



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

The Influence of Short-term Financial Incentives (PES) on Social Norms and Behaviors: Laboratory Experimental Evidence

John Kerr (Community, Agriculture, Recreation and Resource Studies), Marie Lapinski (Communication Arts and Sciences), Robert Shupp (Agriculture, Food, and Resource Economics) and Jinhua Zhao (Economics, and Agriculture, Food, and Resource Economics)

Introduction:

- Social programs worldwide have embraced the notion of offering financial incentives for desirable social behavior. Payment for ecosystem services (PES), whereby land managers in environmentally sensitive areas receive direct payments to protect environmental amenities, is a prominent example.
- However, most of these programs are of limited duration – payments are made for a limited time, after which it is assumed program participants will return to pre-payment behavior, unless the payment has changed preferences or facilitated learning.
- Recent insights from behavioral economics suggest the potential for a more complex long-term effect of short-term payments. In particular, numerous studies find evidence that monetary incentives can crowd out socially derived sources of motivation, and that this detrimental effect can outlast the presence of the incentive.
- This research develops a new economic model of behavior that incorporates normative social behavior and tests it using a laboratory-based public goods experiment. The new economic model incorporates elements of a social normative model from Communication Sciences (Theory of Normative Social Behavior – TNSB). The hope is to better understand and predict how financial incentives in the form of PES or incentive payments influence social norms and behavior.

Theory of Normative Social Behavior (TNSB):

TNSB describes and predicts the effects of social norms on behaviors. It conceptualizes social norms as a function of communication about behavior, among a group of people, in a particular context. Core to the TNSB is the relationship between perceived descriptive norms (perceptions of the prevalence of a behavior) and behavior; it describes the perceptual variables that moderate that relationship:

- Group Identity: feelings of affinity with a referent group – when group identity is strong, descriptive norms will have a greater influence on behavior.
- Ego-involvement: extent to which behavior is closely tied to self-concept
- Outcome expectations: beliefs about the outcomes of engaging in an action
- Injunctive Norms: beliefs about what behavior is appropriate

This study focuses on the impact of perceived descriptive norms, actual behavior and group identity in explaining individual behavior.

Experimental Design and Procedures:

- We conducted a computer-based public goods (PG) experiment with undergraduate student subjects at Michigan State University.
- Standard linear PG setting: 4-person groups, each player has 20 tokens to allocate to a Private or Group account.
 - Private account yields e\$1/token
 - Group account yields e\$1.6/token or e\$0.4 per group member
 - Lower private return from group account implies free-riding
- Four treatments each with 19 rounds:
 - Initial round (Round 0): one-shot; in sorted treatments used to rank order participants in terms of contributions and place in groups with similar contribution levels. In not sorted treatments, participants assigned to groups randomly. All groups were shown group member contributions from Round 0 (in an anonymous fashion) before next rounds.
 - After round 0, subjects stayed in same group rounds 1-18. These 18 rounds were split into three 6-round phases. Subjects did NOT know about subsequent phases until after they completed the current phase.
 - Phase I (rounds 1-6): normal linear PG game each round; same in each treatment.
 - Phase II (rounds 7-12): normal linear PG game each round; in Incentive Payment treatments, for every token contributed to the group account a Bonus Payment of e\$0.6 was paid to the contributor – making the private and group accounts yield the same private return.
 - Phase III (rounds 13-18): normal linear PG game each round without incentive payment; same in each treatment.
- TNSB questions: In all treatments, after round one and at the end of each Phase, participants responded to two sets of questions. One set of questions probed *perceived prevalence of cooperative behavior (descriptive norm)*, while the other elicited individual measures of *group identity* via questions about how similar they thought other group members were to them in terms of values, behavior, thought processes, and intellectual ability.

Experiment Treatments (N=number of subjects)

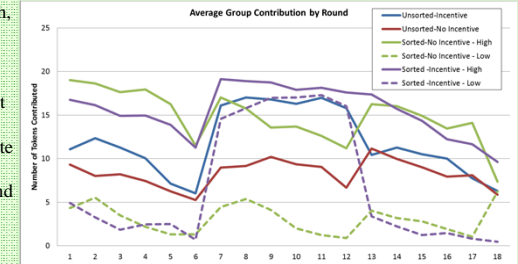
	Incentive Payment	No Incentive
Sorted	N=68; 3 sessions; 17 groups	N=64; 3 sessions; 16 groups
Not Sorted	N=32; 2 sessions; 8 groups	N=28; 2 sessions; 7 groups

Non-Parametric Results:

As shown in the average group contribution by round graph, overall behavior follows standard PG results:

- Free-riding predicts zero token contributions but actual contributions exceed zero.
- Contribution levels fall over rounds and there is a restart effect between phases (see No Incentive treatments).
- PES increases contributions, but still less than 20, despite group and private accounts having same payoffs.

Average contributions broken out by initial round, phase and sorted groups are shown in table below. Non-parametric analysis (Mann-Whitney or Wilcoxon tests) indicates:



- Overall initial round contributions are insignificantly different between treatments.
- PES (Incentive) impact:
 - 1) Focusing on unsorted treatments (Blue and Red), incentive increases Phase II contributions (16.64 vs. 9.41), but does not exhibit a long-term effect as we find no significant difference between Phase I and III in either treatment.
 - 2) Focusing on sorted treatments (Purple and Green), incentive again increases Phase II contributions (17.56 vs. 10.47), but looks to have a detrimental lasting effect overall (Phase III contribution significantly lower than Phase I), but this is also true with no incentive (Green). Thus there may be an interaction with sorting.No aggregate level PES long-term impact is observed.

- Sorting Impact:

- 1) Focusing on Phase I only and aggregating across incentive and no incentive treatments, sorting leads to significantly higher ($p < .05$) contributions (10.62 vs. 9.53).
- 2) However, it appears that sorting leads to greater (and significant) declines in contributions by phase III.

		Incentive				No Incentive			
		Overall	Top 2 Groups	Middle Group(s)	Bottom 2 Groups	Overall	Top 2 Groups	Middle Group(s)	Bottom 2 Groups
Sorted	Initial Round	10.43	17.67	11.00	2.71	11.33	18.21	11.94	4.04
	Phase I	9.49	15.33	10.29	2.99	11.18	17.89	15.33	3.38
	Phase II	17.56	18.57	17.83	16.34	10.47	14.54	14.92	3.44
	Phase III	8.41 (11%)	14.27 (7%)	9.28 (10%)	1.83 (39%)	9.38 (16%)	14.96 (16%)	12.99 (15%)	2.60 (23%)
Not Sorted	Initial Round	9.72				9.93			
	Phase I	10.39				8.54			
	Phase II	16.64				9.41			
	Phase III	9.99 (3.9%)				8.41 (1.5%)			

Average contributions in phases do not include final period contributions due to end-of-world effect (%)'s are percentage change in contributions between Phase I and Phase III.

Regression Results:

Below are select results from a series of linear regressions designed to account for possible interaction effects between sorting and incentives and to investigate the explanatory power of the TNSB social norm questions with regard to individual contributions:

1. Overall: incentive increases contribution while in place, but does not have lasting impact; Sorting raises contributions.
2. There is a negative interaction between incentive and sorting – incentives in sorted groups led to significantly lower contributions post-incentive.
3. Perceived cooperation (i.e., descriptive norm – based on social norm questions) is not significant. We hypothesize this is due to the fact that lagged measures of contributions were included in the regression and the perceived cooperation variable is highly correlated with these lagged measures (i.e., perceived cooperation was not different from actual cooperation).
4. Group identity (the more the participant feels that other group members are similar to them), is positive and significant. That is, the more a participant identifies with the group, the more they contribute.

Conclusions:

1. Both economic incentives and the TNSB-based social norm variables help explain the contribution behavior of individual participants. Specifically, group identity appears to have a positive effect on contributions. This suggests that PES projects designed to enhance social norms and group identity would be more effective at promoting pro-social behavior possibly even after the incentive payments disappear.
2. PES or incentive payments clearly have positive short run effects on contributions, but do not appear to have a significant long-run effect except for homogeneous (sorted) groups. In this case, incentive payments have the effect of *decreasing* contributions relative to before the incentive payments began. This suggests that monetary incentives may crowd out socially derived sources of motivation, but this may be primarily driven by the non-cooperative homogeneous groups.

**The Influence of Short-term Financial Incentives (PES) on Social Norms and Behaviors: Laboratory
Experimental Evidence**

John Kerr
Department of Community, Agriculture, Recreation and Resource Studies
Michigan State University
jkerr@msu.edu

Marie Lapinski-Lafaive
College of Communication Arts and Sciences
Michigan State University
lapinsk3@msu.edu

Robert Shupp
Department of Agriculture, Food, and Resource Economics
Michigan State University
shupprob@msu.edu

Jinhua Zhao
Departments of Economics and Agriculture, Food, and Resource Economics
Michigan State University
jzhao@msu.edu

Selected Poster prepared for presentation at the Agricultural & Applied Economics Association's
2013 AAEA & CAES Joint Annual Meeting, Washington, DC, August 4-6, 2013.

Copyright 2013 by John Kerr, Maria Lapinski-Lafaive, Robert Shupp and Jinhua Zhao. All rights reserved. Readers
may make verbatim copies of this document for non-commercial purposes by any means, provided that this
copyright notice appears on all such copies.