

Field and Lab Experiments to Understand and Change Socio-Ecological Systems

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Panel abstract:

The study of socio-ecological systems (SESs) has seen in the last decades a number of complementary approaches from complexity studies, behavioral sciences, and ecological analysis tools. Simulations, game theory, and experiments have all contributed to a better understanding of the interactions between the human and biological components of SESs. Economic experiments conducted both in the laboratory and the field have added knowledge on how complex human behavior is, rejecting or qualifying the narrow and restrictive model of rationality that was omnipresent in mainstream economics and better known as homo-economics. Evidence from experimental and ethnographic sources has provided evidence that humans respond to a variety of material and non-material incentives and institutions that extend beyond the conventional model of cost benefit analysis over short-term individual interests. Behavior under situations of public goods, externalities or common-pool resource problems seems to include factors such as pro-sociality, short-term biased discounting, aversion to losses and aversion to unequal outcomes, among others. Much of the experimental on these issues evidence remains supported on studies with college students in controlled university labs. However, there is an increasing trend in taking these experiments to populations of other types of subjects who face the environmental and economic challenges of solving the coordination, conflict and cooperation to use their SESs. In this panel we propose to bring experiences of scholars who have applied experiments with such populations in different ecological and social settings.

“A field experiment on sharing in a risky environment: Evidence from Kamchatka”

James Murphy, Lance Howe and Drew Gerkey (*U. of Alaska, Anchorage, USA*)

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Abstract:

Much of the discussion about motivation for food sharing among hunter-gather societies focuses on explanations such as kin selection, mutualism or costly-signaling (among others), yet there is little discussion about the extent to which food sharing may be used to facilitate higher levels of cooperation by rewarding pro-social behavior. Sharing may also be an effective tool to smooth consumption in risky environments. To test hypotheses about sharing as a mechanism to improve cooperation and to smooth consumption this paper presents the results from a series of social dilemma experiments in rural areas of Kamchatka, Russia conducted in the Summer 2011. The paper seeks to answer questions about whether sharing in subsistence economies is motivated, at least in part, by a desire to share idiosyncratic risk, and if so, the conditions under which people share. The paper also asks whether sharing facilitates higher levels of cooperation, or if it just smooths consumption. As a baseline, the first stage in all experiments is a standard linear public goods game. The second stage introduces the treatments which include (a) the ability to share with other group members, and (b) idiosyncratic risk in which all earnings are lost with the exception of any money received from other group members. Preliminary results provide weak support for the risk sharing hypothesis, except when individuals are

able to observe the decisions of other group members not only in the current period, but also in all previous periods. Although sharing is widespread, there is no evidence that sharing is used to reward pro-social behavior. Those in need, i.e. the shock victims, do tend to receive more money from other group members.

“Behavioral spillovers from targeted incentives: when do conditional payment programs affect those not selected to participate?”

Francisco Alpizar, Anna Nordén, Alexander Pfaff and Juan Robalino (*CATIE, Costa Rica*)

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Abstract :

Ongoing concerns with species and water quality, plus growing focus on forests' carbon storage have increased the interest in payments contingent on conservation of forest. Protected areas have been the leading conservation policies within tropical forested countries but efforts to initiate, extend and refine payments are multiplying in such critical locations and in particular, global payments potentially of significant scale may help to mitigate warming. We are concerned with the design of such incentive schemes, and in particular how to select candidates for payment, as we are concerned about effects on those not selected. We hypothesize that scheme design can affect such spillovers. In the lab and now in the field, we are testing whether any selection rules generate spillovers and, if so, whether they all do. We examine this in the lab by putting selection rules to the test in a modified dictator game done at the University of Costa Rica, applied with over 500 students in total. We do find some behavior spillovers and, further, that they depend upon the selection rule. Our basic results (for about 300 students) concern a three-period game in which at first all play a dictator game without knowing that another round is coming (e.g., before policy is created). When the second round is done, some players qualify for conditional payments, i.e. a reduced cost for contributions within the third period, and we randomize the rules for who qualifies. One rule is a lottery. Another is the people who contributed more (specifically above a threshold) in the second period and another is people who contributed less (specifically below a threshold) within the second period. We find greatest behavior spillover when payments go to the non-contributors. This precisely sets up an efficiency tradeoff for PES. Targeting those who require incentives to contribute might maximize payment response but also maximize behavioral inefficiency. So far, our results support the claims above that selection rules affect reactions of the unpaid.

“Cooperation and Collective titling: Evidence from a new property regime in the Colombian Pacific Coast”

Maria Claudia Lopez and Maria Alejandra Vélez (*Facultad de Administración, Universidad de los Andes, Colombia*)

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Abstract:

In 1991, the Colombian Constitution established a new collective property rights regime for territories in the Pacific region inhabited by afro-Colombians since the 17th century. By means of the titling process,

these afro-Colombians communities, organized in community councils as the new political and territorial organization, were handled the right to manage their territories and to exclude outsiders. This massive titling process (ca. more than five million hectares) entails many questions regarding the effect of the definition of formal property rights on the collective action necessary to create new institutions to manage the territory and its natural resources. Using economic field experiments we examine how formalization of collective property rights in Afro-Colombian territories of the Pacific Coast affect cooperation among its inhabitants. We measure cooperation, as the individual contributions to a public good experiment in community councils with formal property rights obtained at different moments of time and with-out formal property rights under two types of sanctioning systems: a social sanction mechanism (*PGS*) and a monetary sanction mechanism (*PGM*).

“Using and conserving a diversity of species: experiments with fishermen and mangrove forest users in the Caribbean”

Juan Camilo Cárdenas, Jorge Luis Castañeda, Daniel Castillo, Maria Fernanda Pereira, Luz Angela Rodriguez. (*Facultad de Economía, Universidad de Los Andes, Colombia*)

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Abstract:

We present the results of a series of experiments to study individual and group behavior in a common-pool resource game where the available stock in each round is dependent on extraction and renewal of the resource in previous rounds, and where joint access is possible for players. We compare a baseline setting of one species to a four species setting, that is, instead of a single resource, players are able to extract from a pool where four different species are available. Different sub-treatments include paying the same or different prices for each the four species. The results suggest that the sole existence of a diversity of species produces a different behavior if compared to the one species baseline setting. Further, group face-to-face communication seems to induce more conservation of the variety of species even if the diversity is only in colors but with no differential market prices.