

Punish Liars, Not Free-Riders

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Motivation

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

- Climate efforts
- Refugee crisis
- Military coalitions

Uncertainty 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 problems with uncertainty?

- Not going to solve all aspects of collective action
- Can it help with the inefficiencies driven by uncertainty?
- “Tit for tat” doesn’t apply, or is ill-advised
- Efficient contributions may entail some free-riding

Communication as Solution

I model collective action on a sequence of projects, and propose a mechanism:

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

Surprisingly, It Works (Conditionally)

Key conditions:

- High enough shadow of the future
- High enough risk the project will fail if high-willingness players are dishonest

Key properties:

- Must punish giving too much, not just too little
- Usually greater social welfare than a constant 50-50 division of labor

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:

$$u_i(x_i, x_j | \omega_i) = \mathbf{1}\{x_i + x_j \geq 2\} - c(\omega_i)x_i.$$

Efficiency Concept

Seeking an equilibrium in which:

- Project completed whenever $\omega_1 + \omega_2 \geq 2$
- At minimum total cost
 - No wasted contributions: $x_1 + x_2 = 0$ or $x_1 + x_2 = 2$
 - Efficient division of labor: $\omega_i < \omega_j$ implies $x_i = 0$

Cannot be achieved without honest communication.

Problem—incentive for high-willingness types to understate.

Efficient Contributions

Contributions as a function of types:

	$\omega_2 = 0$	$\omega_2 = 1$	$\omega_2 = 2$
$\omega_1 = 0$	(0, 0)	(0, 0)	(0, 2)
$\omega_1 = 1$	(0, 0)	(1, 1)	(0, 2)
$\omega_1 = 2$	(2, 0)	(2, 0)	(1, 1)

No incentive for types 0 or 1 to lie.

Short-term incentive for type 2 to pretend to be type 1.

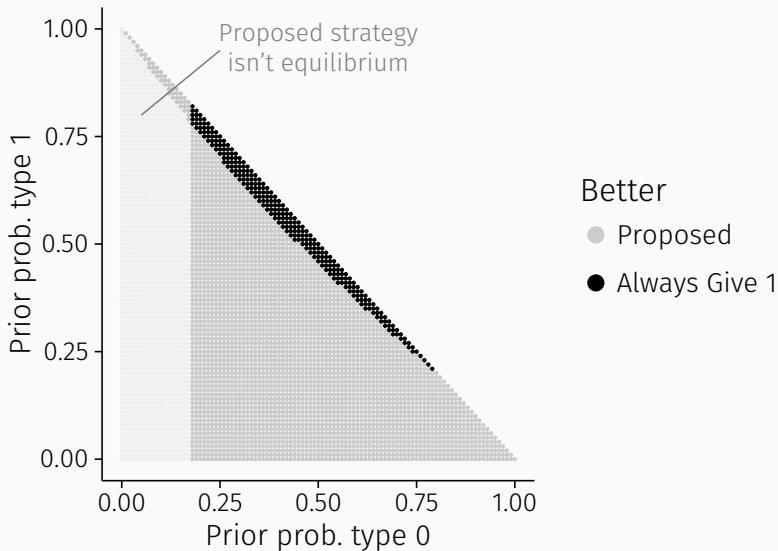
Making Honesty Incentive-Compatible

Ideal for type 2—screen partner by pretending to be type 1.

Main implications:

- Must punish giving “too much”—claiming be half-willing, then supplying full amount
- Must be sufficiently high chance of type 0
 - Type 2 may avoid punishment by mimicking type 1’s message *and* contributions
 - Less attractive as chance of type 0 partner increases

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?