# Experimental Research in Public Goods, 2

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## Institutional Design, Social Effects, Fund Raising

- Andreoni and Petrie, "Public Goods Experiments Without Confidentiality: A Glimpse into Fund-Raising," *JPubE*, 88, 7-8, July 2004, 1605-23
- Rege and Telleb, "The impact of social approval and framing on cooperation in public good situations" *JPubE*, 88, 7-8, July 2004, 1625-1644.
- Potters, Sefton and Vesterlund "After You Endogenous Sequencing in Voluntary Contributions Games," *JPubE*, 89 (8), August 2005.

# Andreoni & Petrie, JPubE 2004

- Fund-raisers announce the names of givers.
- It must matter to them.
- How does it work and does it promote efficiency?
- Experiment: Reveal identity without revealing names (like with CIA agents).

- Conditions:
  - -1. No Pictures No Amounts
  - -2. Pictures No Amounts
  - 3. No Pictures Amounts
  - -4. Pictures Amounts
  - -5. Category Reporting, with Pictures
  - -6. Option to give Anonymously

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	Your	Group - Results from	round 4						
Invested 20 tokens in Blue1	Invested 17 tokens in Blue1	Invested 10 tokens in Blue1	Invested 5 tokens in Blue1	Did not invest in Blue1					
	Decision Screen - Round 5								
How would you like to divide your 20 tokens between the three investment opportunities?									
Tokens in <b>RED</b> investment: Each token earns \$0.02 for you and \$0 for the other group members									
Tokens in BLUE1 investment: Each token earns \$0.01 for you and \$0.01 for the other group members									
Tokens in BLUE2 investment: Each token earns \$0.01 for you and \$0.01 for the other group members									
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#### Results...



#### Results.

- Result 1: Only when both pictures and amounts are shown is there a significant effect.
- Result 2: With Anonymity optional,
  - No one chooses to give anonymously
  - But these people give significantly more than others anyway.
- Result 3: Categories...

#### Results.



- Result 3: With categories 0-14, 15-20, people move to the lower end of the categories
  - Except those giving everything, who don't move.

## Rege, Kjetil Telleb (2004) Social Approval

- Each person must go to the front of the room and take money from an envelope and deposit it into the "Community" account.
- This significantly increases donations
  Similar to the Photos-and-Amounts condition
  - above.

## Potters, Sefton and Vesterlund (2005) – After You

- Suppose the quality of the public good is unknown.
- One person has superior information
- The person with information should go first to signal the quality of the good.
- Person without information should give more when the informed person gives more.
- Knowing this, informed give more when they move first.
- Intuition: Fund-raising appeals with large initial donors who signal quality with large donations.

# Challenges: Punishment

- Fehr and Gachter, "Cooperation and Punishment in Public Goods Experiments," AER, 2000, 90, 4, 980.
- Masclet, Denant-Boemont, Noussair, "Public Goods Games with Sanctions and Meta Norms" Working paper 2004. (Noussair, et al. 1)
- Masclet, Noussair, Tucker, Villeval, "Monetary and Nonmonetary Punishment in the Voluntary Contributions Mechanism." *AER*, March, 2003. (Noussair, et al. 2)
- Cinyabuguma, Page, Putterman "Cooperation under the Threat of Expulsion," *JPubE*, 89 (8), August 2005.

# Fehr and Gachter, AER 2000

- What if after a linear public goods game, we allow subjects to costly punish each other?
- Punishing is costly, so there should be none of it.
- Preserves the Dominant Strategy Equilibrium.
- Will in improve efficiency?

#### **Experimental Design**

- Round 1 payoffs as in standard public goods game.
  - y=20, n=4, a=0.4
- Round 2 allows purchase of punishment points p that <u>shrink</u> earnings of others 10% per point
  - Note: bigger free riders are cheaper to punish

(1) 
$$\pi_i^1 = y - g_i + a \sum_{j=1}^n g_j,$$
  
 $0 \le a \le 1 \le na$ 

(2) 
$$\pi_i = \pi_i^1 [1 - (1/10)P^i] - \sum_{j \neq i} c(p_i^j).$$

#### **Experimental Design**

 Punishment points have increasing marginal cost

TABLE 2—PUNISHMENT LEVELS AND ASSOCIATED COSTS FOR THE PUNISHING SUBJECT											
Punishment points $p_i^j$	0	1	2	3	4	5	6	7	8	9	10
Costs of punishment $c(p_i^i)$	0	1	2	4	6	9	12	16	20	25	30

#### Results

Sessions	Mean contributi	on in all periods	Mean contribution in the final periods		
	Without punishment opportunity	With punishment opportunity	Without punishment opportunity	With punishment opportunity	
1	2.7	10.9	1.3	9.8	
	(5.2)	(6.1)	(4.3)	(6.8)	
2	4.0	12.9	2.3	14.3	
-	(5.7)	(6.4)	(4.3)	(5.0)	
3	4.5	10.7	2.0	13.1	
2	(6.0)	(4.9)	(3.8)	(4.0)	
Mean	3.7	11.5	1.9	12.3	
	(5.7)	(5.9)	(4.1)	(5.6)	

TABLE 3-MEAN CONTRIBUTIONS IN THE STRANGER-TREATMENT

*Notes:* Numbers in parentheses are standard deviations. Participants of Sessions 1 and 2 first played the treatment with punishment opportunities and then the one without such opportunities. Participants of Session 3 played in the reverse order.

- Contributions increase when punishment is allowed
  - Rising from about 20% to about 60%

#### Results

- Who gets punished? Free riders.
- <u>Net</u> effect on efficiency? Zero or negative



FIGURE 5. RECEIVED PUNISHMENT POINTS FOR DEVIATIONS FROM OTHERS' AVERAGE CONTRIBUTION

#### Fehr & Gachter: Issues

- "Price" of punishing changes non-linearly
  - Makes it difficult to infer a willingness to pay for punishing, or cost/benefit ratio
  - Masks the effect of an important policy variable
- Within-subjects comparisons
  - The same subjects played 10 rounds with punishment, and 10 without
  - Makes pure treatment effects difficult to identify because of order and experience effects
- Why does the game end with one round of punishing? What if *Retribution* is allowed?

# Noussair 1: Metanorms.

- Adds two additional versions of punishment:
  - Punish those who fail to punish
    - Norm Enforcing
  - Punish those who punished me
    - Retribution
- Results:
  - Norm Enforcing punishment improved cooperation
  - Retributive Punishing largely counteracted the beneficial effects of punishment.

## Noussair 2: Non-monetary Punishmnet

- In reality, one can register disapproval with a growl or an insult that is rather cheap, but often effective.
- Replicates Fehr and Gachter but also allows Non-monetary punishment
- 30 rounds:
  - 1-10 Standard public goods game
  - 11-20 Either Monetary (F&G) or Nonmonetary punishment
  - 21-30 Back to the standard public goods game

- Sequence of 30 games not revealed--Surprise restarts each time
- Implementing the Non-monetary Punishment:

In this stage you have the opportunity to register your **approval** or **disapproval** of each other group member's decision by **distributing points**. <u>You can award a</u> <u>large number of points to any member</u> <u>of your group if you disapprove of his</u> <u>or her decision (10 points for the most</u> <u>disapproval, 0 points for the least disapproval</u>).<sup>11</sup>

#### **Results: Monetary Punishment**



FIGURE 1. GROUP CONTRIBUTION LEVELS IN MP (PURDUE)

#### **Results: Non-monetary Punishment**



FIGURE 3. GROUP CONTRIBUTION LEVELS IN NP (PURDUE)

#### **Results: Comparisons of Earnings**



FIGURE 6. AVERAGE PER PERIOD EARNINGS IN MP AND NP

#### Noussair 2: Conclusions

- Monetary and Non-Monetary Punishments each improve cooperation and earnings
- The effects are actually similar
- The same efficiency can be reached with anonymous social sanctions that can be reached with costly monetary sanctions
- Questions:
  - External Validity?
  - What happens when stakes are higher?
  - What monetary sanction is equivalent to a non-monetary sanction?

#### Cinyabuguma, Page, Putterman *JPubE*, 2005. Excluding from the Group

- What if people can be excluded from a group, such as an a club or department, and relegated to an inferior group?
- In this experiment, people can be "voted off the island" with costly votes.
- If a person gets a threshold number of votes, they are banned from the group for the rest of the experiment.
  - Note, banning someone costs those remaining, in addition to the cost of the vote, since the person cannot contribute to the public good
  - There is no benefit from banning, other than ex ante as a threat
  - As such, it is non-credible and should not change the dominant strategy equilibrium.

#### **Experimental Deisgn**

- 16 subjects per session
- Endow each round with 10 units
- Payoff = 10 g + 0.2(G)
- "Expulsion Treatment":
  - Subjects shown distribution of g's
  - Can vote to expel other subjects.
  - Each vote cost 0.25 units (about \$0.01).
  - If half of remaining subjects vote to expel, person is moved to the bad group.
  - Endowment in bad group is only 5, not 10.
- Within-subjects design: Baseline then Expulsion
- And also Expulsion then Expulsion treatments
  - Must run both baseline-expulsion and expulsion-expulsion to make sure it is not just experience that accounts for the difference.
  - If the final expulsion treatments are the same in both groups, we know it is not just experience.

#### **Results: Baseline - Expulsion**



Fig. 1. Average contribution in BE design, by treatment and group.

**Results: Expulsion - Expulsion** 



Fig. 3. Average contribution in EE design by treatment and group.

### **C,P&P** Conclusion

- Exclusion from the group has powerful enforcement power
  - As long as there is even one additional period in the future.
  - The cost of being "voted off the island" is so severe, it assures cooperation.
  - If, in reality, "voted off the island" means being shunned by your "in" group, then free riding may not be as severe among "friends"
    - Example: Diamond trade

Continuous vs. step level public goods

Rondeau, Poe, Schulze (2005), "VCM or PPM? A Comparison of Performances of two Voluntary Public Goods Games." *JPubE*, 89 (8), August 2005.

Compares Linear Public Goods to Provision Point goods: Making things more discrete can help.

#### Fundraising "Campaign" giving

Duffy, Ochs, and Vesterlund (2005) "Giving Little by Little: Dynamic Voluntary Contribution Games," working paper, U Pitt.

Test of a paper by Marx and Matthews, REStud, 2000. Turntaking in a Provision Point good eventually reaches Pareto efficient levels, but after an inefficient waiting period.