



Public disclosure of players' conduct and Common Resources Harvesting:

Experimental Evidence from a Nairobi Slum

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Introduction

- Analyse if and how disclosure of information on players' behaviour affects cooperation dynamics
- Common Pool Resource Game in Nairobi slum (CPRG):
 - Restricted Information Treatment (RIT)
 - Public Information Treatment (PIT)
- Information induced asymmetric conformity. Only in PIT:
 - Less opportunistic players move toward group average
 - ...more than more opportunistic ones



Related Literature (1)

- Conformity:
 - degree to which persons in a group modify their behavior, views, and attitudes to fit the views of the group (Moscovici, 1985 – Cialdini & Trost, 1998)
 - Rationales: i) avoiding sanctions due to deviation ii) information obtained and processed by others (Deutsch and Gerard, 1955 - Carpenter, 2004)
 - Capra and Li (2006); Bardsley and Sausgruber (2005); Carpenter (2004)



Related Literature (2)

- Capra and Li (2006):
 - Revision of initial choice upon receiving payoff-irrelevant info on other players' decision.
 - willingness to conform in a PGG (no in DG). Complexity...
- Bardsley and Sausgruber (2005):
 - information on decisions by their own group and another group
 - conformity explains about 1/3 of the “crowding in”
- Carpenter (2004)
 - PGG; control/monitor with reshuffling; Info: distribution of contribution choices.
 - Free riding faster in the monitor than in the control → conformity effect.

Our Paper (1)

- PIT/RIT in Nairobi (scarce social capital + “harambee”)
- Findings:
 1. Subjects tend to conform to the average
 - who withdrew $<$ average \rightarrow withdraw $>$ average
 - who withdrew $>$ average \rightarrow withdraw $<$ average
 2. Conformism is asymmetric:
 - who withdrew $<$ average \rightarrow withdraw $>$ average
AND $>$ the increase in contribution by who withdrew $>$ average.



Our Paper (2)

- Control for conditional cooperation and anchoring + demographics.
- Our PIT = monitoring without sanctioning in management of common pool resources (Omstrom 2009)
- Information → conformity → “tragedy of the commons”
 - *worse than no monitoring no sanctions situations*



Experimental Design

- CPRG and “Harambee”
- 5 rounds; 304 subjects (76 groups of 4)
 - Sit around a pile of 600 KSh (€ 6.18 - weekly wage).
 - withdraw 0-150 KSh;
 - amount left is doubled and divided equally.
 - Unknown n. of rounds; payment for 1 randomly selected round.
- Treatments (38 groups each):
 - RIT: own decision and payoff
 - PIT: own and others' decision and payoff
- Socio demographic survey

Main Hypothesis

- $H_0: WR_{PIT} = WR_{RIT} \rightarrow$ no impact of information disclosure on withdrawal-ratio
- $H_{1a}: WR_{PIT} > WR_{RIT} \rightarrow$ “*downward cascade of cooperation*” (Ostrom, 2000) (info, no sanction)
- $H_{1a}: WR_{PIT} < WR_{RIT} \rightarrow$ information reinforces reputational concerns vis-à-vis other players

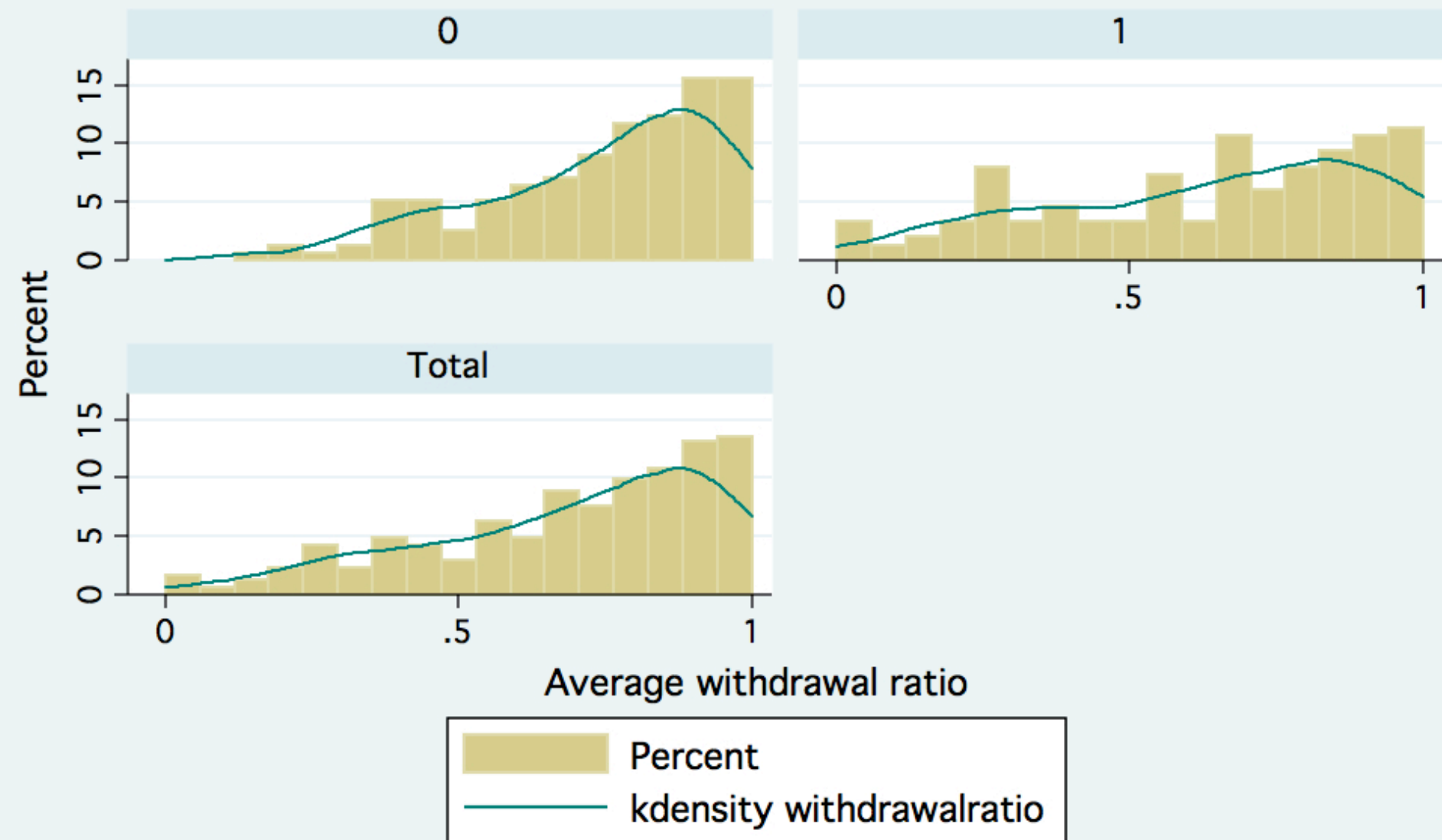
Balancing properties for socio-demographic variables: PIT vs. RIT

	Wilcoxon rank-sum (Mann-Whitney) test	Prob > z
<i>Age</i>	-0.267	0.789
<i>Female</i>	1.243	0.214
<i>Married</i>	-0.892	0.372
<i>Separated</i>	1.607	0.108
<i>Divorced</i>	0.608	0.543
<i>Kikuyo</i>	-1.493	0.135
<i>Luo</i>	1.755	0.079
<i>Lubian</i>	-0.331	0.741
<i>Luhya</i>	-0.504	0.614
<i>Juakali</i>	0.511	0.609
<i>Muslim</i>	0.565	0.572
<i>Years_schooling</i>	0.552	0.581
<i>N_children</i>	0.446	0.656
<i>Food_expenditure_day</i>	0.587	0.557
<i>Unemployed</i>	-2.197	0.028
<i>Trustindex</i>	-0.322	0.747
<i>Sociability</i>	0.721	0.471
<i>Riskaverse</i>	-0.460	0.646
<i>Discount Rate</i>	-0.783	0.434

Mean withdrawal rates in the RIT and PIT treatment

	Mean withdrawal rate RIT	Mean withdrawal rate PIT	PIT-RIT (t-test)	PIT-RIT (ranksum)
<i>All rounds</i>	.627	.743	-7.61 (0.000)	-6.517 (0.000)
<i>Round 1</i>	.617	.686	-1.824 (0.07)	-1.69 (0.09)
<i>Round 2</i>	.630	.764	-3.8460 (0.0001)	-3.350 (0.0008)
<i>Round 3</i>	.623	.717	-2.60 (0.01)	-2.097 (0.03)
<i>Round 4</i>	.626	.786	-4.52 (0.000)	-3.935 (0.0001)
<i>Round 5</i>	.648	.764	-3.264 (0.001)	-2.604 (0.009)

Distribution of withdrawal ratios (at players' level - averaged over 5 rounds)



by treatment type: 0 = PIT, 1 = RIT



Comments:

- PIT-RIT: significant and progressively wider across rounds.
 - No significant in the first round
 - More than doubles from initial levels
 - Peaks at 16% in the fourth round
- group members do not vary across rounds
- ...but *reputation increase free-riding instead of cooperation!*

Econometric Analysis

$$WR_{it} = \alpha_0 + \sum_j \beta_j DROUND_j + \sum_k \gamma_k X_{ki} \dots$$

- + $\alpha_1 GWR_{i,t-1}$ → Conditional Cooperation (+)
- + $\alpha_2 GWR * PIT_{i,t-1}$ → Informed Conditional Cooperation (+)
- + $\alpha_3 (ME-GROUP)_{i,t-1}$ or *diff-rank* → Conformity (two-sided) (-)
- + $\alpha_4 (ME-GROUP) * PIT_{i,t-1}$ or *diff-rank* → Information-induced Conformity (-)
- + $\alpha_5 CHEATED_{i,t-1}$ → Asymmetric Conformity (one-sided) (+)
- + $\alpha_6 CHEATED * PIT_{i,t-1}$ → Info-induced Asymmetric Conformity (+)
- + $\alpha_7 UNCONDITIONAL_i$ → Unconditional Cooperation/Anchoring (+)
- + $\alpha_8 MAXGROUP_{i,t-1}$ → Imitation of Free Riders (+)
- + $\alpha_9 PIT + \varepsilon_i$

OLS - Random effects: from - to + parametrized model



Robustness

- Conformity variable: my-others' payoff
- Fixed effects
 - clustering standard errors is not enough (repeated observations for the same individual)
 - unobservable time invariant sociodemographic factors.

Results are unchanged



Comments

- Information → move toward mean group behavior (*information induced conformity*)
- ...much stronger if they are more cooperative than if they are less cooperative than average → *asymmetric* information-induced conformity.
- ...occurs *net of* conditional and unconditional contribution effects (also significant).
- Betrayal aversion not significant when controlling for conformity.
- PIT dummy remains significant in all estimates: conformity vars → widening difference but not for the initial gap.



Conclusions (1)

- Relative poverty of social capital in Nairobi slums
 - crucial for public goods and common resources production and management
- Multiperiod CPRG experiment
 - Closer to the everyday: face to face interaction
- 2 Treatments (PIT, RIT): information disclosure about other players cooperative/non cooperative attitudes

Conclusions (2)

■ Results:

1. Progressive divergence of WR in PIT and RIT across rounds:
Disclosure of info reduces cooperation.
2. Unconditional cooperation and weak conditional reciprocity effects
3. Induced asymmetric conformity:
 - with public information, *players tend to conform to average group behavior...*
 - ...but *more strongly if in the previous round they were more cooperative than the average of their group*
4. Betrayal Aversion → PIT:
 - dislike of non reciprocated trust → cooperators above group average move toward the mean more than cooperator below average.



Conclusions (3)

- Conformity is an important driver of players action in poor socioeconomic environments
- Conformity is information induced and asymmetric → monitoring and public information without sanctions *reduce* (!) cooperation
- ...tragedy of the commons more likely to occur.



Thank
you

