It pays to be nice: The benefits of cooperating in markets

Serdarevic, Nina, Strømland, Eirik, and Tjøtta, Sigve, Journal of Behavioral and Experimental Economics, 90 (2021), 101595.

何雨忻

Apr 26, 2022

Department of Economics, National Taiwan University

Introduction

Experimental Design

Results

Discussion

Remarks

Introduction

Introduction

"Does it pay to be a nice guy?"

Under repeated prisoner's dilemma game:

1. Cooperators outperform freeriders when **mutual partner choice is allowed**.
2. Subjects living in **larger societies** have extra incentives to develop a good reputation.
3. Providing **reputational history** before choosing partner doesn't improve earning.

Experimental Design

Step 1

To elicit personal cooperative types: cooperator, or free rider.

- One-shot sequential prisoner's dilemma game
- Given first-mover's contribution to public good y^k, individuals i as second-mover choose y_i^k

Estimate Linear Contribution Profile (LCP) for each individual i,:

$$y_i^k = \alpha_i + \beta_i y^k + u_i^k, k = 0, 1, 2, ... 10$$

where α_i = unconditional contribution; β_i = conditional contribution.

Then we have $\hat{y}_i^k$, the predicted contribution profile.

Types of individuals

$$\begin{aligned} \text{Free rider,} \quad & \hat{y}_i^k < 2.5 \\ \text{Unconditional cooperator,} \quad & \hat{y}_i^k \geq 7.5 \\ \text{Reciprocator,} \quad & -2.5 + k \leq \hat{y}_i^k \leq 2.5 + k \\ & \text{for } k = 0, 1, 2, \ldots 10 \end{aligned}$$

Step 2

Authors conducted 3 experiments seperately:

Group5History	Group9History	Group9Current
N=5 (Small)	N=9 (Large)	N=9 (Large)
Full Information	Full Information	Current Information

- Each with 2 treatment: Choice v.s. Random

20 periods, repeated, simultaneous prisoner's dilemma game

- Odd participants: 1 subject always excluded
- Earning function: $\pi_i = 10 - x_i + 0.7(x_i + x_j)$
- 10 = endowment, individual i choose its contribution x_i

Table 1
Distribution of Types (%) between Treatments by Experiment.[14].

Types	Group5History		Group9History		Group9Current	
	Choice	Random	Choice	Random	Choice	Random
Cooperator	66.0	53.0	62.8	65.5	67.4	63.2
- Unconditional cooperator	11.0	12.0	11.7	7.6	9.7	7.6
- Reciprocator	55.0	41.0	51.1	57.9	57.6	55.6
Free rider	6.0	10.0	6.7	7.6	4.9	11.8
Other	28.0	37.0	30.6	26.9	27.8	25.0
Total number of subjects	100	100	180	171	144	144

Figure 1: Distribution of Types

Results

The Benefits of Being a Cooperator

Table 2
Earning Levels and Treatment Effects Overall, by Type and Experiment.

Group5History	Random	Choice	Treatment effect	p-value
Overall Earnings	56.5	62.6	6.2	0.151
Cooperators	50.4	71.0	20.6**	0.012
-Unconditional cooperators	37.9	106.9	68.9***	0.008
-Reciprocators	54.0	63.8	9.8	0.387
Free riders	95.0	23.05	−72.0**	0.011
Others	54.7	51.4	−3.3	0.818
Group9History	**Random**	**Choice**	**Treatment effect**	**p-value**
Overall Earnings	59.5	69.7	10.2***	0.003
Cooperators	55.5	67.3	11.9**	0.014
-Unconditional cooperators	34.7	44.7	10.1	0.529
-Reciprocators	58.2	72.5	14.3**	0.015
Free riders	76.0	53.5	−22.5	0.365
Others	64.7	78.1	13.4	0.108
Group9Current	**Random**	**Choice**	**Treatment effect**	**p-value**
Overall Earnings	53.3	72.3	19.0***	0.000
Cooperators	46.5	75.5	29.1***	0.000
-Unconditional cooperators	48.5	53.8	5.3	0.837
-Reciprocators	46.2	79.2	33.0***	0.000
Free riders	88.8	74.4	−14.4	0.319
Others	53.7	64.0	10.3	0.332

Assortativity

1.2%, 11.3%, and 22% higher in Choice treatment.

Successful Mutual Matching Frequency

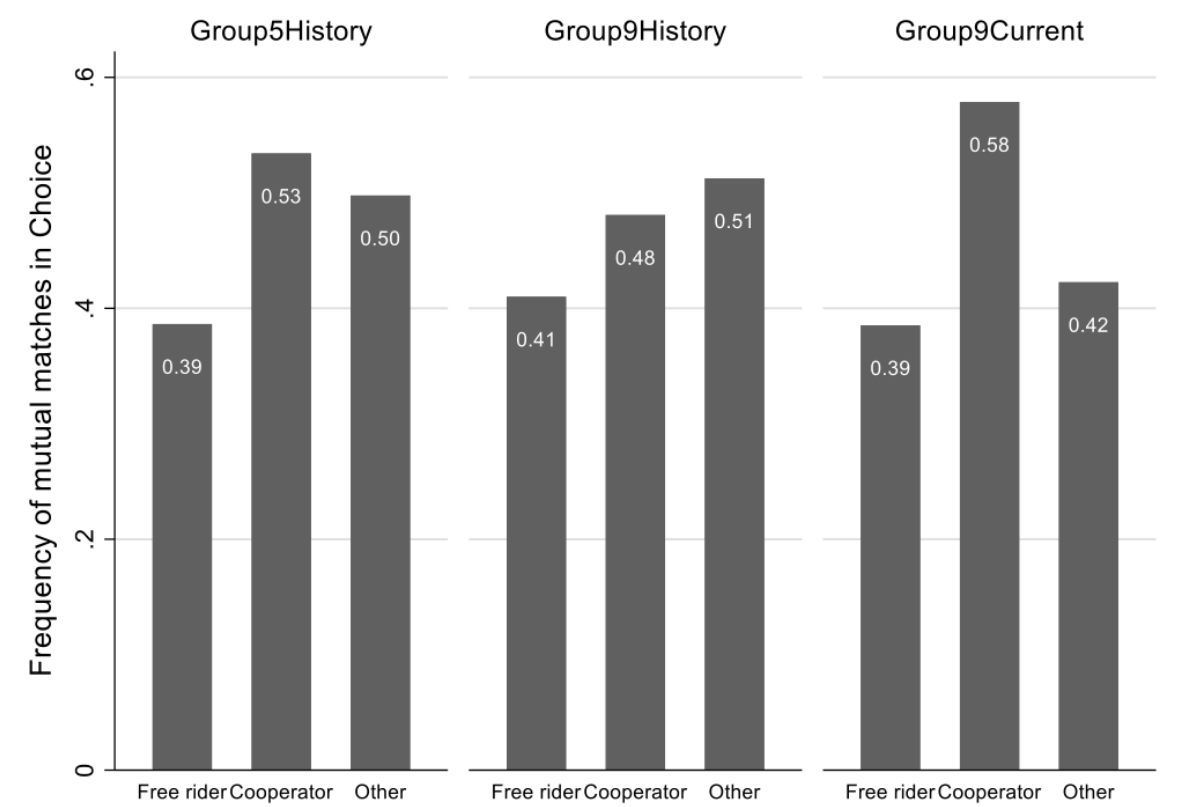

Fig. 2. Frequency of mutual matching in the Choice treatment, by type and experiment.

Figure 3: Successful Mutual Matching Frequency

Group Size and Reminder of Personal Reputation History

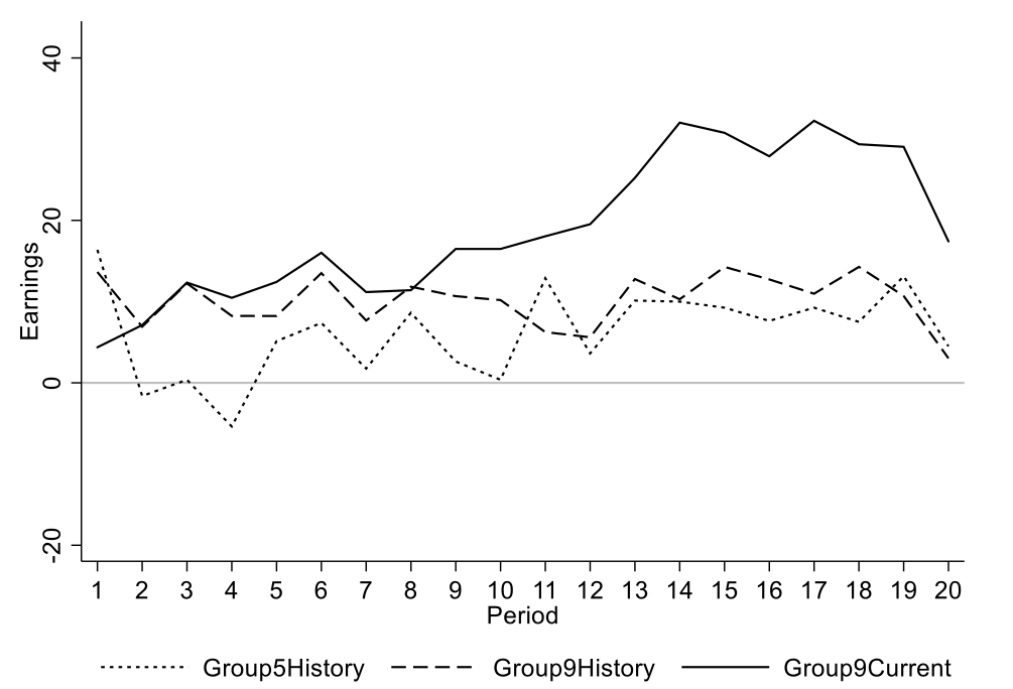

Figure 4: Treatment effect on earnings, over period and by experiment

Differences aren't significant.

Why complete information leads to lower earning? *Search cost creates incentives for cooperation.*

Discussion

Discussion

Choice improved cooperators' earning even with more freeriders

Table A7
The Effect of Free Riders on Earnings of Cooperators and Others, by Experiment.

	(1) Earnings	(2) Earnings	(3) Earnings
Free riders in group	−19.997***	−13.019***	−15.977***
	(5.935)	(4.405)	(3.972)
Choice	5.166	10.578**	17.869***
	(4.748)	(4.120)	(2.816)
Choice × Free riders in group	20.278	6.321	2.730
	(13.156)	(6.800)	(6.918)
Constant	59.943***	63.769***	58.838***
	(3.456)	(3.256)	(1.651)
N	3680	6520	5280
adj. R^2	0.002	0.004	0.010

Figure 5: Effect of Free Riders on Earnings of Cooperators and Others

Free riders tends to be the one being excluded

Table 2: Cooperator and its likelihood to be excluded

	Exclusion Group5History	**Exclusion** Group9History	**Exclusion** Group9Current
Choice	0.122***	0.055	0.052*
Choice × Cooperator	–0.144***	–0.053	–0.071**

Excerpted from Table A1, A3, A5

Free riders do not fake itself as cooperators

Table 3: Free rider and its contribution under Choice treatment

	Contribution Group5History	**Contribution** Group9History	**Contribution** Group9Current
Choice	0.410	0.875**	1.538***
Choice × Free rider	–0.283	1.234	2.151

Excerpted from Table A1, A3, A5

Remarks

Remarks

1. Partner choice is good for cooperators, bad for free riders.
2. Cooperators have higher probability of matching a cooperator, and less being excluded from the game.
3. Partner choice effect is greater at “large” society (although not significant)
4. Altruism might be an evolutionarily stable strategy (ESS) in competitive partnering market.