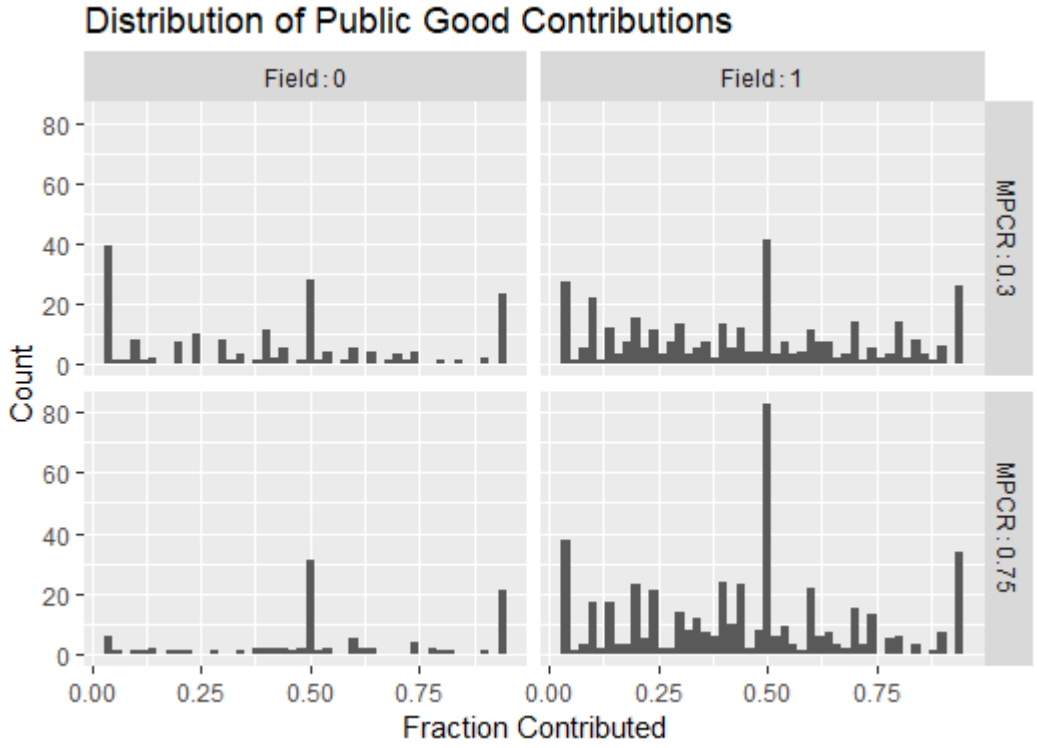

Figure 9. VCM Contributions Over Rounds

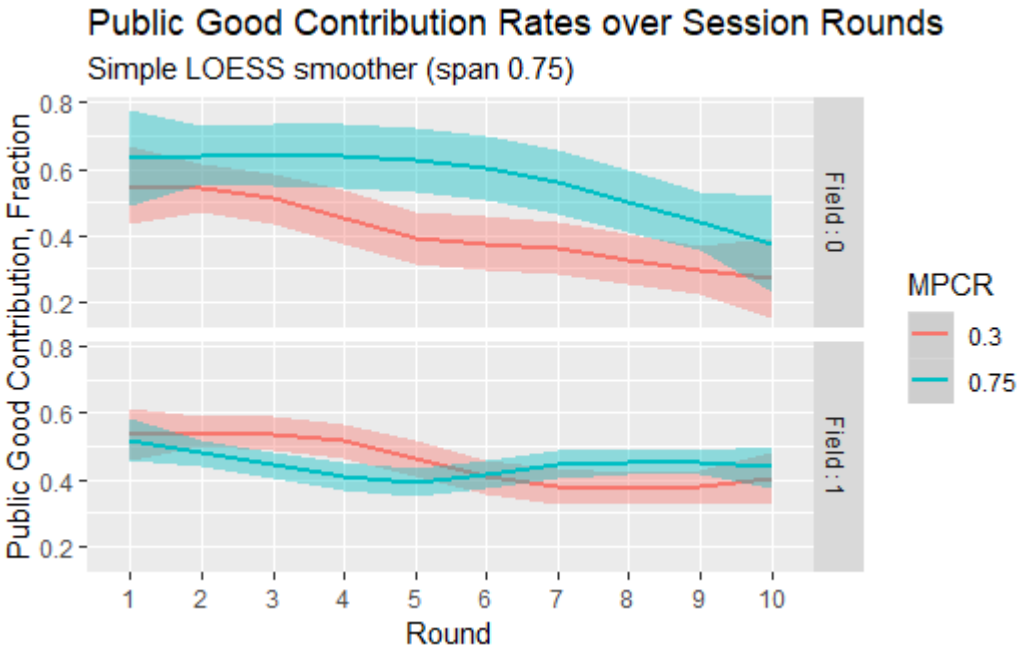

Figure 10. Terminal Node Choices, Lab vs. Field

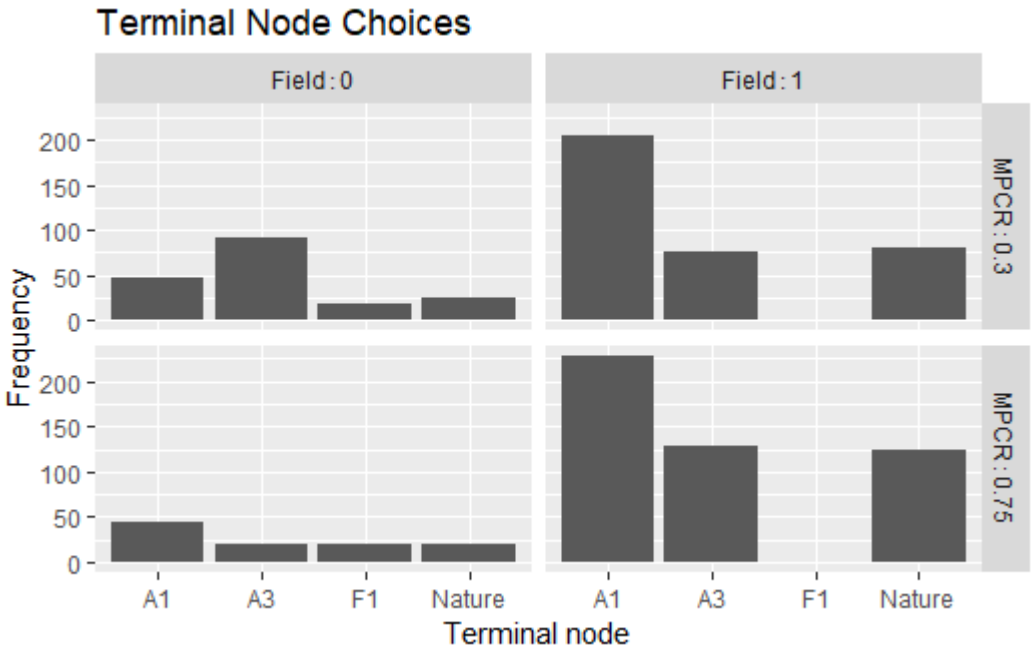

Figure 11. Node Choices Across Rounds, Low MPCR

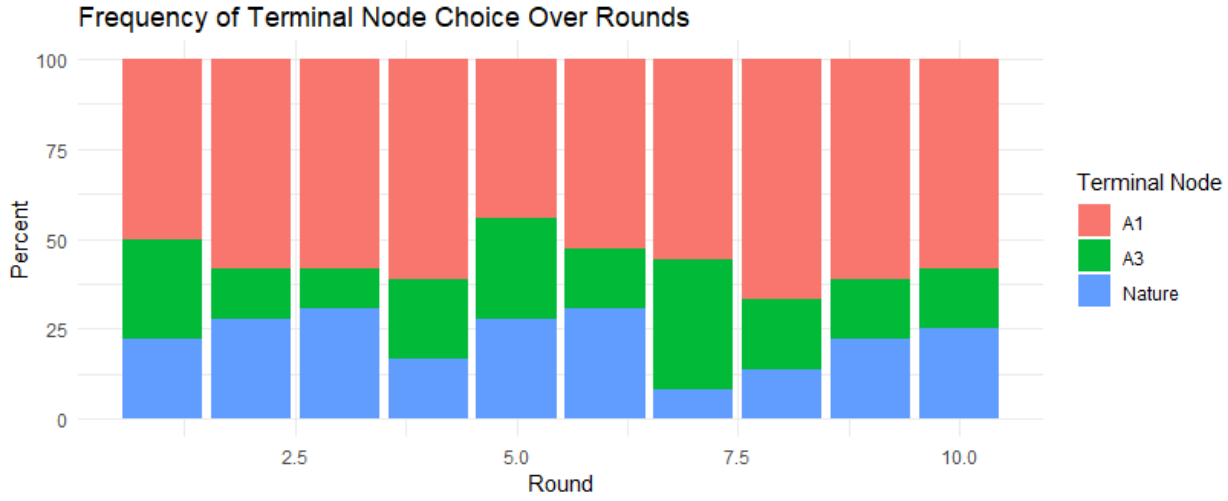

Figure 12. Node Choices Across Rounds, High MPCR