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Chapter 3

Why Does Political Mobilization Work? The Role of Norms and Reciprocity

In Chapter 2 we saw that group identity can explain increased participation to a moderate extent. This chapter addresses a phenomenon closely linked to the activities of political groups: mobilization. I start from the observation that political mobilization works but not all mobilization efforts are equally effective. Whereas door-to-door canvassing can increase voter turnout by as much as 9 percentage points, other methods like direct mailings have a negligible impact. In this chapter I propose a theoretical model and use a laboratory experiment to investigate two non-mutually exclusive channels through which mobilization efforts can work: reciprocity and social norms. The results show that mobilization does not seem to be driven by reciprocity from citizens to the mobilizing agent alone; rather, mobilization efforts work best when they are coupled with a social norm appeal.

3.1 Introduction

Mobilization matters in politics. The last fifteen years have provided a wealth of field experimental evidence which shows that mobilization efforts work (see Green et al. 2013 for a meta-analysis and appraisal of the literature).¹ However, not all mobilization efforts are equally effective. Whereas door-to-door canvassing can in-

¹Rosenstone and Hansen (1993) define mobilization as the “process by which candidates, parties, activists and groups induce other people to participate.” Most commonly studied have been the cases of get-out-the-vote drives and partisan appeals by campaigns, but examples also include “distributing voter registration forms and absentee ballots, driving people to the polls on election day, or providing child care to free parents to attend meetings and demonstrations.”

crease voter turnout by as much as 8.7 percentage points, other methods like direct mailings have proven largely ineffective (Gerber and Green 2000). The evidence suggests that more personal methods like door-to-door canvassing and volunteer phone banks tend to mobilize citizens more effectively than anonymous and massively administered tactics like direct mailings and robot phone calls (Green and Gerber 2004). Though it seems that the ‘human factor’ plays an important role, the psychological process underlying the mobilization mechanism is still far from well understood. In this chapter I empirically test two non-mutually exclusive channels through which mobilization efforts can work: reciprocity and social norm transmission. Given the inherent difficulty in measuring reciprocity preferences in the field and the impracticality of fully observing the content of participation appeals, I conduct a laboratory experiment which extends the canonical framework in the study of laboratory elections (Levine and Palfrey 2007).

The fact that ‘old-fashioned’ mobilization tactics like door-to-door canvassing seem to be more effective than mass media appeals should not mask the fact that mobilization is today more relevant than ever. King et al. (2012) have analyzed the censorship program of the Chinese government, dubbed by the authors the “most extensive effort to selectively censor human expression ever implemented.” They show that Chinese authorities do not react to strong negative criticism of the state; rather, they target and silence “comments that represent, reinforce, or spur social mobilization, regardless of content.” Chinese censors do not fear dissent: they fear mobilization. An experiment of mobilization via social influence conducted by Bond et al. (2012) claims to have changed the participation behavior of 340,000 American citizens in the 2010 congressional elections by implementing simple Facebook banners on election day. The fact that mobilization has a far-reaching impact helps explain the massive endeavors of civic organizations and campaigns. For example, in the 2012 US general election, the National Council of La Raza (the largest national Hispanic civil rights organization in the US) conducted the Mobilize to Vote campaign, a multi-state door-to-door effort to register 180,000 Latino voters.² On the partisan side, the Faith and Freedom Coalition pledged to spend approximately \$12 million to get religious voters to the polls in support of the Republican candidate, Mitt Romney. The organization had files with cell phone, e-mail or other contact information on 17.3 million potential voters in several states that were seen as key in that election. All those voters were supposedly contacted, many of them multiple times, and two million were visited by volunteers.³

²Source: National Council of La Raza, <http://goo.gl/gfIHjJ> (retrieved August 29, 2013).

³Source: Wall Street Journal, <http://goo.gl/cAU3rx> (retrieved August 29, 2013).

The field experimental framework pioneered by Gerber and Green (1999) has been used to test a number of psychological theories with respect to voter participation. Nickerson (2007) tested for conversational network peer-to-peer effects with respect to turnout decisions; contrary to the significant effect found in canvassing by strangers, the evidence shows that an outreach from friends and neighbors fails to mobilize voters. However, it seems that there is voting behavior contagion within households (Nickerson 2008), i.e. an appeal delivered to an household member has spillover effects on the participation behavior of other members of the household.

Several papers test the effectiveness of field interventions in generating participation. In general, these works change the incentives faced by citizens by manipulating the salience of, and feedback on, the social norm of voting. Gerber et al. (2008) vary the scrutiny on one's turnout decision (ranging from ex-post scrutiny by the experimenter to publicly revealing one's participation or abstention to the neighborhood). As expected, moving from a mail-delivered civic duty appeal to the threat of 'public shaming' leads to a considerable increase in participation, showing that social pressure does work. Feelings of personal pride and shame also seem to influence participation decisions: receiving a mail that encourages turnout and shows either a past abstention (shame) or participation (pride) has an effect, with the latter bearing a stronger impact (Gerber et al. 2010). In a similar spirit, Panagopoulos (2010) provides evidence that there is a significant impact of publicly disclosing past participation or abstention on turnout decisions. The same author (Panagopoulos 2011) shows that a gratitude message for past participation increases turnout in future elections. The evidence presented in Gerber and Rogers (2009) suggests that communicating a high turnout social norm (urging citizens to vote because many will do so) is more effective than communicating a low turnout one (many will stay home) on reported intention to vote for occasional and infrequent voters.

3.1.1 Candidate Explanations

The evidence presented thus far sheds light on what social norm interventions can boost voter turnout, but tells us little on the mechanism of mobilization. In other words, why do people participate in politics when a complete stranger asks them to do so? Three candidate explanations can be conceived: a reduction in information costs, reciprocation from the reached citizen to the mobilizer, or adherence to a salient social norm. Regarding the first, mobilization usually conveys practical information on how to participate: how to register, when and where to show up, what one needs to do, etc. In theory, mobilization reduces the costs of participating by providing useful information along these lines. Yet the evidence seems to

suggest that endowing subjects with information on election details (like the location of polling stations) does not significantly increase voter turnout (e.g. Bond et al. 2012). It is also possible that citizens tend to forget upcoming elections and mobilization efforts provide an effective reminder; however, in the words of Green and Gerber (2004), “low voter turnout reflects low motivation, not amnesia”, as evidenced by the fact that prerecorded messages reminding people to vote just before an election do little to increase voter turnout.

The second candidate explanation hinges on the observation that those being reached by civic associations or campaigns might want to return the favor by performing the act they are urged to. A citizen receiving a mobilization attempt, be it a leaflet or a knock on the door, observes an investment of time and money into persuading her to adopt a certain behavior. If this gesture is perceived as kind, the citizen being reached might want to reciprocate by doing what she was asked to. A long literature in psychology and economics has shown that reciprocity is a pervasive behavioral motive (Fehr and Gächter 2000). Online tools of grassroots mass mobilization, like MoveOn.org, harness the power of reciprocity and trust in social networks. The extant evidence points to a potential role for reciprocity. Arceneaux (2007) shows that canvassing by the running candidate of a local election seems to be more effective than by paid canvassers, even though the effect is not statistically distinguishable. The reciprocity hypothesis suggests that people would be more responsive to an appeal by someone who is sacrificing more to mobilize citizens, which in this particular case would be the candidate (whose value of time is particularly high during a campaign). In their meta-study, Green et al. (2013) show that phone calls from volunteer phone banks have an impact on turnout that is roughly double the increase in turnout from commercial phone banks, and more than ten times the impact of pre-recorded messages. This is a hint of the influence of reciprocity, as a volunteer is seen as investing his time in a disinterested manner.⁴

The third candidate explanation for why mobilization works is social norms. This norm is transmitted by the mobilizing agent to the reached citizen and is commonly accepted within the relevant social group. Voting in national or local elections or showing up at a rally can be seen as duties expected from members of groups in society. In this sense they reflect social norms (Elster 1989): they are “shared by other people and partly sustained by their approval and disapproval.” Members of all societies respect a plethora of social norms in their daily lives. In Western societies examples include waiting in queues, covering one’s mouth when yawning, or

⁴In principle, nothing prevents a reached citizen from reciprocating institutionalized or monetized efforts like the ones of commercial phone banks; however, it seems plausible that reciprocal actions should be increasing in non-monetary inputs.

tipping in restaurants. Social norms are “sustained by the feelings of embarrassment, anxiety, guilt and shame that a person suffers at the prospect of violating them” (Elster, 1989). Participating in politics is often regarded as fulfilling a social norm. When behavior is observable, external sanctioning of the social norm of participation by third parties is possible. For example, a union member not showing up at a small rally can be sanctioned by her fellow members. However, behavior is not observable in many instances of political participation like voting or writing letters to officials. In such cases the sanction from disrespecting the norm will tend to be internal rather than external. It is reasonable to conjecture that the sanction from failing to comply with the norm is increasing in its salience. A mobilization appeal does precisely this, i.e. it makes a norm salient. Many people feel compelled to stick to the norm, and most feel bad for not doing so, as evidenced by self-reported turnout 15 percentage points in excess of actual turnout rates (Holbrook and Krosnick 2010).

In this study, I investigate both the reciprocity and the social norm mechanisms as determinants of mobilization’s effectiveness. If a reciprocity rationale explains the effectiveness of mobilization, then who mobilizes makes a difference, as reciprocity behavior may differ depending on the person at which it is directed. The evidence on the impact of reciprocity in political behavior is scarce and mixed in this respect. Whereas there is scant evidence that canvassers who match the ethnic profile of the neighborhood have more success than those who do not (Green and Gerber 2004), the work of Nickerson (2007) testifies to the low impact of friends and neighbors’ attempts at mobilizing each other. The evidence concerning message content is also mixed. On the one hand, Matland and Murray (2012), among others, have shown that message content does not matter; on the other hand, Bryan et al. (2011) find that subtle linguistic clues can have a profound impact on political behavior.⁵ If the salience of a social norm is responsible for the increase in participation then it is worth investigating more systematically the way in which this impact depends on specific messengers and messages.

Testing the role of reciprocity in participation behavior is best done in a controlled laboratory environment, as reciprocity preferences are hard to measure in the field.⁶ A laboratory experiment allows us to isolate the impact of reciprocity by

⁵Asking “How important is it to you to be a voter in the upcoming election?” increases turnout by 10 percentage points more than “How important is it to you to vote in the upcoming election?”

⁶One could devise field experiments where the mobilizing agents differ in characteristics that are hypothesized to influence reciprocity. For example, if the ethnicity or other observable characteristic of a canvasser matches the racial profile of the neighborhood, a higher boost to participation might be expected. However, this requires strong assumptions concerning the preferences of the reached citizens, namely that someone of their own ethnicity commands higher reciprocity. Measuring such preferences in an incentivized way, e.g. by asking citizens to materially reward the mobilizing agent, may crowd out the intrinsic motivation inherent to the act. Measuring such

comparing a treatment where the mobilization decisions are the product of a human subject's effort with one where this is not the case. The laboratory further allows us to observe the specific impact of transmitting a normative appeal by selectively allowing the mobilizing agents to convey a message to the target group. Other questions that can be addressed by an experiment include whether mobilization efforts are directed at subjects contingent on their costs of participation, and whether a voter's reaction to the mobilization effort depends on these costs. In particular, high cost subjects might reciprocate to a greater extent the higher effort of mobilizing them relative to low cost subjects.

Such hypotheses can be tested using a game theoretic model that extends the participation game of the previous chapters. A group member decides how many of the other members of his group to mobilize; the members who have been mobilized then have to decide whether to participate. Mobilization and participation are both costly. The group where more members participate are better off than those where fewer do. Complete information is assumed in order to prevent beliefs from clouding the predictive power of the hypotheses. Applying the concept of quantal response equilibrium (QRE), equilibrium probabilities of participation for all players in all possible electorates can be derived. Given the sequential structure of the game, the subjects mobilizing others can solve for the equilibrium levels of mobilization (sub-game perfect equilibrium).

The experimental design manipulates two experimental features: mobilization and one-way communication. In half of the sessions mobilization is decided by a human subject, while in the other half this observed mobilization pattern is replicated mechanically. This removes the intentionality from mobilization decisions, and therefore should preclude reciprocity-induced boosts to participation. In all sessions, at a pre-determined point in the experiment, the agents who mobilize have the opportunity to transmit a message to their group – which, as we will see, takes the form of an appeal regarding what the group is normatively expected to do.

The results show that mobilization alone is not sufficient to generate higher participation. Furthermore, there is no significant correlation between subjects' reciprocity preferences and participation behavior. The experimental data thus suggests that mobilization's success is not driven by reciprocity concerns per se. However, mobilization is effective when coupled with a normative appeal delivered by the mobilizing subject, leading to an increase in participation of approximately 10 per-

preferences in a non-incentivized way, e.g. using survey questions, may also crowd out intrinsic motivations and further provide unreliable measurements due to an experimenter demand effect (citizens might overstate their reciprocity to individuals of the canvasser's ethnicity as a token of appreciation).

centage points, which is in line with what is typically found in the field.

This chapter is structured as follows: Section 3.2 presents the model, Section 3.3 presents the experimental design and formulates the hypotheses, and Section 3.4 presents the results. A final section concludes.

3.2 The Model

The model put forward in this section is an extension of the participation game of Appendix 1.A. A number of differences are introduced. First, there are two player roles: Alpha and Beta. There is one Alpha player in each group, the remaining are Beta players, i.e. each group is composed of one Alpha and M Betas.⁷ Second, the game has two stages. Alphas move at the first stage while Betas move at the second stage. Alphas decide simultaneously how many Betas to activate (mobilize), i.e. the Alpha of G_i decides how many $m_i \in [0, M_i]$ Betas to activate. Note the change in notation from Chapter 1: $m_i \leq M_i$ now stands for the number of active Betas out of a total M_i Betas. In comparison, the model presented in Chapter 2 corresponds to a situation where there are only Beta players, all of them are active, and $M_i = M_j$.

If a Beta has been activated by the Alpha in her group she is said to be ‘active’; otherwise she is ‘inactive’. Active Betas play a standard participation game. In order to prevent Alphas from sending a leadership or commitment signal to active Betas, Alphas cannot participate.⁸ All players on the winning group (Alpha and Betas, both active and inactive) receive the high material payoff (B^W), while all players on the losing group (Alpha and Betas, both active and inactive) receive the low material payoff (B^L).

There are two types of Beta player in each group: Low and High, denoted by $\Sigma = \{l, h\}$. Activating a Low and High Beta costs c_l^A and $c_h^A > c_l^A$, respectively. Each Alpha has a budget A_i at his disposal, which is exactly enough to activate all the Betas in his group; therefore $A_i = M_i^l c_l^A + (M_i - M_i^l) c_h^A$, where M_i^l denotes the number of Low Betas in group i . What is spent on activating Betas is lost, but what is left (A_i net of activation costs) is kept by the Alpha member. For the sake of tractability I assume that Alphas always activate Low Betas before High Betas. This assumption imposes a minimal degree of rationality on Alphas, as Low Betas

⁷Henceforth, “Alpha(s)” and “Beta(s)” stand for “Alpha player(s)” and “Beta player(s)”, respectively. For the most part, the exposition adopts the viewpoint of the players in group G_i , without loss of generality.

⁸Such a leadership signal could cloud the role of reciprocity in Betas’ choices, in the sense that an Alpha who participated could also reveal a commitment to future activation decisions. Leadership signals have been shown to help overcome coordination failure in situations of group cooperation (e.g. Brandts et al. 2007).

cost less to activate and, as will become clear below, participate at higher rates.

I define an ‘active electorate’ as a pair (m_i, m_j) , which is the number of Betas in each group who are active and can therefore participate. For each (m_i, m_j) , a standard participation game with complete information is played between the active Betas. Participation is costly for (active) Betas: participation costs c_h for a High Beta and $c_l < c_h$ for a Low Beta. The structure and parameters of the game are common knowledge. Therefore, for each (m_i, m_j) there exist equilibrium participation probabilities for each Beta type in each group.⁹ From these participation probabilities the Alphas can derive, for each active electorate, a probability distribution over the possible outcomes: G_i wins and G_j loses, G_i and G_j tie, or G_j wins and G_i loses. For the Alpha in G_i , define a vector containing this probability distribution as:

$$v_i(m_i, m_j) = \left[\Pr_i(\text{win}|m_i, m_j) \quad \Pr_i(\text{tie}|m_i, m_j) \quad \Pr_i(\text{lose}|m_i, m_j) \right]' \quad (3.1)$$

The derivation of each event’s probability is carried out in detail in Appendix 3.A.1; the result for a particular parameterization is provided later in this section. With this information in hand and knowledge of the model’s parameters, the Alpha decides how much of the budget A_i to spend on activating Betas, i.e. she solves:

$$\max_{m_i} A_i - a(m_i) + v_i(m_i, m_j)' b \quad (3.2)$$

where $b = \left[B^W \quad \frac{B^W + B^L}{2} \quad B^L \right]'$ and $a(m_i)$ describes the costs to an Alpha of activating m_i Betas. The Alpha in G_j solves a symmetric problem.

The Alphas choose simultaneously and are aware that the Betas will know how many others (and of which type) have been activated in the two groups. The equilibrium is a pair (m_i^*, m_j^*) . For certain parameter values an interior equilibrium (in pure strategies) exists. This simple model does not have a closed form solution for most group sizes (M_i and M_j larger than 2), as the probability terms underlying $v_i(m_i, m_j)$ are non-linear. I solve the model using numerical methods in order to obtain theoretical predictions.

Before we move on to the parameterization that allows us to characterize the solution that was implemented in the laboratory, a few words about how the model relates to mobilization are in order. The model is quite stylized in order to allow for a straightforward implementation. In particular, the fact that only Betas who have been activated by Alphas are able to participate does not closely represent all

⁹I carry out the analysis for the case of selfish preferences, i.e. the expected utility of participation and abstention are equations 1.1 and 1.2. An extension to social and group-discriminating preferences could be obtained in the fashion of Chapter 2.

forms of mobilization. However, we can think of the activation as voter registration or transportation to the polls provided by a political activist, in the absence of which participation would not be possible. Braconnier et al. (2013) show that home registration visits are successful in increasing both voter registration and voter turnout among the newly registered voters. Of course, ‘real world Betas’ can provide registration or transportation for themselves. However, allowing for an intermediate stage where Betas who had not been activated could choose to activate themselves would add another stage to the game and complicate the model considerably. The gain would be marginal as the purpose of the model is to provide a framework for the empirical test of the behavioral response of subjects who have been activated by an Alpha member, and compare it to the response of those who have been activated by the computer. A further feature that might not seem to be present in all modes of mobilization is the fact that Alphas can keep the money that they do not spend on activation. In the world of campaigning and activism the person mobilizing other citizens is often not handed money that she can ultimately keep. However, there exist organizations behind the people delivering the mobilization efforts, and these organizations have competing ends for their money. In a sense, organizations can use their money to mobilize citizens or allocate it to competing ends. The choice faced by the Alpha member incorporates this trade-off.

3.2.1 Implemented Parameterization and Equilibrium Predictions

The parameters of the model, which are the same for the two groups, are presented in Table 3.1. In solving the model I apply the concept of QRE, for reasons discussed in the Appendix of Chapter 1.

Group size, M	6	Activation cost: High, c_h^A	1
Number of Low Betas, M^l	2	Activation cost: Low, c_l^A	0.5
Benefit for the winning group, B^W	4	Participation cost: High, c_h	1
Benefit for the losing group, B^L	1	Participation cost: Low, c_l	0.5
Alpha’s budget, A	4		

Table 3.1: Parameter values.

In order to obtain point predictions we must choose a value for the μ assigned to Betas, μ^{Beta} .¹⁰ A value of $\mu^{Beta} = 0.4$ was chosen for two reasons. First, it is

¹⁰A detailed derivation of QRE can be found in Appendix 3.A.2. In Appendix 3.A.2 I provide graphical displays of participation probabilities of each Beta type in all possible active electorates, for a large range of μ .

consistent with estimates from experiments which implement participation games. Goeree and Holt (2005) rationalize the data of Schram and Sonnemans (1996) using μ ranging from 0.8 to 0.4; Cason and Mui (2005) estimate μ to be between 0.4 and 0.6; Levine and Palfrey (2007) find $\mu = 0.17$; and Grosser and Schram (2010) base their theoretical predictions on $\mu \geq 0.3$. In a strategic voting setting, Tyszler (2008) estimates $\mu = 0.55$. Second, $\mu = 0.4$ is partially consistent with a maximum likelihood estimation performed on pilot sessions of my experimental design.¹¹ Table 3.2 presents the participation probabilities and outcome distribution for this value of μ^{Beta} .

Active Electorate	G_i				Outcome Distribution			Expected Participation		
	m_i, m_j	p_l	p_h	q_l	q_h	G_i wins	Tie	G_j wins	G_i	G_j
1,0	0.92	-	-	-	-	0.92	0.08	0	0.92	0
2,0	0.58	-	-	-	-	0.82	0.18	0	0.58	0
3,0	0.55	0.15	-	-	-	0.83	0.17	0	0.42	0
4,0	0.52	0.15	-	-	-	0.83	0.17	0	0.33	0
5,0	0.49	0.14	-	-	-	0.84	0.16	0	0.28	0
1,1	0.92	-	0.92	-	-	0.07	0.86	0.07	0.92	0.92
2,1	0.77	-	0.56	-	-	0.75	0.22	0.03	0.77	0.56
3,1	0.72	0.21	0.57	-	-	0.74	0.22	0.04	0.55	0.57
4,1	0.66	0.20	0.56	-	-	0.75	0.21	0.04	0.43	0.56
5,1	0.61	0.20	0.55	-	-	0.76	0.20	0.04	0.36	0.55
2,2	0.90	-	0.90	-	-	0.16	0.68	0.16	0.90	0.90
3,2	0.80	0.45	0.69	-	-	0.57	0.32	0.11	0.68	0.69
4,2	0.74	0.33	0.64	-	-	0.61	0.27	0.11	0.53	0.64
5,2	0.68	0.28	0.61	-	-	0.65	0.24	0.11	0.44	0.61
3,3	0.78	0.54	0.78	0.54	-	0.32	0.36	0.32	0.70	0.70
4,3	0.73	0.41	0.69	0.44	-	0.49	0.29	0.22	0.57	0.60
5,3	0.69	0.33	0.64	0.38	-	0.56	0.26	0.18	0.47	0.55
4,4	0.70	0.42	0.70	0.42	-	0.36	0.29	0.36	0.56	0.56
5,4	0.68	0.36	0.66	0.38	-	0.46	0.27	0.27	0.49	0.52
5,5	0.66	0.36	0.66	0.36	-	0.37	0.26	0.37	0.48	0.48

Table 3.2: Point predictions

Notes: This table presents participation probabilities for each Beta type in each active electorate. Players in G_i (G_j) participate with probability p (q).

The equilibrium probabilities and the resulting probability distribution over out-

¹¹A maximum likelihood estimation using data from the pilot sessions yields $\mu = 0.2$ for the Low Betas, and $\mu \rightarrow \infty$ for High Betas. The reason is that, as we will see below, High Betas over-participate relative to any admissible prediction, and therefore bias the estimate in the direction of random behavior. A value of $\mu = 0.4$ reconciles the high participation observed in the pilot sessions with the typical values found by previous authors. However, using a value of $\mu = 0.8$, as was used in Chapter 2, would only change point predictions and not comparative statics.

comes allows us to close the model. The Alpha members of each group use the information in the 6th-8th columns of Table 3.2 to solve equation 3.2. The two Alphas know the expected payoffs that will result in each of the sub-games that correspond to an active electorate (m_i, m_j) . Using backward induction, they choose the optimal number of Betas to activate, (m_i^*, m_j^*) , which constitutes a sub-game perfect equilibrium.

As with Betas, I derive a QRE of the game played by the Alphas. Figure 3.1 shows the QRE predictions for the number of Betas to be activated by an Alpha, assuming $\mu^{Beta} = 0.4$. Note that the equilibrium is always conditional on the μ assigned to both Alphas (denoted μ^{Alpha}) and Betas. However, this equilibrium is robust to a wide range of μ^{Beta} and μ^{Alpha} . For the depicted values of μ^{Alpha} , we observe that QRE predicts $m_i = m_j = 2$ should be chosen with highest probability. As μ^{Alpha} increases, the difference between the probability of choosing $m_i = m_j = 2$ and other values of m_i and m_j decreases, but the prediction is never overturned, regardless of μ^{Beta} . The most natural assumption is to choose $\mu^{Alpha} = 0.4$, in which case Alphas are expected to activate two (Low) Beta players with probability 0.484, in equilibrium. Figure 3.1 also depicts the NE prediction ($m_i^* = m_j^* = 2$), which is obtained for all values of μ^{Beta} .

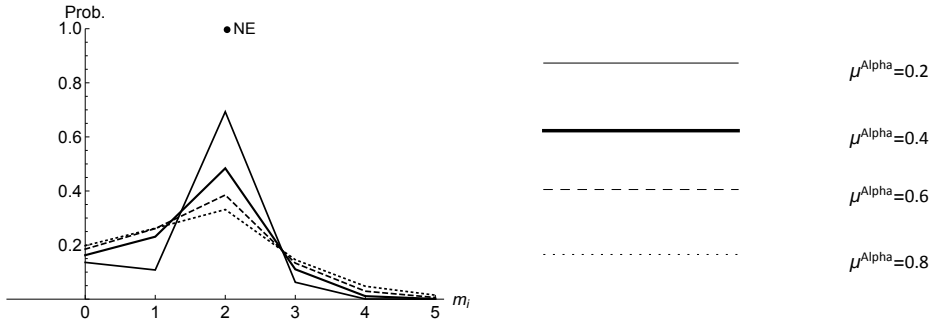


Figure 3.1: QRE and NE predictions for Alphas

Notes: All lines are drawn assuming $\mu^{Beta} = 0.4$.

3.2.2 Comparative Statics

The information presented in Table 3.2 and Figure 3.8 in Appendix 3.A allow us to derive a number of comparative statics predictions. First of all, we note that, within the same group, Low Betas always participate at higher rates than High

Betas. I call this the cost effect. This is an intuitive result: players with higher participation costs will participate less often in equilibrium. Another robust pattern, documented for example by Levine and Palfrey (2007), is the underdog effect: for $m_i + m_j > 3$, expected aggregate participation in the minority is always higher than expected aggregate participation in the majority (i.e. the number in the 9th column of Table 3.2 is always smaller than that in the 10th). The underdog effect reflects both the fact that minorities must participate at higher rates if they are to have a chance of upsetting the majority and the more complicated coordination problem faced by majorities. The competition effect is a related and commonly observed theoretical regularity: holding the total size of the active electorate constant, the participation probability of Betas is decreasing in $m_i - m_j$, $m_i > m_j$. The intuition is that as groups become more similar in size, races become more disputed and individuals respond by participating more. In our example, this translates into the following inequalities: $p_l(3, 0) < p_l(2, 1)$, $p_\sigma(3, 1) < p_\sigma(2, 2)$, $p_\sigma(4, 1) < p_\sigma(3, 2)$, and $p_\sigma(5, 1) < p_\sigma(4, 2) < p_\sigma(3, 3)$, $\sigma = \{l, h\}$; the same inequalities hold for q_l . Finally, in active electorates where $m_i = m_j$, aggregate participation is decreasing in $m_i + m_j$. I refer to this as the weak size effect, which reflects the fact that pivotality is decreasing in electorate size.¹² These predictions will be confronted with the data, as they can help us structure our interpretation of behavioral patterns, ascribing strategic and behavioral effects where they are due. Moreover, they bear interest in themselves as a further test of the pivotal model of turnout vindicated by the evidence of Levine and Palfrey (2007) and Herrera et al. (2014).

3.3 Experimental Design and Hypotheses

The experimental design investigates the role of reciprocity and normative appeals by manipulating two treatment variables: activation by a human subject and a one-way appeal sent by the Alpha to the Betas. Activation by a human subject corresponds to a mobilization effort, and an appeal sent by a subject who mobilizes others can serve the purpose of creating a norm for the group. I will first describe the features of the experimental framework and then discuss the implemented treatments. Earnings in the experiment are expressed in tokens, which are converted into Euro at the rate of 15 Euro cents (approximately 20 Dollar cents) per token.

Each experimental session has two parts. The first consists of a simplified trust game and the second one of what I call the ‘activation-participation game’ (APG),

¹²Levine and Palfrey (2007) test for the size effect, which is a more structured hypothesis that does not hold in this model due to the presence of two cost type subjects.

which is based on the model presented in the previous section. All subjects go through the two parts in this order. The trust game is the same for all subjects, as the treatments are implemented in the APG. A transcript of instructions and comprehension questions can be found in Appendix 3.B.

The trust game (Berg et al. 1995) is a widely used game in the study of trust and reciprocity, allowing us to measure individual attitudes/preferences concerning each of the two. In the trust game, one subject, called the ‘sender’, is endowed with 8 experimental tokens. The sender has to choose how many tokens to keep and how many to send to another anonymous subject, the ‘receiver’. Money sent to the receiver is multiplied by 3. The receiver faces a similar decision: she has to decide how many tokens to keep and how many to send back to the sender.¹³ The amount returned by the receiver is increasing in how reciprocal she is, i.e. the extent to which she rewards and punishes kind or unkind actions. A meta-study by Johnson and Mislin (2011) shows that, on average, senders hand over 50.2% of their endowment to receivers. Receivers send back 37.2% of the multiplied amount, on average. This leads to an approximate equalization of payoffs.

The receiver’s decision is more important for the purpose of this chapter’s research questions, and therefore I introduce three changes to the typical protocol of the trust game. First, subjects play both roles and do so sequentially. This allows us to obtain both trust and reciprocity measurements from all subjects.¹⁴ Second, the receivers input their decision using the strategy method, which is adopted to capture subjects’ reciprocity attitudes towards different levels of trust. Third, senders must send either 0, 4 or 8 tokens to the receiver. This restriction was implemented in order to allow for the use of the strategy method while keeping this part of the experiment parsimonious. Note that 8 tokens induces round numbers when calculating the amount to send back according to many heuristics (the typical fairness heuristics of returning $1/2$ or $2/3$ of the multiplied amount are easy to compute, as well as the less frequent $1/4$ or $3/4$).

Each subject is informed that she is paired with two other subjects: the one she sends 0, 4 or 8 tokens to, and the one to whom she may send a share of the 12 or 24 tokens back. The pairing of a subject with two others prevents interdependencies

¹³Assuming selfish preferences, the sub-game perfect equilibrium is for the sender to send 0 tokens to the receiver and for the receiver to keep whatever she is handed by the sender. The amount sent to the receiver is increasing in the extent to which the sender ‘trusts’ the receiver to share the multiplied amount. In addition, the amount sent to the receiver is increasing in the degree of altruism and the preference for efficiency of the sender.

¹⁴Burks et al. (2003) report evidence that playing both roles decreases the amount sent if subjects are aware of this beforehand, and decreases the amount returned, regardless of whether playing both roles was known beforehand. This pattern does not show up in my data.

between the amount sent and the amount returned.¹⁵ In order not to induce different individual histories, subjects are informed that results from this part of the experiment would only be known at the end. Looking at the results we conclude that the data from this experiment’s trust game is very similar to the typical pattern found in the literature.¹⁶

The second part of the experiment (APG) is based on a parameterization of the model of Section 3.2. The values in Table 3.1 correspond to the token amounts used in the experiment. In each period, the stage game corresponding to the model of Section 3.2 is played. Each subject goes through three blocks of 27 periods each. Each block is further divided into three sub-blocks of 9 periods each. In the first period of each sub-block Alphas make their activation decisions. In the remaining 8 periods of a sub-block, active Betas decide whether or not to participate. Active Betas have no period-to-period feedback, both in order to avoid reaction to period-to-period results and to allow them to implement mixed strategies (recall that the model’s predictions are participation probabilities).¹⁷ Alphas and inactive Betas observed their electorate’s results every period. At the end of a sub-block all members of an electorate were shown the results of the past 8 periods. Results consist of aggregate participation in each period and cumulative earnings in the block. All subsequent sub-blocks had the same structure. Groups, roles (Alpha and Beta) and Beta types (High or Low) were kept constant within each block; this means that from a sub-block to the next, within a block, only the activation status of Beta players could change. At the end of each block, groups, roles and Beta types were drawn anew. Figure 3.2 presents a diagram exemplifying the sequence in block 1 (sub-blocks were numbered from 1 to 9, so block 3 comprised sub-blocks 7 to 9, for example).

In the periods in which the active Betas face the participation decision, Alphas and inactive Betas are asked to provide a rating of the previous period’s results using a three-step rating scale.¹⁸ This information is useful as a proxy for the

¹⁵For example, a subject A who sends her full endowment to subject B might feel less inclined to reciprocate what subject B sends her. If subject A receives tokens from subject C, this kind of interdependency is avoided.

¹⁶Appendix 3.C provides a concise analysis of the trust game data.

¹⁷In participation games, previous period results (whether a subject was pivotal, how many others participated, etc.) are strong predictors of current period behavior. For example, Duffy and Tavits (2008) show that individual participation is increasing in pivotality events and previous period participation, whereas it is decreasing in the own group’s aggregate participation. Grosser and Schram (2006) also show that previous period participation in the own group correlates significantly with participation decisions. This is undesirable to the extent that treatment effects become statistically clouded. Regarding the implementation of mixed strategies, subjects employed them in a third of all sub-blocks.

¹⁸There were three available ratings: “satisfied”, “neutral” and “dissatisfied”.

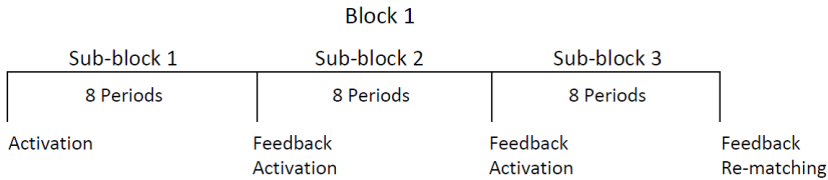


Figure 3.2: Sequence in one of the blocks of the experiment.

beliefs of Alphas and inactive Betas. For example, we can assess whether an Alpha member who activates more Betas than the payoff-maximizing number becomes disappointed when participation is below the winning threshold. Asking Alphas and inactive Betas for input also helps them remain engaged with the experiment. Comparing this feature with instances of political participation, we can conceive of inactive Betas as those citizens who are not able to participate themselves but who observe the (aggregate) outcome. Subjects are paid for the trust game and for one randomly picked block of the APG, both of which are added to the show-up fee.

3.3.1 Treatments

In order to investigate the role of reciprocity, sessions where activation is carried out by human subjects are compared (between subjects) to sessions where activation happens in a pseudo-random way. In the former type of session, mobilization is carried out by the Alpha of each group and thus constitutes an intentional process; I refer to this treatment as *Mob*. The activation patterns observed in *Mob* sessions were subsequently implemented in sessions where the Alphas were present but were not in control of activation decisions. These sessions serve as a control treatment (*Ctr*), as no intentionality in activation decisions is present and therefore reciprocity concerns should be absent. The Alpha members are still affected by the observed activation pattern, but all subjects take it as given and not as the product of the Alphas' choices. In *Mob*, active Betas are activated by their group's Alpha, and may thus incorporate reciprocity considerations in their decision to participate. In *Ctr*, active Betas are simply informed that they did or did not become active, and therefore reciprocity concerns cannot play a role in their decision to participate.

The second manipulated experimental variable was free form one-way communication from the Alpha to the Betas in his group. This was varied within subjects. In both treatments, at the beginning of block 2 (after activation but before Betas could make any decision), subjects are told that the Alphas would have 90 seconds to send written text to the Betas in their group. The experiment only proceeded

after all subjects have read this message and give their permission for the one-way communication to begin, i.e. Alphas have enough time to plan what they want to transmit to the Betas in their group. This window of free form communication allows Alphas to convey an appeal to the group, which is expected to take the form of a group norm. The participation behavior from block 2 (the ‘appeal block’) can be compared to the corresponding behavior in blocks 1 and 3, where an appeal is not present.

3.3.2 Hypotheses

In this sub-section I formulate a number of testable hypotheses on the questions under study. The first hypothesis concerns the role of mobilization on participation, which is assumed to hinge on a reciprocity rationale. To be sure, a considerable literature in experimental economics has studied the importance of reciprocity in shaping individual behavior within the framework of social preferences. The influential outcome-based social preference models (e.g. Fehr and Schmidt 1999 and Bolton and Ockenfels 2000) cannot account for many regularities in games where intentions and reciprocity play a role. Using a simple trust game framework, McCabe et al. (2003) show that reciprocity plays a major part in subject’s reciprocation decisions. Falk et al. (2008) provide further evidence on the role of intentions for reciprocal behavior. Their experimental design bears resemblance to the one proposed in this chapter as they compare a treatment where trust behavior is the product of a subject’s choice with one where trust behavior follows a random draw from the observed distribution of choices. In a game with distributional consequences, subjects are more generous towards kind distributional choices made by human subjects than to choices (with the same distributional consequences) dictated by chance. The authors show that fairness intentions are crucial for both positive and negative reciprocal behavior, and largely supersede outcome inequality considerations in terms of magnitude.

Bearing in mind the extant field and experimental evidence, I conjecture that subjects who have been intentionally mobilized by another subject will reciprocate the mobilization effort by participating at an increased frequency. The underlying rationale is reciprocity: Betas who have been activated by an Alpha perceive mobilization as a kind act, since they become able to participate and pursue their group’s interests. They should reciprocate by participating more. The first hypothesis follows:

Hypothesis 1: *Mobilization (activation) leads to higher participation.*

Participation in Mob is higher than in Ctr.

This hypothesis will be evaluated in light of the theoretical model proposed in Section 3.2. We expect subjects in *Ctr* to participate in line with the predictions presented in Table 3.2, whereas subjects in *Mob* are expected to participate at higher rates. This hypothesis does not follow directly from theory, as players' preferences do not explicitly account for reciprocity. There exist game theoretical models that incorporate reciprocity (e.g. Dufwenberg and Kirchsteiger 2004 and Falk and Fischbacher 2006), but their application would pose significant problems. First, the theory of Dufwenberg and Kirchsteiger (2004) makes reciprocity exclusively dependent on beliefs about how kind other players are. As the authors note, a good set of predictions requires a proper measurement of first- and second-order beliefs, which is possible but would complicate further the experimental design. A problem that is common to both theories is that the parameter that governs reciprocity preferences is exogenous and therefore would have to be estimated from data for the predictions not to be *ad hoc*. The calibration of the model would require more than a simple trust game. To be sure, the authors apply their models to games that are substantially simpler than the APG. In any case, Falk and Fischbacher's (2006) model predicts that in a sequential public goods game there can be positive contributions to the public good in situations in which the Nash equilibrium is to contribute zero. This hints at the direction in which reciprocity might work in a framework like the present one, where free-riding and group benefits are also present.

Casual evidence suggests that reciprocity is not unconditional: kinder acts will tend to generate kinder responses than less kind acts. Put differently, reciprocity is increasing in an act's kindness. In the realm of mobilization efforts, I conjecture that someone who requires a larger mobilization effort will reciprocate to a greater extent. In other words, those who have higher mobilization costs will return the act of being mobilized with a higher boost in participation than those who have lower mobilization costs. It is well known that campaigns and activists target those who are more likely to participate, i.e. those who have low costs of participation (Rosenstone and Hansen, 1993). Often, those with the lowest costs of participation (the more educated, the more mobile, etc.) are also the easiest to mobilize. However, to the best of my knowledge, there is no evidence on how citizens with different mobilization costs respond to the mobilization effort. For example, inhabitants of a remote region have both high costs of participation and high costs of mobilization; however, if a campaign or an activist reaches them, the increase in participation may be higher than observed for easily reached citizens. The proposed setting allows

for such a test since we can observe deviations from the predicted participation probabilities for both high and low cost subjects. If the first hypothesis is confirmed, a corollary hypothesis follows:

Hypothesis 1b: *High cost subjects will deviate from the predicted participation levels more than low cost subjects.*

A normative appeal to the group is expected to guide its members actions in the desired direction. My conjecture is that Alphas will appeal to Betas to participate. Conditional on this being observed, I expect participation to increase. As discussed in the Introduction, a normative appeal to the group makes an implicit social norm salient. The participation game is a situation in which subjects would generally be better off if all others in their group participated while they abstained themselves. This creates strong free-rider incentives. Drawing a parallel with similar situations outside of the laboratory (an election, a sports competition, a faculty meeting, etc.), participation is prescribed by social norms: a guiding principle they adhere to in order to make the group better off, despite the fact that this can be detrimental from a rational and selfish perspective. The appeal block summons obedience to a social norm insofar as an expectation on how subjects ought to act is presented, and some form of sanctions or rewards is involved. Whereas material sanctions are undoubtedly important for the observance of the conditional cooperation social norm (Fehr and Fischbacher 2004), the fact that aggregate results are made public conjures a “still, small voice of censure or approbation from within”, which has been shown to be crucial for norm adherence (Kerr et al. 1997). The second hypotheses is:

Hypothesis 2: *An appeal that makes an implicit group norm salient leads to higher participation. Participation in the appeal block will be higher than in the other two blocks.*

I refer to these three hypotheses as ‘behavioral’ hypotheses since they imply a departure from standard self-interested preferences (reciprocity must matter for 1a and 1b, and normative behavior for 2). All three hypotheses make clear comparative statics predictions, which are tested by cross-treatment comparisons. In addition to the three behavioral hypotheses, the strategic comparative statics of the game enumerated in Sub-section 3.2.2 will also be tested. This can be done by pooling the data across treatments together and focusing on subject types, subject roles and electorate configurations.

3.4 Results

The experimental sessions were run at the CREED laboratory of the University of Amsterdam in April and June 2013. The experiment was programmed and conducted in z-Tree (Fischbacher 2007). A total of 144 subjects participated in six sessions, three for each treatment. Participants were recruited online from a subject pool of students at the University of Amsterdam.¹⁹ Forty-four per cent of the participants were female and 58% were Economics (and related subjects) majors. The typical session lasted 1 hour and 30 minutes, with average earnings of 18 Euro (which includes a show-up fee of 7 Euro).

I start the analysis of results by looking at the activation decisions of Alphas, and then proceed to test the behavioral hypotheses. At this point I will ignore how the data relates to the point predictions of the model, which will be carried out in a subsequent sub-section. A final sub-section assesses the robustness of the results using regression analysis.

In equilibrium, Alphas should activate two Low Betas and zero High Betas each (see Figure 3.1). Table 3.3 presents activation decision frequencies. We observe that Alphas activate two Low Betas 86.1% of the times, but at least one High Beta is also activated 82.4% of the times. The median activation decision is 2 Low Betas and 3 High Betas, i.e. the Alphas activate all the Betas in their group more than half of the times. This over-activation contradicts the equilibrium predictions. However, we do observe that Alphas activate Low Betas before High Betas; this so-called minimum rationality requirement is violated 0.9% of the times only, which lends credibility to the assumption used in the theoretical analysis. The distribution of activation decisions is remarkably stable throughout time, as can be observed in Figure 3.3. The observed over-activation is thus not the product of an escalation (or de-escalation) of competition, in which activation levels would be low in the beginning of a block and high towards the end (or vice-versa). The reasons underlying the observed over-activation lie probably somewhere between social preferences and joy of winning. An Alpha member facing the decision of allocating a budget between his or her own pocket and activating his or her group's members, tends to choose the latter. This maximizes the chances of his or her group winning at the cost of reduced earnings for himself or herself. For example, the equilibrium active electorate, $(m_i^*, m_j^*) = (2, 2)$, entails an expected payoff of 5.5 for each Alpha, while the modal electorate,

¹⁹Two pilot sessions were run (48 subjects) prior to those reported here. These sessions implemented a different parameter configuration, and served the purpose of testing subject comprehension of the experimental protocol, assessing the pace of subjects in the experiment and providing data for model calibration.

$(m_i, m_j) = (5, 5)$, implies an expected payoff of 2.5. An Alpha activating 2 Low Betas makes his or her group an ‘easy prey’ for a competing group with more than 2 active Betas, despite his or her high material prospects. For moderate levels of social preferences the material losses imposed on her group’s Betas might not compensate the personal gain. In the same direction, an Alpha who wants to simply win the game will activate all the Betas since the probability of winning is strictly increasing in the own group’s size, all else equal.

The actions of an Alpha who activates many Betas at a personal material cost, such that Betas can participate and determine the outcome through their actions, are probably regarded as kind acts. The fact that Alphas deviate from the equilibrium predictions, both in the case of full (NE) and bounded (QRE) rationality, disconfirms the model’s predictions under the assumption of selfish preferences on the part of Alphas. However, this should not interfere with the test of the listed hypotheses; if anything, Alphas that over-activate are more likely to be regarded as kind and command more reciprocity as a consequence.

		Low Betas			
High Betas	0	1	2	Total	
0	8.3	4.6	4.6	17.6	
1	0	0	3.7	3.7	
2	0	0	20.4	20.4	
3	0	0.9	57.4	58.3	
Total	8.3	5.6	86.1	100	

Table 3.3: Activation decisions

Notes: Frequency of each active electorate in the data (in percentage).

3.4.1 The Impact of Mobilization

Before proceeding with the analysis, a previous point on the data’s dependence structure is in order. I argue that there is a substantial degree of independence of observations across blocks. To be sure, the independence of observations across blocks can only be assessed statistically, something that is done in detail in Appendix 3.E. That analysis shows that the results of one block do not influence behavior in subsequent blocks. This is not to deny that experience accumulates and that learning can take place, but rather that the results experienced in one block do not influence subsequent block’s observed behavior. For the non-parametric tests I will use a pair of electorates in a given block (i.e. all subjects in the same session) as an independent observation. All tests are two-sided, unless otherwise noted.

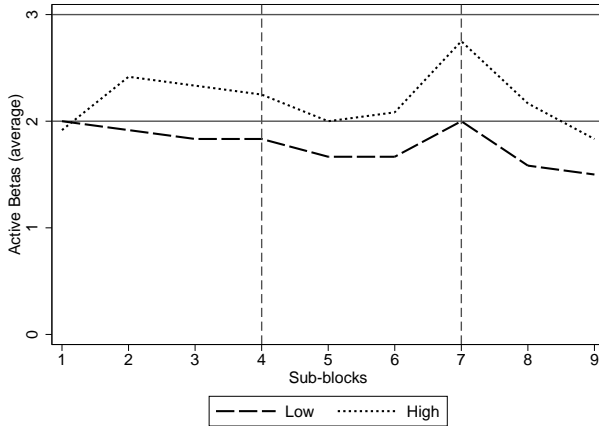


Figure 3.3: Activation decisions of Alphas through sub-blocks.

The first hypothesis posits that participation should be higher when subjects are mobilized by a human subject (*Mob*) relative to when they are not (*Ctr*). The rationale underlying this conjecture is that reciprocity should lead to an increase in participation. To test this hypothesis we look at the aggregate levels of participation of *Mob* and *Ctr*, which are depicted in Figure 3.4. Aggregate participation is measured conditional on being active, i.e. it is the ratio of the number of active Betas who participate in an active electorate divided by the size of the active electorate, $m_i + m_j$.

The data shown in Figure 3.4 provides no evidence of an overall impact of mobilization on aggregate participation levels. The participation levels in the two treatments are remarkably close to each other: 75.2% in *Mob* and 75.8% in *Ctr*. Participation is higher in *Ctr* in the first block, whereas in the second block the pattern is reversed. In the last block participation levels in the two treatments are close to each other. Since the experimental design imposes the same pattern of activation in the two treatments, I carry out Wilcoxon matched-pairs signed-ranks tests (W-MP) on the data. Using the average participation in a block as an observation, a comparison between the 9 pairs of treatment and control observations shows no statistical evidence of a mobilization effect (W-MP $p = 0.76$). Restricting attention to the three pairs of observations from the two blocks where a difference seems to be present, we obtain no statistical evidence for block 1 (W-MP $p = 1.00$) and marginal insignificance for block 2 (W-MP $p = 0.11$). These results point to the irrelevance of mobilization for aggregate participation. The null of no difference between *Mob* and

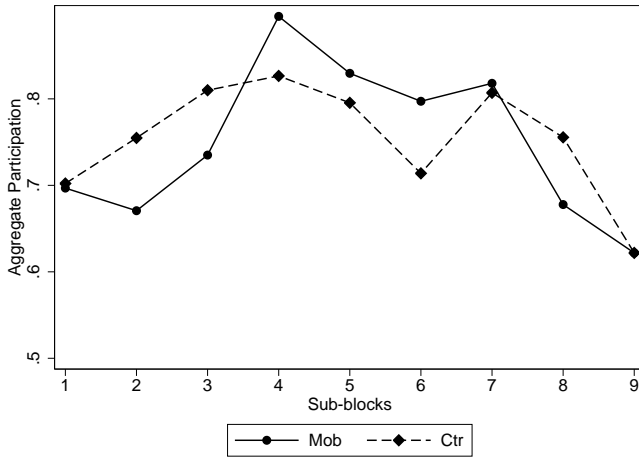


Figure 3.4: Aggregate participation across treatments

Notes: Each point represents average aggregate participation in the corresponding sub-block.

Ctr cannot be rejected, which means that reciprocity from the Betas to the Alphas does not seem to influence participation decisions. However, there is a hint of an interaction effect between mobilization and the appeal. The participation levels in the appeal block of *Ctr* are in line with the other two blocks, whereas in *Mob* that is not the case. In *Mob* the appeal seems to induce a boost in participation. Given the low number of observations of the presented non-parametric test, a more definite answer to this question will be given in the next sub-section.

Hypothesis 1b, a corollary of Hypothesis 1, states that if reciprocity lead to higher participation, High cost subjects would participate at higher levels as their activation should be perceived as a kinder act. The observed null effect of reciprocation can in principle be due to a differential response from High and Low cost subjects, e.g. Low cost subjects are irresponsive to activation while High cost subjects are responsive, but since the former are activated more often the pattern does not show up in the data. In order to investigate this possibility, Figure 3.5 presents the participation patterns of the two cost level groups in each treatment. Whereas High cost subjects participate at lower rates than Low cost subjects (80% versus 72%), the response to treatments is not more pronounced for High cost subjects. We fail to reject Hypothesis 1b (W-MP $p > 0.50$).

A final check on the potential role of reciprocity can be carried out by investi-

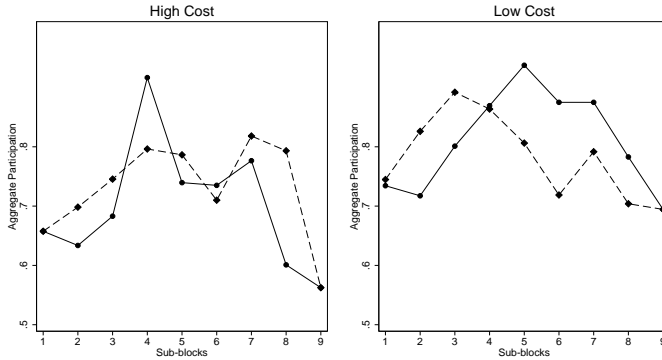


Figure 3.5: Participation and individual costs

Notes: This graphic presents the data of Figure 3.4 broken down by cost levels (High and Low).

gating whether reciprocal attitudes correlate with participation behavior. For this purpose, I define two types of reciprocator: strong and weak. A strong reciprocator is a subject who, as a receiver in the trust game, returns more than what the sender sent her. A strong reciprocator sends back simultaneously more than 4 and more than 8 tokens in case the sender sent her 4 or 8 tokens, respectively; recall that tokens are multiplied by 3 by the experimenter, which means that the receiver gets 12 or 24 tokens in each of these cases. In other words, a strong reciprocator leaves the sender better off than he would be had he not trusted the receiver. All other subjects are weak reciprocators. The share of strong reciprocators in the data is 43%. Figure 3.6 presents the data of Figure 3.4 broken down by reciprocator type. What we observe is that, contrary to our conjecture, strong reciprocators are the least sensitive to treatment manipulations (W-MP $p = 0.37$ and $p = 0.29$ for strong and weak reciprocators, respectively). Instead, it seems to be weak reciprocators who are most susceptible to the manipulation implemented in the appeal block, exhibiting higher participation levels (the participation gap between the appeal block and the two other ones is 14.1 percentage points for weak reciprocators, and 0.9 percentage points for strong reciprocators). The next sub-section investigates the response to the Alpha's appeal in more detail.

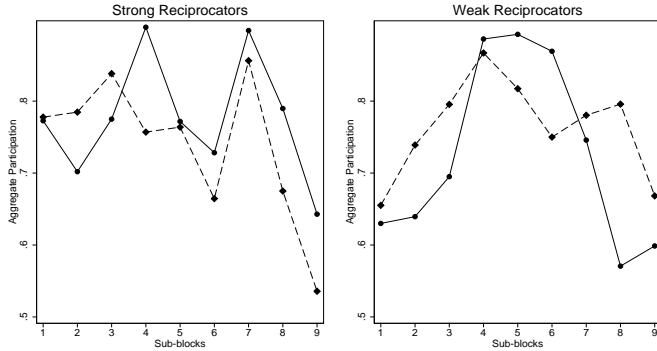


Figure 3.6: Participation by reciprocator type

Notes: This graphic presents the data of Figure 3.4 broken down by reciprocator type.

3.4.2 Participation Appeals and Group Norms

Hypothesis 2 puts forward that an appeal by the Alpha to the Betas further increases participation, provided it proposes a desirable course of action - i.e. a norm for the group to follow. Recall that Alphas have the possibility of delivering written messages to their group's Betas for 90 seconds after the activation decision of sub-block 4. It has been shown that within-group discussion in participation games leads to increased participation (Bornstein et al. 1989, Schram and Sonnemans 1996b, Goren and Bornstein 2000). I expect a one-way appeal to have the same effect, but it is important to stress the differences between the open discussion implemented by the cited works and this experiment's manipulation. Open discussion allows subjects to propose, discuss and commit to a given strategy. The fact that these promises amount to cheap talk has not prevented intra- and inter-group cooperation strategies to arise. Furthermore, open discussion allows subjects to infer others' intentions as well as to create a sense of group identity. The messages sent by the Alpha can propose a strategy and motivate it, but no commitment for the participation game is present as Alphas cannot participate themselves. Alphas could potentially convey intentions about future activation decisions (sub-blocks 5 and 6), but that was never the case. The absence of communication from the Betas to the Alpha also attenuates the case of group identity enhancement.

The appeals sent by the Alphas to the Betas can be found in Appendix 3.F. Alphas sent an average of 15 words to the Betas when they were responsible for activation decisions (*Mob*), and 12 when they were not (*Ctr*). This difference is

not statistically significant according to a Wilcoxon-Mann-Whitney rank-sum test (MW; $p = 0.13$). Two Alphas in *Ctr* chose not to send an appeal to the Betas, while all Alphas in *Mob* sent an appeal. Two typical appeals are reproduced here:²⁰

Alpha₁ (Mob): I want everybody to buy a disc each round

Alpha₂ (Ctr): lets try buying 4 discs. everyone buy one and lets see what they do.

The great majority of appeals request participation (disc buying) from Betas in one form or another: conditional on a message being sent, the share is 86.4% (79.1% if we consider all appeals). This number is similar across treatments: 91.6% in *Mob*, 80% in *Ctr*. In sum, the Alphas transmit an appeal which puts forward a norm to be followed by the group (e.g. ‘I want everybody to buy a disc each round’, i.e. ‘I want everybody to participate’; ‘everyone buy one and lets see what they do’, i.e. ‘everyone participate and let’s see what they do’), often accompanied by a rationale relating to group payoffs or how participation will leave the group better off despite implying a personal sacrifice. This configures a manipulation that comes as close as possible to making an implicit social norm (costly contribution to the group’s effort) explicit in a laboratory environment, without literally invoking external norms.

Figure 3.7 shows aggregate participation in the appeal block compared to the other two blocks. We observe that participation is higher when subjects receive an appeal: 81.1% versus 72.9%. Comparing the aggregate participation rate of the appeal block of with the pooled aggregate participation rate of the other two blocks of each session (i.e. each session contributing two observations, one for the appeal block and one for the non-appeal blocks), the difference proves to be statistically significant (MW $p = 0.02$). The null of no difference between appeal blocks and non-appeal blocks is rejected in favor of the alternative Hypothesis 2. In other words, the Alphas’ appeals induce an increase in participation. However, a closer observation of Figure 3.7 suggest that this effect is mainly driven by the mobilization treatment. In fact, the appeal induces an increase of 13.3 percentage points of aggregate participation in *Mob*, compared to an increase of 3.2 percentage points in *Ctr*. Performing the same statistical test on each treatment separately confirms this observation: whereas the difference is still statistically significant in *Mob* (MW $p = 0.05$), in *Ctr* it becomes insignificant (MW $p = 0.28$).

The more pronounced effect of a group norm by those who are in charge of mobilization can be due to a number of reasons. On the one hand, the Alphas

²⁰Recall that the participation decision is framed as buying a disc. An appeal to buying a disc is therefore equivalent to an appeal to participation.

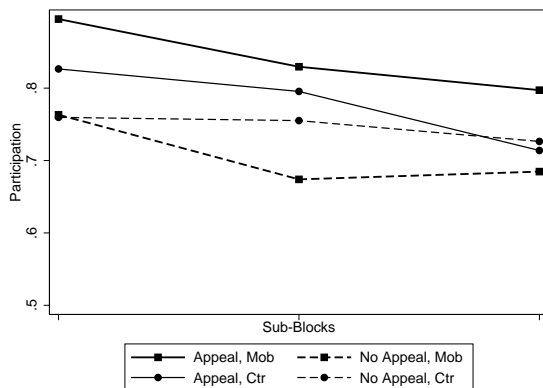


Figure 3.7: Participation and normative appeals

Notes: Participation in Appeal versus non-Appeal blocks, across treatments.

in *Mob* might feel more entitled to demand a particular behavior from Betas, and deliver the norm in a more assertive or motivational way. On the other hand, the group norms might be perceived differently by Betas in the two treatments. For example, a Beta in *Mob* may perceive the Alpha's request as more legitimate than if the exact same request was delivered in *Ctr*. Investigating these points further is interesting, but an eventual difference in the motivational content of messages is endogenous to the mobilization process, and therefore part of the effect we are trying to observe. We conclude that a social or group norm is especially effective when the person delivering it is also the one responsible for mobilizing others, possibly because the message or the context in which it is delivered is, or is perceived as, more motivational, legitimate, etc. The norm becomes less effective when delivered by someone who was not responsible for mobilization.

3.4.3 Test of Equilibrium Predictions

In this sub-section I analyze the experimental data in light of the predictions presented in Table 3.2 and the four comparative statics results put forward in Sub-section 3.2.2. The participation probabilities of Table 3.2 correspond to what we should observe when individuals are self-interested, exhibit a moderate degree of bounded rationality and are not subject to influences that fail to be captured by the strategic structure of the game. In other words, these predictions correspond to a situation where reciprocity concerns and other influences, like a normative appeal,

are absent. Table 3.4 presents the observed participation rates for each Beta type and the resulting aggregate participation rates for each active electorate. As mentioned at the beginning of the section, the activation levels were in general high, which leads to a concentration of data points on the larger electorates.

A noteworthy feature of the data is the high participation levels (above 70%). However, the deviation was driven for the most part by high cost subjects. Subjects seem to be less responsive to cost than the theory predicts and other experimental results have shown (Levine and Palfrey 2007). It is possible that the circumstances of the APG, in which not all subjects can participate and determine the group outcome induces a lower sensitivity to cost.

Roughly 2/3 of the estimated p and q are above the model's predictions. However, on average, the difference is not substantial: the estimated participation probabilities lie 9 percentage points above the predicted probabilities. This deviation is mostly driven by high cost types. The model predicts that high cost types should never participate at a probability higher than 0.5 (see Figure 3.8). In the data this is only supported in lopsided electorates, i.e. when $m_i - m_j \geq 3$. In the remaining cases the participation of high cost types is invariably and substantially above 50%. In fact, high cost subjects participate 25 percentage points above the predicted levels, on average, both when they are in the majority and in the minority. Low cost subjects in the majority over-participate slightly (6 percentage points on average), while those in the minority under-participate slightly (6 percentage points on average, if we exclude the outlier $\hat{q}_l(4, 1)$). We conclude that the calibration of the model captures the behavior of Low Betas to a considerable extent, but fails to predict the behavior of High Betas by a large margin. In fact, participation rates of high cost Betas above 50% cannot be rationalized by any calibration of the model. It appears that subjects are less sensitive to participation costs than our model predicts.

However, the cost effect, which hypothesizes that $\hat{p}_l(m_i, m_j) > \hat{p}_h(m_i, m_j)$ and $\hat{q}_l(m_i, m_j) > \hat{q}_h(m_i, m_j)$ for all (m_i, m_j) , is largely observed in the data. For Betas in the majority, this regularity is observed in all 13 cases. In the minority it is verified in 40% of the cases, but the values are close in terms of magnitude. Restricting attention to balanced electorates, we observe a difference of 17 percentage points between Low and High cost for (4, 4) and 10 percentage points for (5, 5). Comparing the average participation of cost types in all electorates, the statistical evidence supports the existence of a cost effect (MW $p = 0.00$).²¹ The effect is mostly driven by majorities: using a matched pairs signed rank test on the average participation

²¹The unit of observation is the average participation of a given type in each electorate, i.e. a sub-block.

Active Electorate m_i, m_j	Model						Data						
	G_i		G_j		Participation		G_i		G_j		Participation		n
	p_i	p_h	q_i	q_h	G_i	G_j	\hat{p}_i	\hat{p}_h	\hat{q}_i	\hat{q}_h	\hat{G}_i	\hat{G}_j	
3,0	0.55	0.15	-	-	0.42	0	0.66 (0.04)	0.13 (0.18)	-	-	0.48 (0.09)	0	2
4,0	0.52	0.15	-	-	0.33	0	0.45 (0.13)	0.19 (0.26)	-	-	0.32 (0.17)	0	4
5,0	0.49	0.14	-	-	0.28	0	0.53 (0.32)	0.38 (0.16)	-	-	0.44 (0.13)	0	12
1,1	0.92	-	0.92	-	0.92	0.92	0.78 (0.15)	-	0.78 (0.15)	-	0.78 (0.30)	0.78 (0.30)	2
4,1	0.66	0.20	0.56	-	0.43	0.56	0.25 (0.35)	0.19 (0.09)	0	-	0.22 (0.22)	0	2
5,1	0.61	0.20	0.55	-	0.36	0.55	0.61 (0.27)	0.39 (0.24)	0.22 (0.26)	-	0.47 (0.17)	0.22 (0.26)	4
2,2	0.90	-	0.90	-	0.90	0.90	0.98 (0.03)	-	0.98 (0.03)	-	0.98 (0.03)	0.98 (0.03)	2
4,2	0.74	0.33	0.64	-	0.53	0.64	0.84 (0.22)	0.72 (0.13)	0.81 (0.09)	-	0.78 (0.04)	0.81 (0.09)	2
5,2	0.68	0.28	0.61	-	0.44	0.61	0.72 (0.23)	0.46 (0.14)	0.19 (0.22)	-	0.56 (0.10)	0.19 (0.22)	4
4,3	0.73	0.41	0.69	0.44	0.57	0.60	0.84 (0.19)	0.73 (0.06)	0.50 (0.45)	0.53 (0.37)	0.79 (0.12)	0.51 (0.34)	4
5,3	0.69	0.33	0.64	0.38	0.47	0.55	0.91 (0.04)	0.75 (0.06)	0.375 (0.09)	0.44 (0.44)	0.81 (0.05)	0.40 (0.09)	2
4,4	0.70	0.42	0.70	0.42	0.56	0.56	0.88 (0.20)	0.71 (0.26)	0.88 (0.20)	0.71 (0.26)	0.80 (0.14)	0.80 (0.14)	10
5,4	0.68	0.36	0.66	0.38	0.49	0.52	0.97 (0.09)	0.78 (0.22)	0.66 (0.27)	0.71 (0.23)	0.86 (0.13)	0.69 (0.14)	12
5,5	0.66	0.36	0.66	0.36	0.48	0.48	0.92 (0.15)	0.82 (0.17)	0.92 (0.15)	0.82 (0.17)	0.86 (0.13)	0.86 (0.13)	44

Table 3.4: Model predictions and observed results

Notes: This table presents predicted (columns 3-8) and estimated (columns 4-10) participation probabilities for all observed active electorates. There are 108 active electorates in total: two per sub-block for each session. The two electorates in which Low Betas were not activated before High Betas were excluded. Standard deviations in parentheses.

of low and high cost subjects (the 8th to 11th columns of Table 3.4), the difference is significant for the majority (W-MP $p = 0.00$) but not for the minority (W-MP $p = 0.69$). In general, low cost subjects participate more than high cost ones, but the gap between the two is smaller than predicted. Moreover, it seems that the relative gap between high and low cost subjects' participation rates becomes smaller as the electorates become larger. Focusing on the majority, the ratio $\pi = [\hat{p}_h(m_i, m_j) - \hat{p}_l(m_i, m_j)] / [p_h(m_i, m_j) - p_l(m_i, m_j)]$ is significantly decreasing in $m_i + m_j$, while controlling for $m_i - m_j$.²² As groups become larger and therefore more inclusive, cost differences seem to cease to matter; this is a pattern deserving more investigation.

Another regularity that emerges from the theoretical analysis of the game is the underdog effect, which states that the minority should participate at higher rates than the majority: we should observe $G_i(m_i, m_j) < G_j(m_i, m_j)$ for all electorates where $m_j > 0$, $m_i \neq m_j$ and $m_i + m_j > 3$. With the exception of (4, 2), the underdog effect does not show up in the data, which is in contrast with the results of Levine and Palfrey (2007) and Herrera et al. (2014). In the relevant electorates, average participation is 71% in the majority (G_i) and 48% in the minority (G_j); this difference is statistically significant (MW $p = 0.00$, using the average participation in each side of a sub-block electorate as the unit of observation). The minority seems to 'give up' in very lopsided contests, something that is also present in the data of Cason and Mui (2005). In my framework this tendency might be aggravated by the fact that Betas might protest with abstention whenever their group's Alpha didn't mobilize enough Betas (preventing the two groups from competing on a level playing field).

Balanced electorates are more competitive. Hence, we expect participation probabilities to be decreasing in $m_i - m_j$ while controlling for $m_i + m_j$ (see Section 3.2 for all inequalities). This is a result documented in Levine and Palfrey (2007) and Herrera et al. (2014), for example. Due to the absence of many active electorate configurations in the data, the only comparison we can make is between $(m_i, m_j) = (5, 1)$ and $(m_i, m_j) = (4, 2)$. The competition effect posits that $p_\sigma(5, 1) < p_\sigma(4, 2)$, $\sigma = \{l, h\}$ and $q_l(5, 1) < q_l(4, 2)$. The data produces an ordering that conforms to the hypothesis: $\hat{p}_l(5, 1) = 0.61 < 0.84 = \hat{p}_l(4, 2)$; $\hat{p}_h(5, 1) = 0.39 < 0.72 = \hat{p}_h(4, 2)$ and $\hat{q}_l(5, 1) = 0.22 < 0.81 = \hat{q}_l(4, 2)$. The latter comparison achieves marginal statistical significance (MW $p = 0.06$; $p > 0.16$ for the other two cases). Given the low number of observations, there is moderate support in favor of the competition

²²A simple regression of π on electorate size, $m_i + m_j$, and electorate difference, $m_i - m_j$, yields coefficients (and standard errors) of -0.09 (0.03) and -0.05 (0.05), respectively; $N = 14$ and $R^2 = 0.38$. The data for the minority is less conclusive

effect.

As the size of the electorate increases, aggregate participation should decrease. For the sake of comparison, let us restrict attention to cases in which $m_i = m_j$. The model predicts $G(1, 1) > G(2, 2) > G(3, 3) > G(4, 4) > G(5, 5)$. This is largely disproved by the data: $\hat{G}(2, 2) > \hat{G}(5, 5) > \hat{G}(4, 4) > \hat{G}(1, 1)$. The weak size effect found in the literature is not observed in the data.

In sum, the aggregate participation levels observed in the experiment are substantially above the ones predicted by theory. The explanation lies in the over-participation of high cost subjects, which shows that subjects might be less cost sensitive than the available evidence suggests. Despite the mismatch between the theory and the data in terms of magnitude, the comparative statics of cost are mostly observed in the data. The cost effect follows the predicted pattern, despite the lower gap between high and low cost types. The underdog effect is not observed, as the minority seems to give up in lopsided electorates. The competition effect is reasonably supported by the data. However, participation does not seem to decrease as electorate size increases, i.e. no weak cost effect is present.

3.4.4 Regression Analysis

The results presented up to this point show that reciprocity does not seem to drive a response to mobilization efforts and that subjects with different reciprocity preferences do not seem to participate differently. However, we have seen that there is a boost to participation when the mobilization effort is accompanied by a group norm appeal. From a strategic point of view, participation costs seem to matter but less than predicted by theory. In what follows I will use regression analysis to test the robustness of these findings. Table 3.5 presents two models in which individual participation is regressed on the treatment variables, participation costs and trust and reciprocity preferences. Marginal effects are estimated using the method of Ai and Norton (2003) and Norton et al. (2004), and evaluated at the average sample value of all variables. Model 1 presents no interaction effect between the treatment variables whereas Model 2 does.

Regarding reciprocity preferences, the pattern observed so far is confirmed: the variable Reciprocator Type is insignificant, attesting that reciprocal behavior is largely irrelevant for individual participation behavior. The amount trusted (Trust) is equally irrelevant. Participation costs, on the contrary, matter. For the average subject in the sample, a high participation cost leads to a 13.73 percentage point decrease in participation relative to a low participation cost. In line with what was concluded in sub-section 3.4.3, the magnitude of the cost effect is smaller than

predicted by the theoretical analysis, but is nevertheless substantial.

	Model 1		Model 2	
	Coeff.	Mg.Effect (%)	Coeff.	Mg. Effect (%)
Activation	-0.21 (0.29)	-3.58 (0.05)	-0.35 (0.29)	-3.19 (0.06)
Appeal	0.41*** (0.08)	6.95*** (0.02)	0.14 (0.11)	7.23*** (0.02)
Activation*Appeal	-	-	0.54*** (0.15)	9.76*** (0.04)
Cost	-0.79*** (0.08)	-13.73*** (0.04)	-0.80*** (0.08)	-14.57*** (0.04)
Trust	0.04 (0.05)	0.69 (0.01)	0.04 (0.05)	0.70 (0.01)
Reciprocator Type	0.30 (0.31)	6.03 (0.06)	0.30 (0.30)	6.23 (0.06)
Constant	1.49*** (0.47)		1.59*** (0.47)	
Log Likelihood		-3212.09		-3205.95

Table 3.5: Panel regression results

Notes: This table presents model coefficients and marginal effects estimated using a panel data logit specification with random effects. The marginal effects are reported as percentage values and are evaluated at sample average values. Standard errors in parentheses, N=142 in both models. *** indicates significance at the 1% level.

As suggested by the non-parametric analysis, mobilization alone (i.e. activation) does not seem to influence participation. Both the coefficient and the marginal effects are insignificant. In contrast, the effect of a normative appeal is positive and significant according to Model 1, but it becomes insignificant when the interaction between the appeal and activation is included in Model 2. This interaction effect is highly significant, which leads us to conclude that an appeal per se does not lead to a significant increase in participation. However, when the subject delivering the appeal is responsible for mobilization the effect is considerable and highly significant. The observed boost in participation is 9.76 percentage points, which is in line with the typical effect of canvassing found in field studies.²³

²³The marginal effect of an appeal alone is significant because it is mostly driven by the interaction effect. Restricting the sample to *Ctr* sessions, the marginal effect drops to 3.08% and is insignificant.

3.5 Conclusion

This work provides a laboratory test of the psychological mechanisms underlying the effectiveness of political mobilization. Political mobilization is a massive endeavor in many modern electoral democracies, with a considerable impact on participation behavior. The fact that simple gestures and appeals can foster participation has fascinated social scientists for a long time. In the words of Cox (1999), “one may ask why it is rational for voters to participate merely because they are urged to vote.” The question is particularly puzzling given the evidence discussed in the Introduction, showing that strangers seem to be at least as good as friends when trying to persuade others to participate in politics. According to Cox (*idem*), “if the person urging a citizen to vote is a stranger”, explaining why mobilization works “is harder.” He conjectures that “perhaps there exists a norm enjoining people to vote and they are reluctant publicly to violate this norm.” The evidence presented in this chapter lends support to this conjecture: personalized normative appeals are crucial for mobilization to work, even if delivered by absolute strangers. This finding also helps explain the fact that some mobilization efforts are more effective than others, e.g. why door-to-door canvassing is more effective than direct mailings.

In this chapter I tested two channels through which mobilization could work: reciprocity and group-level normative appeals. Citizens reached by an activist or a campaign might perceive the mobilization act as kind, and wish to return the kindness by participating. Concurrently, mobilization efforts invariably include an appeal akin to a watchword or slogan. These appeals often harness the compliance to a social or group norm, be it participating in a national election or a local demonstration. The social or group norm is made salient by the mobilizers, which renders its violation more prone to both internal and external sanctions.

The experimental design tests these two non-mutually-exclusive forces by having subjects play a game in which two groups compete for benefits on the basis of participation. Participation is an individual and costly decision. The novelty of the proposed framework is that subjects have to be activated (mobilized) by another subject in the same group, who faces a trade-off between keeping the budget handed to him or her by the experimenter and activating subjects in his or her group. I compared treatments in which the mobilization process is in control of a human subject, and is therefore intentional, to treatments where this process is not in the hands of a subject and thus perceived as non-intentional. If reciprocity considerations drove the response to mobilization, we should observe those activated by a human subject participating at higher rates than those who were told they simply became active. In addition, in a part of the experiment the subject responsible for activation

decisions could send an appeal to the subjects in his or her group. This appeal usually provided a norm for the group - a request for others to participate.

The results show that mobilization does not lead to higher participation when taken separately, hinting at the irrelevance of reciprocity concerns for participation decisions. Furthermore, a measurement of individual trust and reciprocity preferences (administered at the beginning of the experiment) does not correlate with participation behavior. However, appeals to participation seem to be effective in raising participation levels, especially when this appeal is sent by the subject responsible for mobilizing his or her peers. The appeal typically provides a norm for the group (e.g. 'I want everybody to participate'). An appeal by a subject who was not responsible for this process is of similar nature, but it does not lead to a significant increase in participation.

The overall evidence sheds light on the psychological mechanisms underlying the mobilization process. The experimental analysis presented in this chapter allowed for a decomposition of the mobilization process into the material act of mobilizing others and the normative appeal simultaneously conveyed. It seems that the simple investment of material resources that make participation possible do not garner enough gratitude as to increase participation. However, normative appeals delivered by the individual responsible for mobilization are extremely effective. This suggests that violating the normative appeal conveyed by the subject responsible for mobilization is psychologically costly, and thus primes subjects into participating more.

Whether this evidence describes the processes taking place in instances of political participation outside of the laboratory is (always) an open question, but it suggests a direction for future field work. In particular, we should try to explore what is hinted at by this experiment, in particular by decoupling the material resources invested in mobilization efforts from the strength of their normative content. For theoretical work in the rational choice tradition, this chapter provides a starting point for incorporating mobilization in a pivotal voter framework. It also suggests that modeling the mobilization process can perhaps eschew preferences for reciprocity aspects, but should take seriously into account the intricacies of norm transmission.

Appendix

3.A The Model - Details

3.A.1 Participation Probabilities for Beta Players

This sub-section presents the derivation of the probability vector in equation 3.1. For an active electorate (m_i, m_j) , let $m'_h \leq m_h$, $h = i, j$, be the number of active Betas who choose to participate. From the perspective of Beta i , define m''_i and m''_j as the number of other players who participate in G_i and G_j , respectively. The mechanics of the model are identical to the basic case presented in Chapter 1, with the only exception that now $m''_i < m'_i \leq m_i \leq M_i$ (players other than i who participate, players who participate including i , active Betas in G_i , size of G_i), where before we had $m'_i \leq m_i \leq M_i$ (players other than i who participate, players who participate including i , size of G_i).

For group G_i , equation 3.1 can be expanded as follows:

$$\begin{aligned}
 v_i(m_i, m_j) &= \left[\Pr_i(\text{win}|m_i, m_j) \quad \Pr_i(\text{tie}|m_i, m_j) \quad \Pr_i(\text{lose}|m_i, m_j) \right]' \\
 &= \left[\Pr[m'_i > m'_j | (m_i, m_j)] \quad \Pr[m'_i = m'_j | (m_i, m_j)] \quad \Pr[m'_i < m'_j | (m_i, m_j)] \right]'
 \end{aligned} \tag{3.A.1}$$

and analogously for G_j .

Determining the value of each term in this vector requires knowledge of the participation probabilities of each Beta type in the corresponding active electorate, (m_i, m_j) . These equilibrium probabilities are obtained following the procedure described in Chapter 1, equations 1.1 and 1.3. The direct equivalent of equation 1.3 is:

$$\Pr[m''_i = m''_j] + \Pr[m''_i = m''_j - 1] = \frac{2c_\sigma}{(B^W - B^L)}, \sigma = l, h. \tag{3.A.2}$$

To proceed with the analysis we only need to specify the probability terms in these equations. Let $M^l \leq M$ be the number of Low Betas in a group. Define the probability of participating as p_l and p_h for Low and High Betas in G_i , respectively; and q_l and q_h for Low and High Betas in G_j , respectively. In other words, we base our analysis on a quasi-symmetric mixed equilibrium, in which the same type within a group implements the same strategy.

The formulas that follow refer to a Low Beta in G_i ; formulas for High Betas

and Betas in G_j can be written in an analogous way. Recall that we have assumed that Alphas activate Low Betas before High Betas. If $m_i = 0$ and $m_j \leq M_j^l$, the probability terms in equation 3.A.2 are simply $\Pr [m_i'' = m_j''] = (1 - q_l)^{m_j}$ and $\Pr [m_i'' = m_j'' - 1] = m_j q_l (1 - q_l)^{m_j - 1}$. If $0 < m_i \leq M_i^l$ and $m_j \leq M_j^l$ the probability terms in equation 3.A.2 are:

$$\begin{aligned} & \Pr [m_i'' = m_j''] & (3.A.3) \\ & = \sum_{k=0}^{\min[m_i-1, m_j]} \binom{m_i-1}{k} \binom{m_j}{k} p_l^k (1-p_l)^{m_i-1-k} q_l^k (1-q_l)^{m_j-k} \end{aligned}$$

$$\begin{aligned} & \Pr [m_i'' = m_j'' - 1] & (3.A.4) \\ & = \sum_{k=0}^{\min[m_i-1, m_j-1]} \binom{m_i-1}{k} \binom{m_j}{k+1} p_l^k (1-p_l)^{m_i-1-k} q_l^{k+1} (1-q_l)^{m_j-k-1} \end{aligned}$$

If $m_i > M_i^l$ and $m_j \leq M_j^l$, the probability terms in equation 3.A.2 are:

$$\begin{aligned} & \Pr [m_i'' = m_j''] & (3.A.5) \\ & = \sum_{k=0}^{m_j} \left\{ \begin{array}{l} \binom{m_j}{k} q_l^k (1-q_l)^{m_j-k} \\ \sum_{s=0}^k \binom{M_i^l-1}{s} \binom{m_i-M_i^l}{k-s}^* \\ p_l^s (1-p_l)^{M_i^l-1-s} p_h^{k-s} (1-p_h)^{(m_i-M_i^l)-(k-s)} \end{array} \right\} \end{aligned}$$

$$\begin{aligned} & \Pr [m_i'' = m_j'' - 1] & (3.A.6) \\ & = \sum_{k=0}^{m_j-1} \left\{ \begin{array}{l} \binom{m_j}{k+1} q_l^{k+1} (1-q_l)^{m_j-(k+1)} \\ \sum_{s=0}^k \binom{M_i^l-1}{s} \binom{m_i-M_i^l}{k-s}^* \\ p_l^s (1-p_l)^{M_i^l-1-s} p_h^{k-s} (1-p_h)^{(m_i-M_i^l)-(k-s)} \end{array} \right\} \end{aligned}$$

Finally, if $m_i > M_i^l, i = 1, 2$, the probability terms in equation 3.A.2 are:

$$\Pr \left[m_i'' = m_j'' \right] \tag{3.A.7}$$

$$= \sum_{k=0}^{\min[m_i-1, m_j]} \left\{ \begin{array}{l} \sum_{s=\max[0, k-(m_i-M_i^l)]}^{\min[k, M_i^l]} \binom{M_i^l}{s} \binom{m_i - M_i^l}{k-s} * \\ p_l^s (1-p_l)^{M_i^l-s} p_h^{k-s} (1-p_h)^{(m_i-M_i^l)-(k-s)} \\ * \\ \sum_{s=\max[0, k-(m_j-M_j^l)]}^{\min[k, M_j^l]} \binom{M_j^l}{s} \binom{m_j - M_j^l}{k-s} * \\ q_l^s (1-q_l)^{M_j^l-s} q_h^{k-s} (1-q_h)^{(m_j-M_j^l)-(k-s)} \end{array} \right\}$$

$$\Pr \left[m_i'' = m_j'' - 1 \right] \tag{3.A.8}$$

$$= \sum_{k=0}^{\min[m_i-1, m_j-1]} \left\{ \begin{array}{l} \sum_{s=\max[0, k-(m_i-M_i^l)]}^{\min[k, M_i^l]} \binom{M_i^l}{s} \binom{m_i - M_i^l}{k-s} * \\ p_l^s (1-p_l)^{M_i^l-s} p_h^{k-s} (1-p_h)^{(m_i-M_i^l)-(k-s)} \\ * \\ \sum_{s=\max[0, k-(m_j-M_j^l)]}^{\min[k+1, M_j^l]} \binom{M_j^l}{s} \binom{m_j - M_j^l}{k+1-s} * \\ q_l^s (1-q_l)^{M_j^l-s} q_h^{k+1-s} (1-q_h)^{(m_j-M_j^l)-(k+1-s)} \end{array} \right\}$$

The probability terms presented in equations 3.A.3-3.A.8 can be plugged into the equilibrium conditions (equation 3.A.2) to derive both Nash equilibria (pure and mixed) and QRE. For the reasons discussed in Chapter 1, this chapter implements only QRE.

3.A.2 Quantal Response Equilibrium

Beta Players

Following the procedure outlined in Appendix 1.B of Chapter 1, we can proceed with the derivation of QRE for each player type in a given active electorate. In equilibrium, the participation probabilities of the two types in both groups are determined simultaneously, and represent a probabilistic best response to all other Betas' probabilistic best responses. For each value of μ^{Beta} there exists a logit

equilibrium, but uniqueness is not guaranteed. However, it is possible to identify a branch that pins down an equilibrium for each value of $\mu^{Beta} \in (0, \infty)$; when $\mu^{Beta} \rightarrow 0$ the branch converges to a Nash equilibrium (McKelvey and Palfrey, 1995).

Having determined p_σ and q_σ for every (m_i, m_j) , it is straightforward to derive the probability distribution of events in each active electorate. This is done by plugging the equilibrium values of p_σ and q_σ in equations 3.A.3-3.A.8. Define the resulting probability vector as $v_i(m_i, m_j, \mu^{Beta})'$, which is identical to the probability term presented in equation 3.A.1 except that we explicitly acknowledge that the equilibrium probability distribution depends on μ^{Beta} and the ensuing equilibrium values of p_σ and q_σ . Figure 3.8 depicts the participation probabilities for each type of player in each possible electorate. Table 3.2 in Sub-Section 3.2.1 presents the values that result from this procedure for $\mu^{Beta} = 0.4$.

Alpha Players

A similar procedure can be applied to the Alpha's decision in order to obtain a logit QRE, with the difference that we must implement a multinomial logistic specification, as Alphas have 6 actions at their disposal ($m_i \in [0, 5]$). Define $\sigma_i(m_i, m_j, \mu^{Beta})$ as the payoff accruing to Alpha i when the active electorate is (m_i, m_j) and μ^{Beta} is assumed. The payoff is thus:

$$\sigma_i(m_i, m_j, \mu^{Beta}) = A_i - a(m_i) + v_i(m_i, m_j, \mu^{Beta})' b \quad (3.A.9)$$

which is analogous to equation 3.2.

As it was the case with the Betas, we need to extend Alpha's payoffs by a stochastic component: $\sigma_i(m_i, m_j, \mu^{Beta}) + \mu^{Alpha} \varepsilon_i^{m_i}$. Define $s_i := \Pr[m_i]$ as the probability assigned by Alpha i to activating m_i Betas. Imposing the assumptions on $\varepsilon_i^{m_i}$ discussed in Chapter 1, we can write:

$$s_i = \frac{\exp\left[\frac{\sigma_i(m_i, m_j, \mu^{Beta})}{\mu^{Alpha}}\right]}{\sum_{m_i=0}^5 \exp\left[\frac{\sigma_i(m_i, m_j, \mu^{Beta})}{\mu^{Alpha}}\right]}, i = 0, \dots, 5 \quad (3.A.10)$$

Fixing μ^{Beta} , Alphas know $v_i(m_i, m_j, \mu^{Beta})$ and therefore also the payoffs of the activation game, $\sigma_i(m_i, m_j, \mu^{Beta})$. The payoffs for the case $\mu^{Beta} = 0.4$ are reproduced in Table 3.6.

These payoffs constitute the input for calculating s_i . For a given μ^{Alpha} , the QRE consists of a probability distribution over the m_i for each Alpha, which is a best

(m_i, m_j)	0	1	2	3	4	5
0	6.50,6.50	5.11,7.39	5.26,6.74	5.26,5.74	5.25,4.75	5.25,3.75
1	7.39,5.11	6.00,6.00	4.92,6.58	4.94,5.56	4.94,4.56	4.93,3.57
2	6.74,5.26	6.58,4.92	5.50,5.50	4.81,5.19	4.75,4.25	4.69,3.31
3	5.74,5.26	5.56,4.94	5.19,4.81	4.50,4.50	4.09,3.91	3.94,3.06
4	4.75,5.25	4.56,4.94	4.25,4.75	3.91,4.09	3.50,3.50	3.22,2.78
5	3.75,5.25	3.57,4.93	3.31,4.69	3.06,3.94	2.78,3.22	2.50,2.50

Table 3.6: Payoff matrix of Alphas for $\mu^{Beta}=0.4$.

response to the other Alpha's probability distribution. Figure 3.1 in the main text depicts QRE for different values of μ^{Alpha} . The Nash Equilibrium, $(m_i^*, m_j^*) = (2, 2)$, can be easily computed from the payoff matrix presented in Table 3.6.

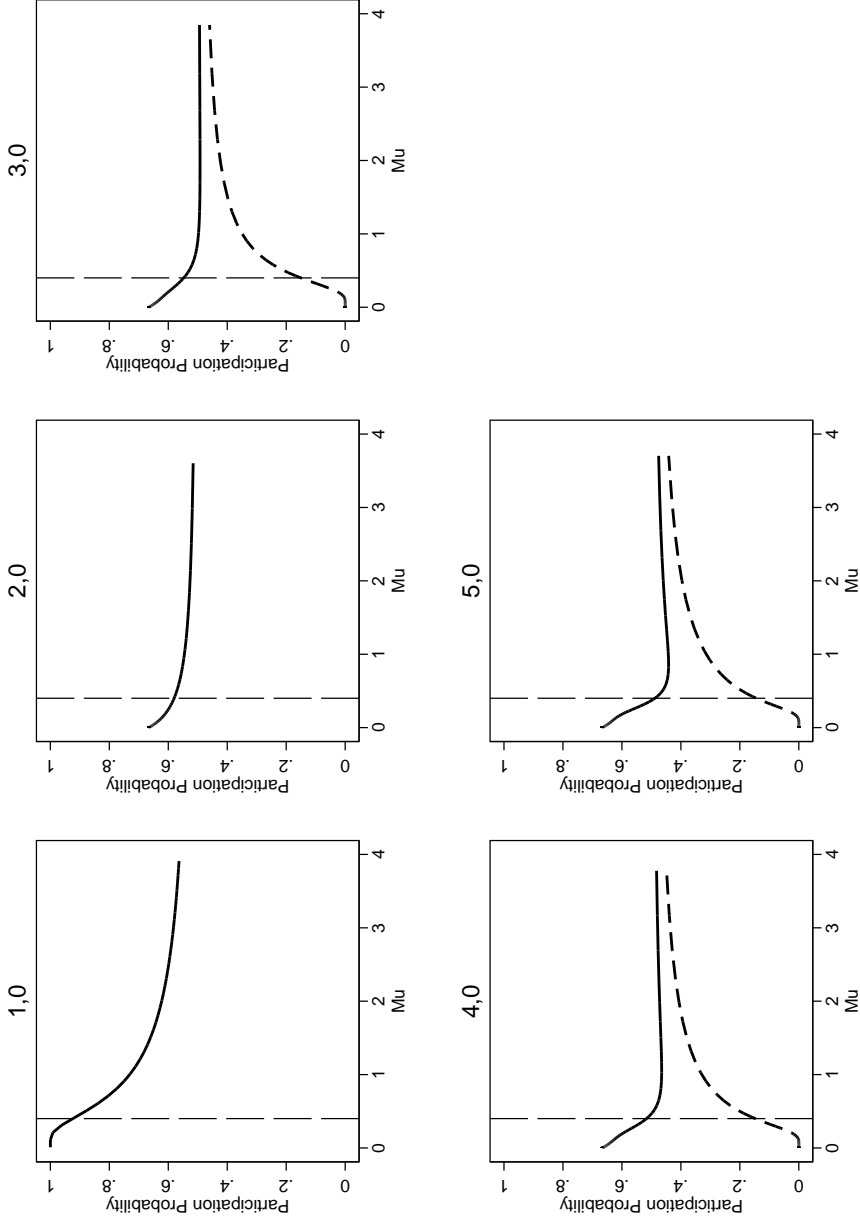


Figure 3.8: QRE equilibrium participation probabilities for different values of μ .

Notes: The numbers above each graph indicate the corresponding active electorate (m_i, m_j) . Thick (thin) lines denote G_i (G_j) and dashed (solid) lines denote High (Low) Betas. The vertical bar corresponds to $\mu = 0.4$.

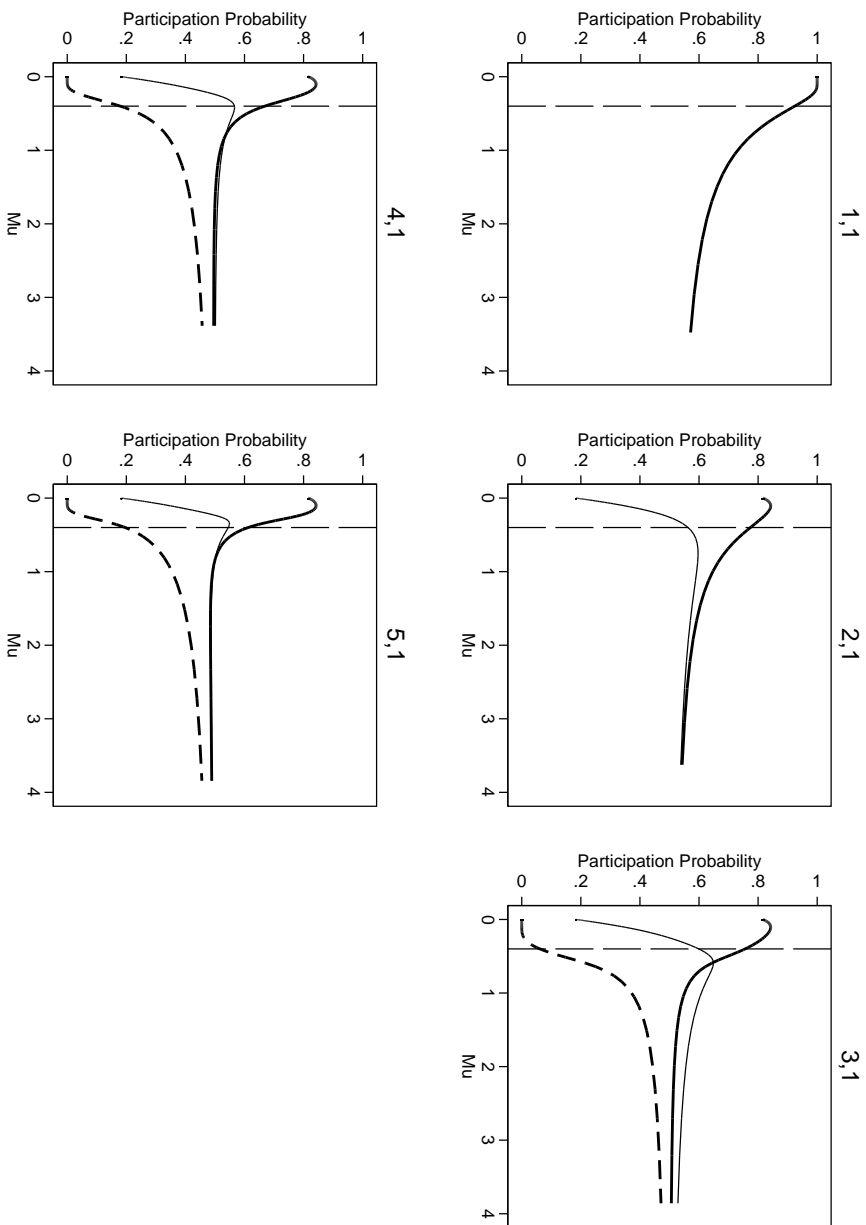


Figure 3.8 (continued).

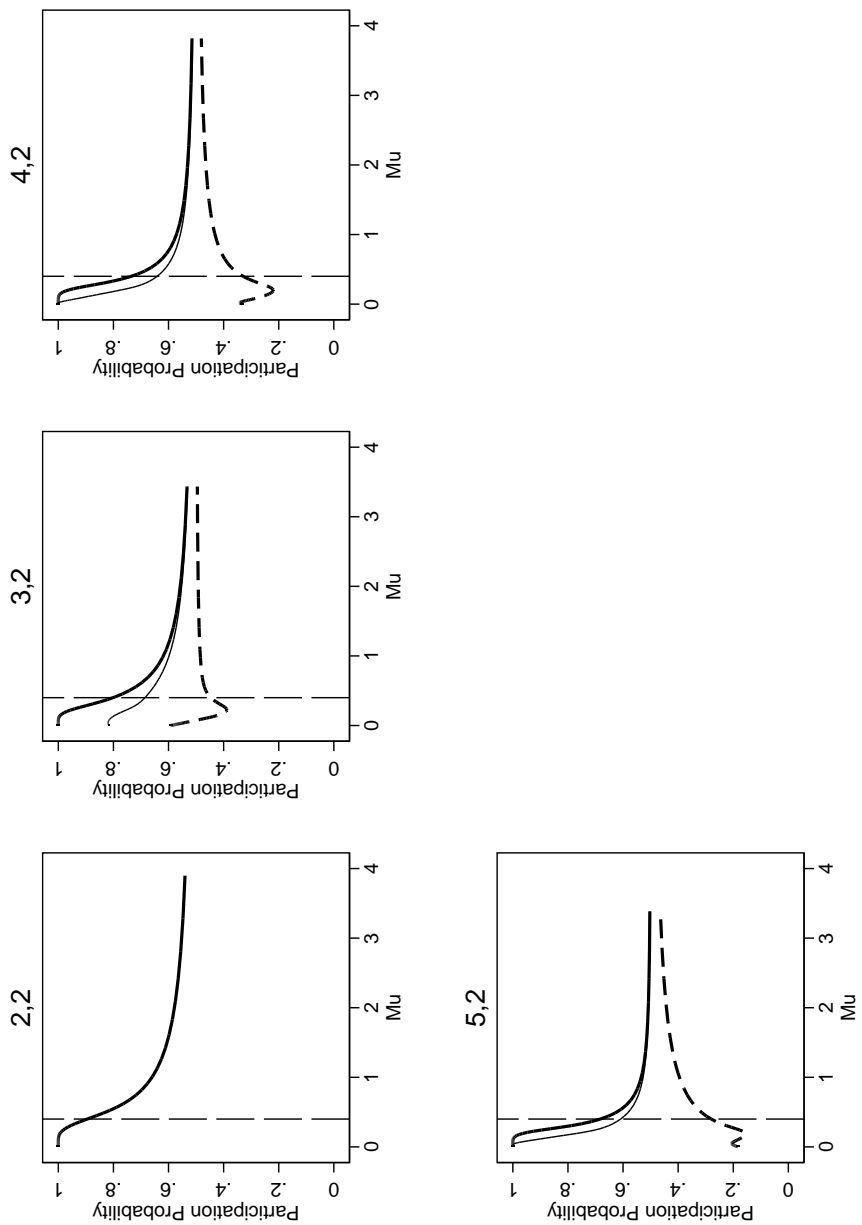


Figure 3.8 (continued).

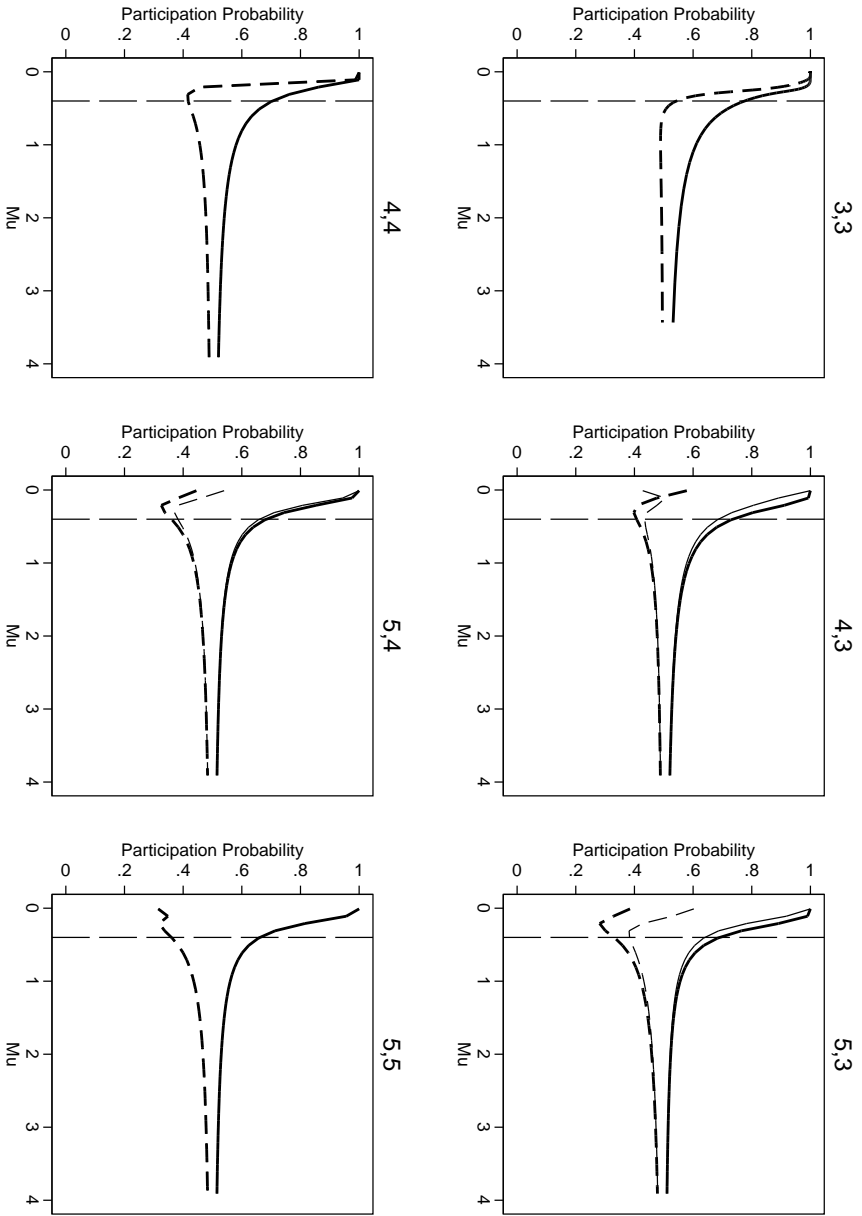


Figure 3.8 (continued).

3.B Experiment Instructions

What follows is an abridged transcript of the experiment's instructions. The changes from *Mob* to *Ctr* are shown within square brackets.

This experiment is composed of two tasks: Task 1 and Task 2. You will receive instructions for Task 2 after Task 1 has been completed. Tasks are made up of rounds. Task 1 has one round. Task 2 is divided into 3 blocks of 27 rounds each, which makes a total of 81 rounds.

In Task 1 you have to make two decisions. You will be paired with two different participants of this experiment. You will not know their identity and they will not know yours. All results from this task will only be revealed at the end of the experiment. For the sake of explanation let us refer to the two participants with whom you are paired as Participant A and Participant B.

For this task you have been given 8 tokens by the experimenter, which you can keep for yourself or send to Participant A. You can send 0, 4 or 8 tokens to Participant A. The tokens that you send to Participant A will be multiplied by 3. Participant A then has to decide how many of them to keep for himself or herself and how many to send back to you.

After subjects submit their decision.

Participant B, who is not the same person as Participant A, has been asked how many tokens he or she wants to send to you. Basically, Participant B was asked to make the same decision which you had to make regarding Participant A. Participant B could choose to send you 0, 4 or 8 tokens out of the 8 tokens that he or she received from the experimenter. These tokens, if any, have been multiplied by 3. This means that if Participant B decided to send you 0 tokens there will be 0 tokens at your disposal, if Participant B decided to send you 4 tokens there will be 12 tokens at your disposal and if Participant B decided to send you 8 tokens there will be 24 tokens at your disposal. The tokens that you do not send back to Participant B are yours and will be converted into earnings.

Task 2 consists of 3 blocks of 27 rounds each, which makes a total of 81 rounds. What follows is a complete description of Task 2. At all times during Task 2 there will be a summary of relevant instructions on your screen.

You are part of a group of 6 participants, you and 5 others. Your group will interact with another group that is identical in every respect and which will face the same decisions. In each group there is 1 Alpha member and 5 Beta members. The Alpha member is appointed randomly for the duration of a block (27 rounds). This means that any participant can be either an Alpha member or a Beta member, and will remain so for the duration of a block of 27 rounds. At the beginning of a new block, new Alpha and Beta members will be randomly chosen. This means that group composition remains constant

for the duration of a block. Groups change when a new block starts.

Each block has the same structure: 1 Activation round followed by 8 Decision rounds, repeated 3 times. In the Activation round only the Alpha member makes a decision. In the Decision rounds all members have to make a decision, even though the kind of decision might differ per member. At the end of each 8th decision round a summary of decisions and payoffs will be shown to all members.

Task 2

In the Activation round only the Alpha member makes a decision. [In the Activation round it is announced how many Beta members have been activated for the following 8 Decision rounds. The activation status of each Beta member will change every 8 rounds and is determined randomly. No decision has to be made by any member in the Activation round.] In the Decision rounds all members have to make a decision, even though the kind of decision might differ per member.

Alpha Member

The Alpha member of each group has to decide how many Beta members to activate. The activation decision is made every 8 rounds and applies to the 8 rounds between activation decisions. Alpha members get an amount of tokens (a budget), which they can either keep for themselves or use to activate Beta members. Activating Beta members has a cost, to be incurred per each round that a Beta member is active. [The Alpha member is affected by the activation state of the Beta members: active or inactive. Alpha members get an amount of tokens (a budget) in each round. Active Beta members represent a cost to the Alpha member. For each round that a Beta member is active a cost is deducted from the budget of the Alpha member.] The budget and costs will be explained in more detail below.

During the 8 Decision rounds the Alpha member will observe and rate the decisions made by the active Beta members. The ratings will not be revealed to any participant of the experiment.

Beta Member

The Beta members of a group can be in one of two states: active and inactive. This depends on whether they have been activated by the Alpha member or not. [The Beta members of a group can be in one of two states: active and inactive, which is determined randomly.]

The Beta members that are active will have to make the following decision. In every round, each active Beta member of a group will have to decide on whether to buy a “disc” or not. A “disc” has a cost, to be explained in more detail below. The members of the group with more “discs” receive a higher reward in that round: 4 tokens. The members of the group with fewer “discs” receive a lower reward in that round: 1 token. If the number

of discs in the two groups is the same, the group who gets the higher reward in that round is picked with equal probability. In other words, in case of a tie each group has a 50% chance of getting the high reward. Note that if one of the groups gets the high reward the other necessarily gets the low reward.

Important: these rewards apply equally to all the members of a group in a given round, be it an Alpha member, an active Beta member or an inactive Beta member.

The Beta members that are inactive observe and rate the decisions of the active Beta members. The ratings will not be revealed to any participant of the experiment.

Budget, Activation Costs and Disc Buying Costs

Both Activation Costs and Disc Buying Costs depend on the type of Beta member. There are 3 High Cost Beta members and 2 Low Cost Beta members in each group. You will be informed which one you are, in case you are a Beta member.

In each round the Alpha member gets a budget of 4 tokens that he can keep for himself or herself or use to activate Beta members. The tokens spent on activating Beta members cannot be recovered. The budget is just enough to activate all Beta members in his or her group, which means that nothing remains of the budget if all Beta members are activated. The cost of activating a High Cost Beta member and a Low Cost Beta member are 1 and 0.5 per round, respectively. Note that the amounts we refer to are per round. However, the Alpha member makes a decision that is valid for 8 rounds. [In each round the Alpha member gets a budget of 4 tokens. The tokens deducted from the Alpha member's budget due to active Beta members cannot be recovered. The budget is just enough to pay for all Beta member activation in his or her group, which means that nothing remains of the budget if all Beta members are active. The costs of an active High Cost Beta member and a Low Cost Beta member are 1 and 0.5 per round, respectively. Note that the amounts we refer to are per round. However, the activation state of Beta members is valid for 8 rounds.]

The cost of buying a disc is also different for High Cost Beta members and Low Cost Beta members: 1 and 0.5 per round, respectively.

In sum, the earnings per round of each member are as follows:

Alpha member = Reward + Budget - Eventual Activation Costs

Active Beta member = Reward - Eventual Disc Buying Cost

Inactive Beta member = Reward

Before we head to the 3 blocks there will be some practice questions to make sure you understand Task 2.

3.B.1 Comprehension Questions

The following questions were administered after the APG's instructions. Subjects could only proceed after a correct answer to all questions.

Q1: What is the maximum number of Beta members that can be activated by the Alpha member? A1: 5.

Q2: If an Alpha member activates all the Beta members of his group, how much is left of the budget? Recall that an Alpha member has a budget of 4 tokens at his disposal, that there are 2 Low Cost Beta members and 3 High Cost Beta members in each group, and that activating a Low Cost Beta member and a High Cost Beta member costs 0.5 and 1, respectively. A2: 0.

Q3: Suppose that the Alpha member activates 2 Low Cost Beta members and 1 High Cost Beta member. Suppose further that, in a given round, these Beta members all buy a disc whereas the Beta members of the other group only buy 1 disc. What is the payoff of the Alpha member in this round? Recall that activating a Low Cost Beta member and a High Cost Beta member costs 0.5 and 1 tokens per round, respectively, and that a member of a group receives 4 tokens if his or her group buys more discs than the other group. A3: 6.

Q4: At the end of a block of 27 rounds, all participants are assigned new (random) member roles and new groups are formed. True or false? A4: True.

Q5: Suppose that the other group buys 2 discs in total. What is the minimum number of discs that your group has to buy such that your group gets the high reward of 4 tokens for sure? A5: 3.

Q6: Suppose that your group bought 2 discs and the other group bought 2 discs as well. What is the probability that your group gets the high reward in this round of the game? Note: Express probability in decimal terms; for example, if you want to answer "20% probability" please type "0.2". A6: 0.5.

Q7: Suppose you are a High Cost Beta member and that all Beta members have been activated in both groups. Suppose further that, in a given round, your group buys 5 discs and the other group buys 4 discs. What are your earnings (in tokens) in this round of the game? A7: 3.

3.C Trust Game Results

The data from the trust game is presented in this Appendix. Approximately half of the subjects chose to send the intermediate amount (4), roughly 30% sent the high amount (8), and 20% sent 0 (see Figure 3.9). Averaging, subjects sent 55.5% of their

endowment (standard deviation: 35.5%), which is consistent with the typical 50% result found in trust games with a finer action space (Johnson and Mislin 2011).

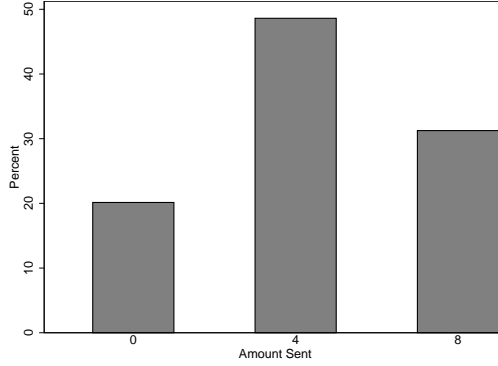


Figure 3.9: Amount sent in the trust game.

The amount returned is also in line with typical results. The distribution of the returned amount is remarkably close for the intermediate and high received amounts: subjects chose to return 34.4% and 35.3%, respectively (standard deviations of 21.2% and 21.0%; see Figure 3.10).

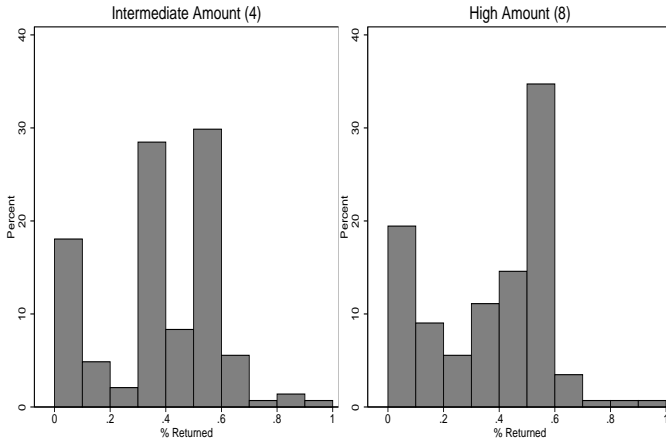


Figure 3.10: Amount returned in the trust game.

3.D Subject Ratings

This Appendix provides a short description of the ratings data. During the APG, Alphas and inactive Betas observe the outcome of every period, which they are asked to rate. Subjects choose between “dissatisfied”, “neutral” and “satisfied” (coded as 1, 2 and 3, respectively). This information provides important clues on what both Alphas and inactive Betas expect from the active Betas (in terms of participation) and what Betas expect from the Alphas (in terms of activation).

Figure 3.11 presents the ratings distribution of Alphas and inactive Betas. The main conclusion to be drawn is that inactive Betas tend to be more dissatisfied than Alphas, which is to be expected if we assume that they would prefer to be active. Alphas, on the other hand, are mostly satisfied with the observed results.

Table 3.7 presents regression results on how Betas perceive activation decisions. The evidence shows that Betas rate high activation decisions favorably, while activation in the other group assumes the expected sign, but is statistically insignificant. Ratings are not significantly higher in the presence of an appeal, and high cost Betas don't rate differently than low cost ones.

Ratings also convey important information on subjects' expectations regarding participation. In particular, we want to know what Alphas and inactive Betas consider satisfactory with respect to the participation behavior of active Betas. This can shed light on the extent to which participation is expected and can therefore be considered norm for group members. Table 3.8 presents regression results, where we can observe that high participation is rated favorably by both Alphas and Betas, while controlling for victory, tying and margin of victory. This means that participation is valued beyond its instrumental consequences, which provides grounding to participation being regarded as normative behavior for the group.

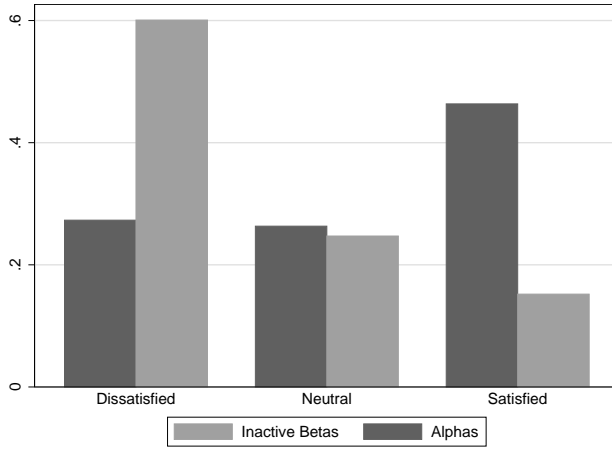


Figure 3.11: Ratings distribution.

	<i>Mob</i>	<i>Ctr</i>
Activation Own Group	0.21*** (0.06)	0.16*** (0.05)
Activation Other Group	-0.03 (0.06)	-0.06 (0.06)
Appeal	0.19 (0.23)	-0.09 (0.20)
High Cost	-0.10 (0.28)	0.31 (0.24)
Constant	1.31*** (0.36)	1.46*** (0.31)
R ² (overall)	0.24	0.13

Table 3.7: Panel regression results

Notes: Panel regression with fixed effects; the cross section variable is subject and the time variable is sub-block. The dependent variable is an inactive Beta's rating of the activation decisions (once per sub-block). Activation Own (Other) Group is the total number of active subjects in the subject's own (other) group, and both Appeal and High Cost are dummy variables. Standard errors in parentheses, N=111. *** indicates significance at the 1% level.

	Alphas	Betas
Participation Own Group _(t-1)	0.33** (0.14)	0.35*** (0.10)
Participation Other Group _(t-1)	-0.29** (0.14)	-0.10 (0.11)
Victory _(t-1)	1.89*** (0.09)	1.51*** (0.13)
Tie _(t-1)	1.10*** (0.06)	0.63*** (0.08)
Margin of Victory _(t-1)	-0.10*** (0.04)	-0.09** (0.04)
Appeal	-0.10 (0.08)	0.18 (0.12)
High Cost		-0.63*** (0.20)
Constant	1.16*** (0.09)	1.61*** (0.08)
R ² (overall)	0.49	0.32

Table 3.8: Panel regression results

Notes: Panel regression with fixed effects; the cross-section variable is subject and the time variable is period. The dependent variable is the Alpha's and the inactive Betas' rating of the results in their electorate, respectively. Participation Own (Other) Group is the participation rate in the subject's own (other) group. Victory is a dummy variable which takes value 1 if the own group achieved outright victory (victories from coin tosses excluded), Margin of Victory is the difference in participation between the own group and the other group, Appeal and High Cost are dummy variables. Standard errors in parentheses. N=1260 and N=744, respectively. **/** indicates significance at the 5%/1% level.

3.E Independence of Observations Across Blocks

Part of the non-parametric analysis presented in this chapter relied on the assumption of observation independence across blocks. The crucial aspect is that there was a complete re-matching of groups and re-assignment of both roles and types from one block to the next. A subject thus faced a probability of 2.97×10^{-5} of being part of the exact same group, while the probability that his or her group was composed exclusively of subjects who were not part of his or her previous group is 0.25. These two aspects dampen the influence of experienced history for future interac-

tion. Furthermore, new roles and types were randomly assigned at the beginning of each block. A High Beta, a Low Beta and an Alpha faced a 1/2, 1/3 and 1/6 probability of being assigned the same role from one block to the next. In addition, earnings were set to 0 at the beginning of each block, and subjects knew that they would only be paid for one randomly picked block.

In order to statistically assess the independence claim, I present regression results on how the determinants of participation correlate across blocks. The procedure consists of two steps: first, I investigate which aspects influence participation behavior from one sub-block to the next; second, I test whether these aspects have an influence across blocks.

Given that feedback is given at the end of each sub-block, it is conceivable that elements of the game in a sub-block influence behavior in future sub-blocks. Such elements include participation levels in the subject's own group and in the other group, whether the subject was pivotal, and whether a tie was observed (e.g. Duffy and Tavits 2008 or Grosser and Schram 2006 use some of these variables as controls in parametric statistical analysis). Table 3.9 presents regression results on the relationship between these variables and participation decisions.

The results show that individual participation in a given sub-block is significantly influenced by having been active in the previous sub-block and by the previous sub-block's participation level in the subject's own group provided he or she was active. Participation in the other group, the number of pivotal events or the number of ties do not seem to have an effect.

Nevertheless, all of these elements are included in regression models that investigate the impact of a given block's play on subsequent ones (Table 3.10). Since subjects are part of multiple groups in the experiment and that lagged dependent variables must be included, I opt for a simple linear regression specification. The dependent variable is average individual participation in block 2 or block 3. The independent variables are average individual participation (p), average group participation (in the own group, P^G , and in the other group, $P^{G'}$), the number of pivotal (Piv) and tie (Tie) events, the share of the block in which the subject's group achieved victory (W), and the share of the block in which the subject was active (A). Since historical effects might depend on whether a subject was active or not, interaction effects are included in some specifications.

Most variables are insignificant, be it in parsimonious or more comprehensive specifications. The results suggest that the history of one block does not affect individual participation in the next block systematically. There exist three statistically significant patterns worth discussing though. First, aggregate participation

in the first block seems to affect individual participation in the second block differently for active and inactive subjects (model 2). Whereas a subject who was inactive tends to participate significantly more in the second block, for active subjects (the large majority) this effect is insignificant ($H_0 : \beta_{P_1^G} + \beta_{A_1 * P_1^G} = 0$, $F(1, 84) = 1.10$, $p = 0.30$). An identical pattern is observed for block 3, but with respect to individual participation (p_2) (models 5 and 6). Again it seems that subjects who were seldom active will tend to participate more in the following block, but the result is not statistically significant for subjects who were often active ($H_0 : \beta_{p_2} + \beta_{A_2 * p_2} = 0$; $F(1, 86) = 0.17$, $p = 0.68$; $F(1, 53) = 0.42$, $p = 0.52$, respectively). In any case, this result would be hardly surprising, as each subject might have an idiosyncratic tendency to participate. A third set of significant variables are observed in model 4, but they are not part of any systematic pattern. All in all, the independence of observations across blocks does not appear to be a problematic assumption.

Individual Participation			
Part. Own Group $_{t-1}$	-0.01 (0.02)	Active $_{t-1}$ *Part. Own Group $_{t-1}$	0.05* (0.03)
Part. Other Group $_{t-1}$	0.03 (0.02)	Active $_{t-1}$ *Part. Other Group $_{t-1}$	-0.02 (0.02)
Tie $_{t-1}$	-0.01 (0.01)	Active $_{t-1}$ *Tie $_{t-1}$	0.02 (0.01)
Piv $_{t-1}$	0.02 (0.02)	Active $_{t-1}$ *Piv $_{t-1}$	-0.00 (0.02)
Active $_{t-1}$	0.16** (0.07)	Constant	0.24*** (0.06)

Table 3.9: Determinants of participation across sub-blocks

Notes: Panel regression with fixed-effects, where the cross-section variable is subject and the time variable is sub-block. The dependent variable is the rate of individual participation (in a sub-block), while the independent variables are the rate of participation in the subject's group (Part. Own Group), the rate of participation in the other group (Part. Other Group), the number of pivotal events (Piv), the number of tie events (Tie) and whether the subject was active (Active). N=1152. ***/**/* indicates significance level at the 1%/5%/10%. level.

	P_2			P_3			P_2			P_3		
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
P_1	0.08 (0.17)	-0.69 (0.91)		0.08 (0.17)		-0.01 (0.92)	$A_1^*p_1$	0.89 (0.92)				0.11 (2393)
P_1^G	0.05 (0.08)	0.58** (0.24)		-0.15* (0.08)		-0.19 (0.26)	$A_1^*P_1^G$	-0.69** (0.27)				-0.01 (0.30)
$P_1^{G'}$	-0.01 (0.09)	-0.34 (0.32)		0.07 (0.09)		-0.06 (0.33)	$A_1^*P_1^{G'}$	0.41 (0.35)				0.26 (0.37)
Piv_1	-0.01 (0.02)	-0.02 (0.09)		-0.06*** (0.02)		0.01 (0.11)	$A_1^*Piv_1$	0.01 (0.10)				-0.07 (0.11)
Tie_1	0.01 (0.01)	-0.04 (0.04)		0.01 (0.01)		0.03 (0.04)	$A_1^*Tie_1$	0.05 (0.04)				-0.04 (0.04)
W_1	-0.13 (0.40)	-0.94 (1.59)		1.08** (0.43)		-0.07 (1.66)	$A_1^*W_1$	1.16 (1.72)				1.41 (1.76)
A_1	-0.19 (0.16)	-0.60 (0.79)		-0.16 (0.16)		-0.94 (0.81)						
P_2			0.15 (0.20)	-0.05 (0.23)	1.24* (0.65)	2.11** (0.96)	$A_2^*p_2$				-1.16* (0.66)	-2.36** (1.03)
P_2^G			0.10 (0.11)	0.21 (0.13)	0.24 (0.37)	0.10 (0.47)	$A_2^*P_2^G$				-0.31 (0.42)	-0.24 (0.54)
$P_2^{G'}$			-0.10 (0.10)	-0.13 (0.13)	-0.23 (0.26)	-0.33 (0.29)	$A_2^*P_2^{G'}$				0.32 (0.32)	0.64 (0.36)
Piv_2			0.00 (0.02)	0.01 (0.02)	0.01 (0.11)	0.07 (0.11)	$A_2^*Piv_2$				-0.02 (0.11)	-0.08 (0.12)
Tie_2			-0.01 (0.01)	-0.02* (0.01)	-0.00 (0.05)	0.00 (0.05)	$A_2^*Tie_2$				-0.01 (0.05)	-0.03 (0.06)
W_2			-0.20 (0.43)	-0.46 (0.52)	-0.30 (1.22)	-1.12 (1.32)	$A_2^*W_2$				0.71 (1.44)	2.17 (1.66)
A_2			-0.15 (0.20)	-0.19 (0.23)	-0.22 (0.67)	-1.21 (0.89)	Const.	0.64*** (0.24)	1.08*** (0.71)	0.77*** (0.21)	0.76*** (0.38)	1.59 (1.03)

Table 3.10: Determinants of participation across blocks

Notes: Least squares regression where the dependent variable is the rate of individual participation (in either block 2 or block 3), Subscripts indicate the block to which the variable is reported. N=98 for models (1) and (2), N=100 for models (3) and (5) and N=80 for models (4) and (6). ***/**/* indicates significance level at the 1%/5%/10% level.

3.F Transcript of Alphas' Messages

The transcript of the messages sent by the Alphas to the Betas in their group is presented below. Alpha_i stands for the Alpha of group i ; Group 1 competed with Group 2, and Group 3 with Group 4. The numbers in parentheses after 'Session' indicate the active electorate in sub-block 4 (the one for which choices had been made). The number in parentheses after ' Alpha_i ' indicates the time in seconds at which the message was sent: the clock started at 90 and counted down to 0. Sessions A, B and C implemented *Mob*, the remaining implemented *Ctr*.

Session A (5-5, 4-5):

$\text{Alpha}_1(73)$: Hi there, I think we should all buy discs

$\text{Alpha}_1(37)$: In that way we can make the most tokens

$\text{Alpha}_2(50)$: I want everybody to buy a disc each round

$\text{Alpha}_3(71)$: all choose to buy a disc

$\text{Alpha}_3(40)$: we are with four, but one of the other does not choose to buy. if we all buy we can get 4

$\text{Alpha}_3(34)$: payoff

$\text{Alpha}_4(24)$: Let's work together and get the most tokens for sure!

Session B (5-4, 1-1):

$\text{Alpha}_1(51)$: Please, always buy a disc in every round. We have got 5 members, they've got 4, so we could earn a lot of points here. Thanks in advance.

$\text{Alpha}_2(40)$: okay guys, if you're low cost always buy the disc, payoff will still be 0.5 if you lose, high cost at least 1 per round, payoff could be 4-1

$\text{Alpha}_2(10)$: scorched earth

$\text{Alpha}_3(41)$: i hope you can buy discs, because we have higher chance to win

$\text{Alpha}_4(19)$: the beta member always has to buy a disc! the expected payoff is higher because the other group also has one beta. the expected payoff is 2

Session C (5-5, 5-4):

$\text{Alpha}_1(44)$: please all buy a disk, if we do it together we can make more profit. Otherwise I'd rather make a lot of profit on my own.

$\text{Alpha}_1(2)$: I think the best way is to stick together :)

Alpha₂(74): please all buy a disc!

Alpha₂(7): thats all i have to say lol

Alpha₃(12): I've activated you all. If you all buy discs, we all will earn the maximum to my opinion.

Alpha₄(54): hey, Ok so there is one more beta activated in the other group. here there are 4 and in the other group 5. So in my opinion you should

Alpha₄(33): all buy discs, so we have a higher probability of getting the reward

Alpha₄(24): lets see how it goes :)

Session D(5-5, 4-5):

Alpha₂(58): hi

Alpha₃(41): think critically what to choose, last round the other group had 5 (we only 4) members just as in this case. They all bought disk!

Alpha₄(84): He all :-)

Alpha₄(55): Let's try to buy all the discs we can. So that we always go for the highest reward

Alpha₄(41): It will cost you a little bit, but makes it more likely that you earn more money

Alpha₄(22): 4-1 or 4-0.5 is still more than.. 1-1 or 1-0.5

Alpha₄(16): Let's do it!!!!

Alpha₄(13): And earn some money

Session E (5-4, 1-1):

Alpha₁(80): buy

Alpha₁(60): buy them all

Alpha₁(12): "good luck ;)"

Alpha₂(48): lets try buying 4 discs. everyone buy one and lets see what they do.

Alpha₃(69): In the first 8 rounds we have one active member

Alpha₃(63): and the other group also one active member

Alpha₃(39): so if the active member buys all the time the disc we have 50% chance to get the high reward which is good

Alpha₃(17): I think it would be good to try and have the higher rewards in the other rounds as well

Alpha₄(70): everybody buy discs

Session F (5-5, 5-4):

Alpha₁(29): both groups have 5 members, please all buy discs, it has shown in the past that in round there are always some who dont, we buy all!!!

Alpha₂(54): Ok, we can get them if we play disciplined. Which means every one buy discs every round!

Alpha₃(88): Hi

Alpha₃(77): We should buy all discs each round\

Alpha₃(68): Especially now we have more active beta members

Alpha₃(56): That way we're certain we get 4 points each round

Alpha₃(29): So, everyone. Don't skip.