

External Validity of Public Goods Experiments and Field Contributions Experiments

Susan K. Laury
ERSA Public Economics Workshop
16 March 2015, East London



Overview

- An Experiment that tests the external validity of public goods experiments
 - Are those that contribute to a laboratory public good more (or less) likely to contribute to a naturally-occurring public good.
- A field experiment for contributions to a naturally-occurring public good in which key parameters are controlled by the researcher.

Laury and Taylor (J. of Econ Behavior and Organization, 2008)

- There were two parts of the experiment:
 - Induced-value, context-free public goods experiment
 - Local Public Good Experiment
 - Subjects paid before the local public goods experiment was conducted
- Most subjects participated in the laboratory (induced value) public goods experiment first.
 - Order was reversed for about 1/3 of subjects

Lab Public Goods Experiment

- Followed Goeree, Holt and Laury (2002)
- Half faced same parameters reported earlier
 - Token kept = 5-cents
 - Group size = 2, 4; Internal Return = 2 or 4-cents, External Return = 2, 4, 6, or 12-cents
- Half faced more variation in group size and higher earnings
 - Token kept = 10-cents
 - Group size = 2, 4, 8; Internal Return = 4 or 8-cents, External Return = 4, 8, or 12-cents

Local Public Goods Experiment

- Procedures follow standard choice-modeling (conjoint) format used to elicit values for non-marketed public goods.
 - Subjects asked to choose between different bundles of goods
 - The goods are described in terms of their characteristics, one of which is price
 - By comparing observed tradeoffs between characteristics and cost, one can infer the marginal value of the attributes.

- We wanted the public good used to have the following characteristics:
 - Deliverable
 - if it is 'purchased' it should be credible that it will be provided in return for payment
 - Divisible
 - the payment should be connected to a certain amount of the good provided
 - We must be able to alter the goods' attributes without impacting the first two criteria.
- We chose *Trees Atlanta's* 'gift trees' program

- Subjects were given an experiment packet that contained instructions, eight choice questions, and a demographic survey.
- Instructions covered:
 - Trees Atlanta and its gift-trees program
 - The three trees and their main attributes:
 - Flowering habit, mature height, growth rate (years to maturity), shade potential
 - Color photos of each (at maturity) shown
 - How contributions worked
 - One binding choice, if tree chosen in that choice the subject paid the cost
 - Subject would be provided with confirmation from Trees Atlanta once the tree was planted

Lab Public Good: Overview

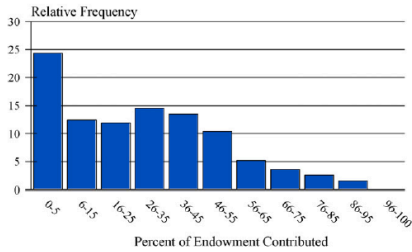


Fig. 1. Average individual contribution over all decisions.

Trees Atlanta Results (Overview)

- Only 27 percent of subjects ever chose to purchase a tree.
- Almost half purchased a tree in just one of 8 questions
 - This happened at the highest rate with those whose altruism parameter was not significantly different from zero.
- Probability of contributing:
 - Positively correlated with earnings
 - Negatively correlated with price of tree
 - Oak trees most likely to be chosen

- Our interest is in the correlation between contributions to the lab public good and contributions to Trees Atlanta.
- We use several measures of behavior from the lab public good:
 - Average contributions
 - Strong Free-Riding (contributing nothing)
 - Weak Free-Riding (contributing something, but less than 30% of one's endowment)
 - Estimated altruism parameter (as in Goeree et al.)

- Those who contribute more to the lab public good are somewhat more likely to contribute to Trees Atlanta
- Strong free-riders are somewhat less likely to contribute.
- Weak free-riders are more likely to contribute than all others.
- The altruism parameter is not significantly related to contributions.

- List and Reiley (J. of Political Economy, 2002)
- List and Reiley conduct a field experiment on contributions to a naturally-occurring good.
 - In a field experiment there is a trade-off between control and realism
 - Some factors can still be controlled by the experimenter
 - However, more factors are outside of the experimenter's control

- The good studied is a provision-point public good.
 - Contributions must reach a threshold (the provision point) before any amount of the public good can be provided.
 - Contributions in excess of the threshold:
 - May earn no additional return
 - May earn additional return that is linear or subject to additional thresholds
 - The simplest framework is one in which there is a single provision point after which contributions provide no additional earnings.

- Example (Marks and Croson, Journal of Public Econ, 1998)
 - Subjects assigned to a group with $N=5$
 - Each subject receives 55 tokens
 - Private account earns 1-cent/token
 - Group Account earns nothing unless contributions sum to 125
 - If this provision point is reached, each person earns 50-cents from the group account (even those who do not contribute)
 - There are multiple Nash equilibria in this game.
 - Efficient equilibria are such that contributions sum to 125

- Research questions have included:
 - What is the effect of rebates if the threshold is not met?
 - What is the effect of rebates if the threshold is exceeded?
 - How should rebates be allocated in this case?
 - What if excess contributions may be used to provide a continuous (non-provision-point) public good?

List and Reiley's Field Experiment

- Consider the impact of two factors on a fundraising campaign:
 - Rebates if the threshold level of contributions is not met
 - Seed Money
- Many professional fund-raisers are encouraged to postpone public fundraising until a substantial portion of the goal is pledged as 'seed money'

- They sought contributions to purchase computers for CEPA (Center for Environmental Policy Analysis) at the University of Central Florida.
- The cost of each computer was \$3,000
- Solicited contributions from 3,000 central Florida residents
 - Each was randomly assigned to a group of 500
 - Each group was asked to fund a separate computer for use at CEPA

Treatments

- Seed Money:
 - 10% (\$300)
 - 33% (\$1000)
 - 67% (\$2000)
- Refund:
 - Within each seed money treatment, half of the groups guaranteed a return of the contribution if the goal was not met
 - Excess contributions were to be used to fund other CEPA needs

- Solicitation letters identical except for reference to seed money and rebate.
- The relevant language:
 - ‘We have already obtained funds to cover 10 percent of the cost for this computer, so we are soliciting donations to cover the remaining \$2,700’
 - ‘If we fail to raise the \$2,700 from this group of 500 individuals, we will not be able to purchase the computer, but will use the received funds to cover other operating expenditures of CEPA’
 - ‘If we fail.... We will not be able to purchase the computer, so we will refund your donation to you.’

Results

	Participation Rate	Average Contribution	Total Contribution
10	3.4%	\$11.88	\$202
10R	4.0%	\$18.95	\$379
33	6.6%	\$24.39	\$805
33R	6.2%	\$27.84	\$863
67	8.4%	\$35.36	\$1485
67R	8.0%	\$44.38	\$1775

- The effect of increasing levels of seed money was greater than the effect of refunds.
 - Participation rates were modestly affected by changes in treatment
 - The average contribution (and therefore total contributions) were much higher for higher levels of seed money.
- Total contributions were \$5,509
 - After refunds, \$4,267 was kept by CEPA
- Total capital raised (after refunds)
 - \$1,775 in the refund treatment
 - \$2,492 in the no-refund treatment
