An Experimental Study of the Effect of Announcements on

Public Goods Contributions

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Abstract: We include probabilistic announcements in a standard public goods experiment. Although the possibility of having decisions announced encourages subjects to contribute more to the group account, learning that some individuals are free-riding more than average has a negative effect.

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Introduction

Fund raising campaigns commonly use public announcements about contributions to generate more donations. This strategy is based on the assumption that donors derive utility from having others learn of their generosity to "worthy" causes such as charities, museums and public radio. Alternatively negative publicity, or the threat of it, can affect behavior. For example, private clubs often post lists of people who have not paid their annual dues. We conduct a laboratory experiment to examine the effect of announcements on individual contributions to public goods. Specifically, we modified a standard voluntary contributions mechanism to include a probabilistic external audit mechanism. Audits took one of three forms: an announcement of the audited subject's choices; a monetary punishment based on the subject's choices; or both an announcement and a monetary punishment. Consistent with other experimental studies, increasing the probability and/or severity of the monetary punishment has a significant positive effect on contributions to the public good. However, the effect of the announcement, the focus of this paper, is mixed. The *a priori* possibility of an announcement increases public contributions slightly. The *ex post* effect of an announcement is to inform others in the group about one individual's free-riding behavior. This appears to encourage other subjects to decrease their contributions to the public account.

Procedures

Subjects were recruited from undergraduate courses at The College of William and Mary. Twelve students were recruited for each session; ten students were decision makers and two served as monitors. Students were given lab credit for showing up for the experiment and two of the subjects were chosen randomly at the end of each session to be paid their earnings in the experiment. Eighty subjects served as decision makers in all of the sessions, and earnings averaged $25.48 for those who were paid.

Tables were arranged in a U-shape with subjects facing inward. Each decision- maker sat behind a three foot high divider which prevented other subjects from seeing his desk, but allowed subjects to see each other's faces. Each divider was labeled with a large number that corresponded to the subject's identification number in the experiment. Upon arrival students read along as we read the instructions aloud.[1] Each period every subject was given an empty envelope labeled "Private Account" and an envelope labeled "Group Account" which contained ten "tokens." Subjects were given the opportunity to move none, some, or all of the tokens in their possession from the group account to their private account. Tokens remaining in the group account at the end of the period were doubled and shared equally by the ten members of the group. Tokens moved to private accounts were not doubled and were not shared by the group. Once all subjects made their token allocation decisions, the monitors collected the group account envelopes and tallied the number of tokens in the group account. This number as well as the doubled amount and each person's share of the doubled amount were announced to the group. Earnings were calculated at the end of the period at a rate of 10 cents per token accumulated, which included all tokens in a subject's private account plus his share of the group account.

Table I summarizes treatment variables by session. To examine the effect of the announcement and the financial punishment on contributions to the group account we implemented them both independently and jointly. Columns 3 and 4 indicate the probability of announcement and punishment in each period. Subjects were selected for audit using a ten-sided

[1] The instructions are available at http://faculty.wm.edu/lrande/links/publicity_instructions.pdf.

die, which was thrown after the group account was tallied and announced. If the probability of announcement was ten percent, we threw the die and approached the desk of the subject whose identification number matched the number on the die. We then counted the number of tokens in his private account envelope and announced it out loud. When the probability of announcement was fifty percent, subjects with even identification numbers were announced if the die throw resulted in an even number and vice versa.[2] Notice from table I that the order of treatments varied across sessions.

Results

All parameters were chosen so that subjects had a dominant strategy to completely free ride (i.e. move all tokens to their private account) in all treatments. However, of the 80 subjects in the experiment, only 4 subjects (all male) did so. At the other extreme, 3 subjects (all female) consistently contributed all of their tokens to the group account. The rarity of complete free riding is consistent with results from other VCM experiments.

Table I reports mean contributions to the group account by treatment. To tease out specific treatment effects, we ran a tobit regression on the group account contributions of all players in all sessions. Because each subject made a series of contributions, we used a random effects specification which allows errors across an individual subject to be correlated. The results of this regression are presented in table II. Because the size of the group account in the previous period is one of the explanatory variables, period 1 contributions are not included in the regression. In addition to the variables listed in the table, the regression also includes session

[2] We used the same procedure to choose subjects for the financial punishment.

dummies to control for differences across sessions that are not picked up by the other explanatory variables.[3]

The results are consistent with those from other public goods experiments. The coefficient on Group Account Last Period is positive and significant, indicating that subjects reciprocate others' generosity to the group account. The coefficient on Male is negative and significant, which is consistent with a number of other experimental studies suggesting that gender plays an important role in decision making. The coefficient on Period is negative and significant, demonstrating an "erosion" of public contributions over time. The coefficient on Reset, a dummy indicating if a change in the treatment occurred in that period, is positive and significant. The positive and significant coefficients on Punishment Probability and Punishment Level indicate that the possibility of a financial punishment encourages subjects to contribute more to the public account, despite the strong equilibrium prediction of complete free riding. We extend this work on financial punishment to investigate the relative effects of punishment probability and severity in Anderson and Stafford (2003).

The effect of public announcements about contributions is ambiguous. Notice from table II that the *possibility* of having one's contribution announced (represented by the dummy variable Announcement) leads to a small (0.37 tokens) increase in the group account contribution. When a variable measuring the Announced Level (i.e. how much the chosen subject(s) allocated to the private account) was added to this model, it was not significant and the coefficient on the Announcement dummy lost significance.[4]

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[3] While only 2 of the 7 coefficients on session dummies are individually significant, they are jointly significant.

[4] The correlation coefficient between Announcement and Announced Level is 0.66, which is likely to be the cause of the coefficient on Announcement becoming insignificant.

Table III presents the results of a similar regression that only includes observations from periods that followed an announcement, that is, where some information on individual contributions was provided. Although the coefficient on Announcement is not significant, an additional dummy variable indicating whether the announced level of free-riding exceeded the average level of free-riding has a significant negative (-0.60 tokens) effect on contributions to the group account. In other words, learning (through the public announcement) that one person is excessively free riding on the group account leads other subjects to decrease their contributions.

Summary

We include a probabilistic announcement feature in a standard public goods experiment. The possibility of having decisions revealed to other members of the group prompts subjects to contribute more to the group account. However, learning that some individuals are free-riding more than others has a negative effect on contributions. These results are consistent with Andreoni and Petri (2003) who also investigate the effect of relaxing anonymity in a public goods experiment. When digital pictures are used to link contribution information to individuals, average contributions are higher than when contributions are reported anonymously. Further, they find that having a large proportion of “laggards” (which they define based on stingy first period contribution rates) results in lower overall contributions.

References

Anderson, Lisa R. and Sarah L. Stafford, 2003, Punishment in a Regulatory Setting: Experimental Evidence from the VCM, Journal of Regulatory Economics 24, 91-110.

Andreoni, James and Ragan Petrie, 2003, Public Goods Experiments Without Confidentiality: A Glimpse into Fund-Raising, working paper.

Table I. Experimental design and descriptive statistics

(1)	(2)	(3)	(4)	(5)
Session	Periods	Probability of Announcement	Probability of Punishment	Mean Contribution to Group Account
1	1-10	0.00	0.10	3.7
2	1-10	0.00	0.10	3.7
	11-20	0.10	0.10	1.5
3	1-10	0.10	0.10	4.0
	11-20	0.00	0.10	2.9
4	1-5	0.00	0.10	4.7
	6-10	0.10	0.10	2.5
	11-15	0.50	0.50	4.8
	16-20	0.00	0.50	1.1
5	1-5	0.00	0.00	4.0
	6-10	0.10	0.00	2.5
	11-15	0.10	0.10	3.9
	16-20	0.00	0.10	1.2
6	1-5	0.00	0.00	4.1
	6-10	0.10	0.00	2.4
	11-15	0.00	0.10	1.4
	16-20	0.10	0.10	0.5
7	1-5	0.00	0.00	3.9
	6-10	0.10	0.00	2.6
	11-15	0.10	0.10	4.8
	16-20	0.00	0.10	5.4
8	1-5	0.00	0.00	4.7
	6-10	0.10	0.00	3.1
	11-15	0.00	0.10	5.5
	16-20	0.10	0.10	5.7

Table II. Results of the Random Effect Tobit Regression on Group Account Contributions

Variable	Coefficient	Standard Error
Constant	2.64***	0.91
Punishment Probability	4.68***	1.65
Punishment Level	0.66***	0.12
Ever Punished	-0.45	0.33
Punished Last Period	-1.16***	0.43
Announcement	0.37*	0.22
Group Account Last Period	0.07***	0.01
Male	-4.56***	0.31
Period	-0.21***	0.04
Reset	0.95***	0.35

(Dependent variable = Number of tokens allocated to group account)
*** Significant at the .01 level; **Significant at the .05 level; * Significant at the 0.10 level

Table III. Results of the Random Effect Tobit Regression on Group Account Contributions in Periods Following an Announcement

Variable	Coefficient	Standard Error
Constant	5.79***	1.47
Punishment Probability	8.53***	2.31
Punishment Level	0.74***	0.16
Ever Punished	0.85*	0.4
Punished Last Period	-1.22**	0.52
Announcement	1.30	0.81
Announced Free-Riding Greater than Average	-0.60*	0.31
Group Account Last Period	0.05***	0.02
Male	-5.23***	0.48
Period	-0.37***	0.07
Reset	1.66***	0.80

(Dependent variable = Number of tokens allocated to group account)
*** Significant at the .01 level; ** Significant at the .05 level; * Significant at the 0.10 level