Punish Liars, Not Free-Riders

Brenton Kenkel

June 22, 2017

University of Rochester/Vanderbilt University

Motivation

In important collective action problems, actors are uncertain about each other's willingness to contribute.

- Climate efforts
- Refugee crisis
- Military coalitions

Private information adds new problems to the free-rider problem.

- Is the project feasible?
- How to divide the labor?

Central Question

When and how can *communication* promote cooperation in collective action when actors have private information?

- Won't solve all problems of collective action—can it help with those caused by uncertainty in specific?
- "Tit for tat" doesn't apply, or is ill-advised
- It can pay to allow some free-riding

The Model

Players $i \in \{1, 2\}$ interact over infinite periods. In each stage, a new project that costs 2 units of effort.

1. Nature draws types $\omega_i \in \{0, 1, 2\}$
   - Most a player is willing to contribute to assure success: none, half, or all of the project cost
   - Drawn anew each period (as in Sartori 2002)
2. Players send cheap-talk messages about their types
3. Players select contributions $x_i \in \{0, 1, 2\}$
4. Payoffs realized:

$$u_i(x_i, x_j \mid \omega_i) = \begin{cases} 1 - c(\omega_i)x_i & x_i + x_j \geq 2, \\ -c(\omega_i)x_i & x_i + x_j < 2. \end{cases}$$

Proposed Mechanism

I look for an “efficient” equilibrium in which:

1. Each period, everyone honestly reveals how much they are willing to give to the project at hand
2. Then they coordinate on efficient contributions
    - If insufficient total willingness, no contributions
    - If equally willing, split 50-50
    - Otherwise, costs borne by most willing
3. If anyone is caught having lied, future communication breaks down

Catching a Lie

Two ways a player can get caught having lied.

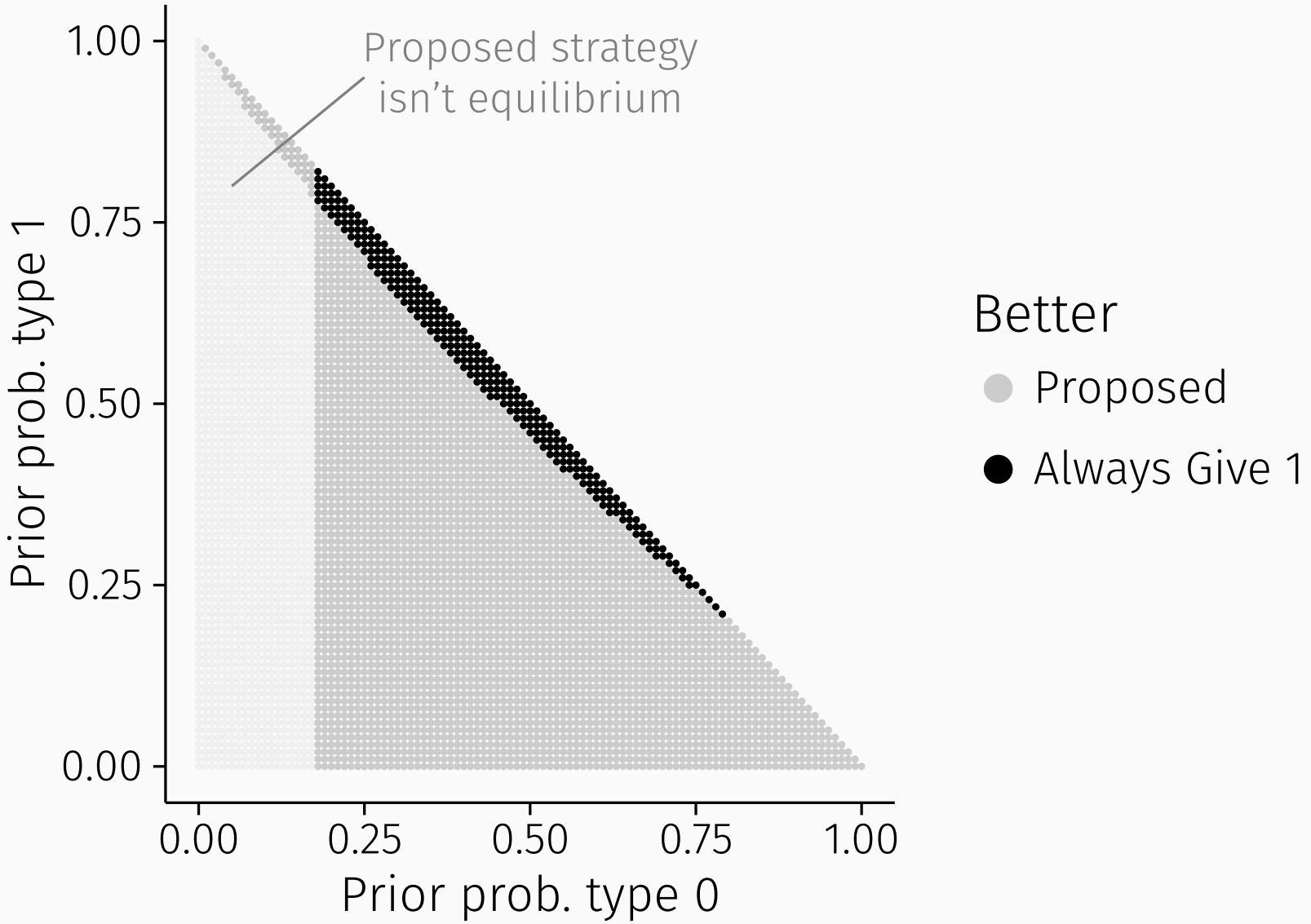
1. Claims high willingness, then gives too little
    - No incentive to do this anyway
2. Claims low willingness, then gives too much
    - Seems benevolent, but isn't!
    - Screening by high-willingness types, reduces efficiency
    - Must be punished in efficient equilibrium

Conditions

There is an equilibrium with efficient cooperation through communication if:

- Strong enough shadow of the future
- High enough chance of totally unwilling type
  - Can avoid being caught lying by mimicking message *and* contribution of lower type
  - But now can't screen—must forego completion if partner is low type
  - Too risky if high enough chance of low type

Welfare Comparison



Closing Thoughts

Conclusions:

- Under uncertainty, cannot simply punish free-riders
- Honest communication is sustainable if:
  - Interaction is repeated
  - “Too high” contributions are punished
  - Real risk of failure if dishonest

Future directions:

- Historical application to alliances?
- Lab experiments?