Can we save agrobiodiversity by paying farmers? Insights from a framed field experiment in Peru

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Introduction

• In situ agricultural biodiversity (ABD) part of the lyrics of the Food Security & BIODV conservation debate

• Env. governance is changing – e.g., Payments for Ecosystem Services (PES): within a “kind of-greening economy”

• Research on PES has mostly focused on:
  - Cost-effective design (e.g., targeting, size of payment)
  - Social-ecological context (e.g., common pool resources)
  - Socio-political framing (e.g., commodification of nature)
  - Interactions (TRADEOFFS & SYNERGIES) between direct (price) impacts and culturally intrinsic/moral motivations for conservation
Competition vs. cooperation

• Individuals cooperate even if it may appear to be contrary to their individual interest (Ostrom 2000) → people not driven just by self-interest
  → focus on social-ecological systems (issues of fairness, power relations, legitimacy, etc.)
  → Economics must move beyond utilitarian ethics approach

• Intrinsic/moral motivations often proxied by altruism and/or self steem reflecting cultural norms.

• BUT these norms are fragile and can easily be undermined by external interventions (extrinsic institutions).
Cooperativeness

- **Unconditional cooperation** due to *altruism* or *self-esteem*
  - This may be undermined when people feel controlled (e.g., penalties)
  - This is a proxy for intrinsic motivations for conservation

- **Conditional cooperation** (reciprocity) mediated by levels of trust (social capital)
The question

• Are external PES-like incentives effective for in situ agrobiodiversity (ABD) conservation through collective action?

Payments for Agrobiodiversity Conservation Services

→ How might PACS interact with intrinsic motivations for ABD conservation?
The Peruvian Andes
Methods

• Field experiment in 9 subsistence farming communities in the Andean high-plains in Peru (Puno province around Lake Titikaka).

• Framed field experiment – main assumptions:
  • Private net benefits from cultivating commercial variety > traditional crop variety
  • Public benefits depend on conservation thresholds being reached (safe minimum population)
Game design: Impure public good game with a threshold, 6 rounds
Baseline game and treatments

**Part 1 (rounds 1-6): Baseline game**
- All farmers (176 participants)
- Without access to:
  - communication
  - reward

**Part 2 (rounds 7-12): Treatment game**
- Individual reward (40 participants)
- Collective reward (40 participants)
- Communication & NO reward (40 participants)
- Communication + collective reward (56 participants*)
Map of the room, without communication

Information provided: identities, group-level conservation in each period, no indications of individual-level conservation
Map of the room, during communication
Results 1/2 (treatment effects)

- Baseline
- Communication only
- Collective reward
- Communication and collective reward
- Individual reward
- Threshold

Group conservation level

Baseline: +3.75***
Communication only: +2.55***
Collective reward: +1.36**
<table>
<thead>
<tr>
<th>Effect of external reward</th>
<th>Collective reward</th>
<th>Individual Reward</th>
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<tbody>
<tr>
<td><strong>Direct Effect</strong></td>
<td>0</td>
<td>++++</td>
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<tr>
<td><strong>Indirect Effects</strong></td>
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<tr>
<td><em>Unconditional cooperativeness</em></td>
<td>😞</td>
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<tr>
<td><em>Social reciprocity effect</em></td>
<td>0</td>
<td>0</td>
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<tr>
<td><em>Conservation threshold effect</em></td>
<td>0</td>
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<tr>
<td><em>Family, kinship ties effect (trust)</em></td>
<td>😊</td>
<td>0</td>
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<tr>
<td><strong>Total Effect (Average)</strong></td>
<td>+</td>
<td>+++</td>
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<td><em>Complementarity effect of communication on the collective reward</em></td>
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<td>n.a.</td>
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Discussion

• Individual rewards appear to be more effective in promoting cooperation than collective rewards (against expectations!)

• Farmers seem to be more *unconditionally cooperative* than *conditionally cooperative*

• Rewards do seem to crowd out intrinsic motivations in situations where unconditional cooperativeness is relatively robust
  • Caution about results since collective rewards require farmers to self-organize and cooperate, which may bring social benefits in context where social interactions are weak.
Discussion

• Increased interaction needed by agronomists, ecologists and social scientists (including economist, seriously!)

• Economists ALSO need to interact (more) with political scientists, anthropologists, sociologists and psychologists (no kidding!)

• PES should be considered as part of a policy MIX

• Formal institutions (laws and regulations, of course!) as well as informal institutions (collective action norms and rules) must be well understood before economic incentives are designed.

→ beware of crowding out moral/intrinsic motivations
“Good policies are those that support socially valued ends not only by harnessing selfish preferences to public ends but also by evoking, cultivating, and empowering public-spirited motives”