Civic Engagement as a Second Order Public Good: An Experiment

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Introduction

- Much of social, economic and political life in large scale societies involves the dilemma that people need to abide by rules and provide themselves with public goods such as trustworthy water, food, and pharmaceutical supplies, public transportation, a stable currency, etc.; but each individual has private incentives to free ride or treat themselves as being above the rules.
- Mutual monitoring, peer pressure, and peer punishment is a solution that works well for some parts of the dilemma, especially on small or local scales; but states appear needed for providing macro-scale public goods including rule of law.
- This raises the question: can we have the benefits of the enforcement powers of a state, yet retain our basic liberties and our democratic authority over the state (a.k.a. democracy and state accountability)?
- In this research, we extend the voluntary contribution or public goods game set-up to study this question in the experimental lab, using a new experimental design which features civic engagement as a 2nd order public good and as a required pre-requisite of an accountable state.

- Taxation backed by government coercive power can address the free riding problem of public goods provision on a macro scale.
- Is voluntary collective action thus unnecessary for solving the public goods provision problem at this scale, since the public goods in question can be provided by the state?
- We argue that viewing the state as an **alternative** to voluntary collective action is (at least partly) not fully defensible.
- Why? Because existence of a state that addresses public goods problems on behalf of its citizens makes no sense if we assume a population—including agents within the state—of selfish, rational individuals.
- If some coalition of individuals amasses enough power to mandate tax payments, why should that group set taxes at the socially optimal levels or provide a socially optimal vector of public goods?

- We can't say the enforcement powers of the state solve the problem of public goods provision from the standpoint of a country's people unless we can show what would make such a state accountable to those people.

- Democratic countries attempt to address this dilemma by making government accountable to the citizenry, by way of

  - government decision-makers being elected (and removable from office)

  - a free press helping to inform citizens of government actions

  - institutionalized checks and balances among state branches backed by principles of accountability to the public

- In modern democratic countries, we attempt to address this dilemma by making government accountable to the citizenry by means of

  - government decision-makers being elected

  - a free press aids in informing citizens of government actions

  - institutionalized checks and balances including rules to limit political malfeasance, and internal investigative bureaus

- These devices would (arguably) be ineffective in the absence of voluntary pro-social and civic actions.
- In particular, citizens must incur a cost to inform themselves of political options, and to go and vote.

Rational money-maximizing citizens wouldn't do this since their chance of privately benefiting by changing a political outcome is negligible.

- Citizens must incur a cost to inform themselves of political options, and to go and vote. The press is viable only to the degree that citizens pay attention and citizens are interested enough in government behavior so that political reporting can be part of a profitable business model.

Nihil utile quod non honestum

THE PRESS

- Citizens must incur a cost to inform themselves of political options, and to go and vote. The press is viable only to the degree that citizens pay attention (and where the press isn't paid for by government) that they are interested enough so that political reporting can be part of a profitable business model.

Advocates of political democracy view such statements as warning signs of potential subversion of democracy.

"The press is the enemy of the people."

DIEU ET MON DROIT

Nihil utile quod non honestum

THE PRESS

- Conclusion: the problem of voluntary collective action doesn't disappear by invoking reliance on the governmental power of taxation.
- Rather, it continues at one remove—as a 2nd order public goods problem: a need for civic engagement.

Introductory description of our experiment

- In our experiment, government can solve the macro ("main") public goods provision problem via a penalty for non-payment of a tax obligation; but such a (welfare enhancing) government is available only if participants engage in sufficient amounts of costly civic engagement.
- In the experiment; engaging in civic activity is strictly dominated for each individual. In other words, the classic conditions of a **social dilemma** hold in the 2nd order public good problem of civic engagement.

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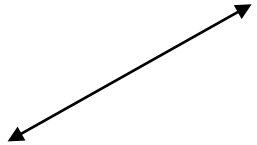


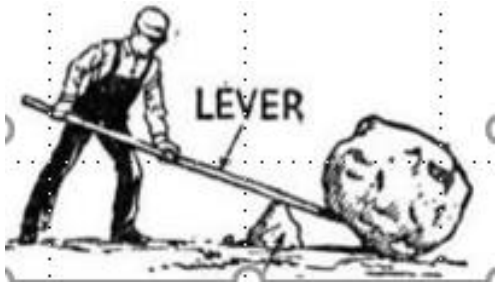
Def'n.: **social dilemma** (as used by E. Ostrom and others) is a situation in which, when each individual pursues his/her private interest rationally, social welfare is lower than if all could adopt more collectively optimal actions.

The prisoners' dilemma is one example. The VCM/PGG is another one.

The trust game of Berg, Dickhaut & McCabe is another: A and B could each get $20 instead of $10 if B were trustworthy and fair and A were trusting (or if they could enter a binding contract), but selfish rationality results in each earning $10.

- In the experiment, engaging in civic activity is strictly dominated for each individual. In other words, the classic conditions of a **social dilemma** hold in the 2nd order public good problem of civic engagement.
- The cost of civic engagement is fairly modest compared to the benefit all obtain from having a government to provide the macro public goods.
- One can think of democratic government's coercive power to tax as a mechanism that can **leverage** a small amount of modest-cost voluntary civic engagement into a large amount of high cost public goods provision.

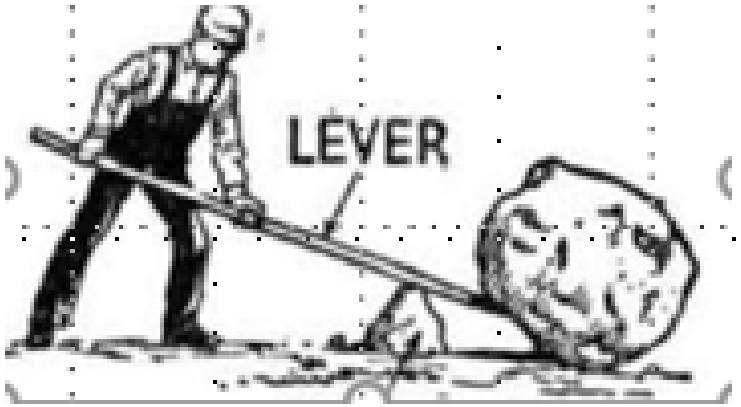
a little civic engagement →



← solves big public goods problem by creating accountable gov't.

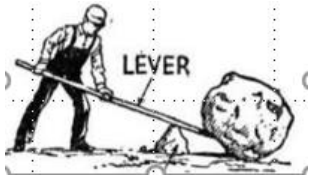
a little civic engagement →

money equivalent of cost
is a small fraction of
average income



← solves big public goods problem by creating accountable gov't.

30% - 40% of average
income is collected to
fund the public sector



- Our design is novel in a number of ways:

- Ours is the first experimental design (to our knowledge) in which a **formal penalty for non-contribution exists if and only if a 2nd order public good called "civic engagement" is sufficiently forthcoming.** The incentive to participate in costly civic engagement satisfies strict social dilemma criteria—i.e., it is never privately payoff-maximizing to participate in civic engagement.

- Each session simulates **a society** by having **24 subjects** who **share the same public good**.

- We capture the real world macro public good problem by having both a **private and** a **public sector**, with **an interior optimum amount of public good provision**.

- Provision of the public good both (i) *enhances productivity of each citizen's private sector activity* and (ii) *provides each citizens with a direct benefit*, paralleling real world public goods. (Feature (i) is novel, at least in experiments.)

- Our design is novel in a number of ways:

  - We simulate a large society by having 24 subjects in one large group.

  - We capture the real world macro public good problem by having both a private and a public sector, with an interior optimum amount of public good provision.

  - Provision of the public good both enhances productivity of each citizen's private sector activity, and provides citizens with direct benefit (earnings).

  - Ours is the first experimental design (to our knowledge) in which a formal penalty for non-contribution exists only conditional on solving a 2nd order collective action problem which we think of as "civic engagement." The incentive to participate in costly civic engagement satisfies strict social dilemma criteria—i.e., it is never privately payoff-maximizing to participate in civic engagement.

We **represent "civic engagement" by real effort tasks** having some **"flavor" of real world civic engagement**.

Structure of rest of talk

I. Introduction [now completed]
II. Literature review
III. Experimental Design and Predictions
IV. Experimental Results
V. Concluding Comments

II. Literature

- Experimental studies that deal with taxation have focused on (a) studying choice of tax rate by vote, and (b) studying impacts of audit probability and of penalty levels on tax compliance.
- *Because we focus on other issues, we keep these dimensions very simple—(a) if there is a mandatory payment level, it is the socially optimal one, and (b) the penalty for non-payment is monetarily deterrent and certain.*

Literature

- There is a vast literature reporting linear voluntary contribution mechanism (VCM) a.k.a. public goods game (PGG) experiments. Most use finitely repeated play. Results include:

  - contributions begin at about half of optimum and decay with repetition unless

    - subjects can engage in rich communication (e.g. Bochet, Page & Putterman, 2006), or

    - subjects can engage in peer punishment (e.g. Fehr & Gächter 2000 and much else reviewed in Chaudhuri, 2011), or

    - groups of cooperators are brought together endogenously* (sometimes giving rise to an effective reputation mechanism) or exogenously (experimenters match cooperators together).

* e.g. Page et al., 2005.

Literature

- There are fewer public goods experiments with non-linear public goods and interior optima.
- A reported drawback is subjects' difficulty finding the optimum.
- Qualitative results are nevertheless similar to those for linear public goods—i.e., contributions trend further and further below the social optimum, with repetition.
- Perhaps none of the experiments with an interior optimum includes the feature that the level of public good provision determines the productivity of a private sector, as in our design.

Literature

- There is a small but growing subset of the linear public goods literature in which *peer punishment* and *centralized punishment* mechanisms are compared (to each other) and chosen between by subjects.

  - These studies can be divided into ones in which the central punisher role is taken by a computer program (Kosfeld, Okada and Riedl, 2009, Markussen, Putterman and Tyran, 2014, and Kamei, Putterman and Tyran, 2015), versus ones in which the role is assigned to subjects. In some of the latter (Gross, Meder, Okamoto-Barth & Riedl; Fehr & Williams), there is endogenous choice of who is the punisher.

  - We use the computer approach. This may be thought of as abstracting from the problem of central agent malfeasance; or, alternatively, our design may be thought of as one that permits a state to be present only when central agent malfeasance is being curbed by civic engagement. (We plan to link the curbing of malfeasance to civic engagement in future experiments.)

Literature

- Another division of this literature (on choice between peer and centralized punishment mechanisms) is between (i) experiments in which subjects vote in the political sense, (ii) ones in which they 'vote with their feet,' and (iii) ones in which an institution's presence is determined by decisions to pay for it (Andreoni and Gee; also: Sigmund, DeSilva, Traulsen & Hauert, 2010; Traulsen, Torsten & Milinski, 2012). Our experiment is more in the third category: there is a centralized penalty scheme provided that enough people do enough civic tasks, and not otherwise.
- But (iii) also still includes at least 2 flavors: one entails coordination on reaching a threshold; the other is a pure public good. Ours might be the only one in the latter category.

- In Andreoni and Gee paying for the 'hired gun' can be privately optimal (it is a coordination game); in this paper (KPT#2), it is never privately optimal (to a money maximizer).

(We also differ from A&G in that everyone is penalized alike, in ours, vs. only the lowest contributor is penalized if there is a penalty scheme ("hired gun"), in theirs.)

Literature

- We see our design as in some respects following up on Markussen *et al*. (2014) and Kamei *et al*. (2015); we build on their kind of 'formal sanction' representation of the state, but we're addressing its civic engagement pre-requisite for the first time.
- That is, MPT and KPT let subjects choose between Formal Sanctions (FS) and Informal Sanctions (IS) by voting, and the subjects *get a perfect FS scheme for a fixed price if they vote (costlessly) for it*.
- We now argue that the problem of voluntary collective action cannot be costlessly *voted out of existence**, as in those papers; rather, it logically re-emerges, in the form of the **2nd order collective action problem of civic engagement**.

Note: majority rule should in theory lead to socially optimal choices if we assume that everyone votes…but both the institution that majority rule is respected, and the idea that everyone votes, cannot usually be assumed.

III. Experimental **Design - Overview**

- The macro public good problem confronts a "society" of 24 laboratory subjects (session size = 24). 20 sessions → 480 (Brown U. student) subjects
- The public good interaction, potentially under a penalty scheme, occurs in each of 18 periods.
- Subjects play three initial periods without penalty scheme, to let them experience a free riding problem for themselves (if behaviors resemble those of standard finitely repeated public goods experiments).
- During those three periods, subjects know there will be 15 more periods in which a penalty scheme **may** be available, but they learn the details of the scheme and the conditions in which it is available only after Part 1 ends (i.e., in a second set of instructions).

Main Stage allocation problem (all periods)

- Same in initial 3 periods and remaining 15 periods (apart from possibility of penalties then).
- Each of 24 participants has 20 tokens to allocate between a “private activity” and “the public sector.”
- The public sector is described as being an analogue to real world government. It provides services (roads, traffic signals, contract enforcement) that make private sector activities more productive, and it provides direct benefits to all in society (such as clean air).
- Participant i’s earnings in a period’s main stage are given by

  $y_i = b_i * V(\Sigma p_i) + D(\Sigma p_i)$ <==> with $\Sigma p_i = P$, we say y_i = i’s payoff = $b_i * V(P) + D(P)$

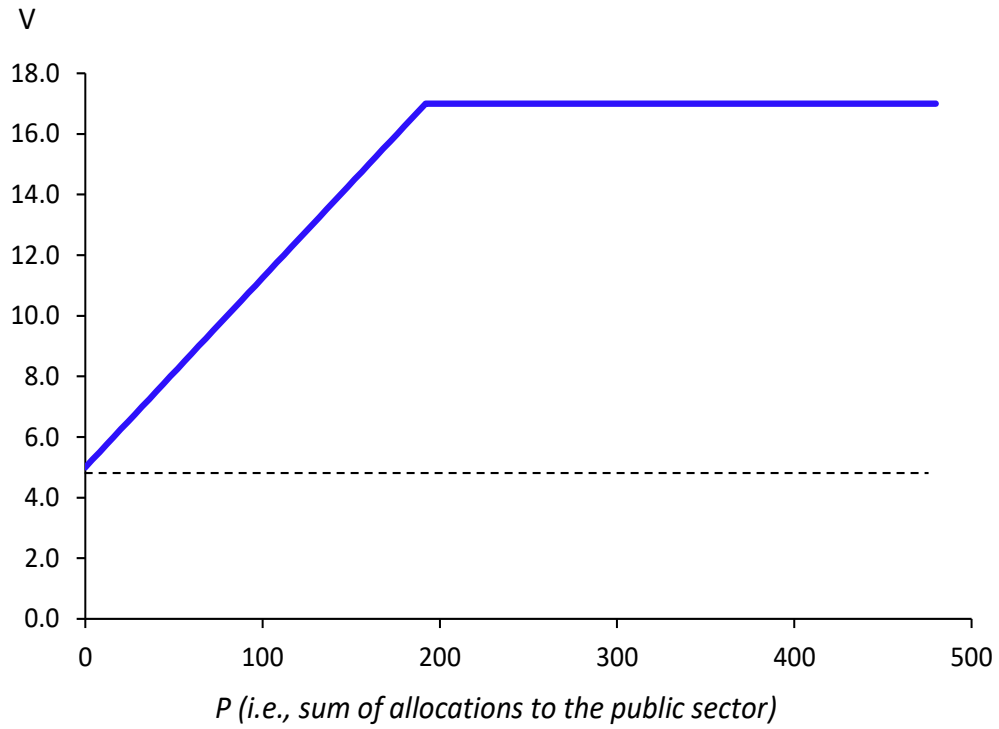
  b_i = i’s allocation to her private activity, p_i = i’s allocation to public sector,

  $b_i + p_i = 20$, all i

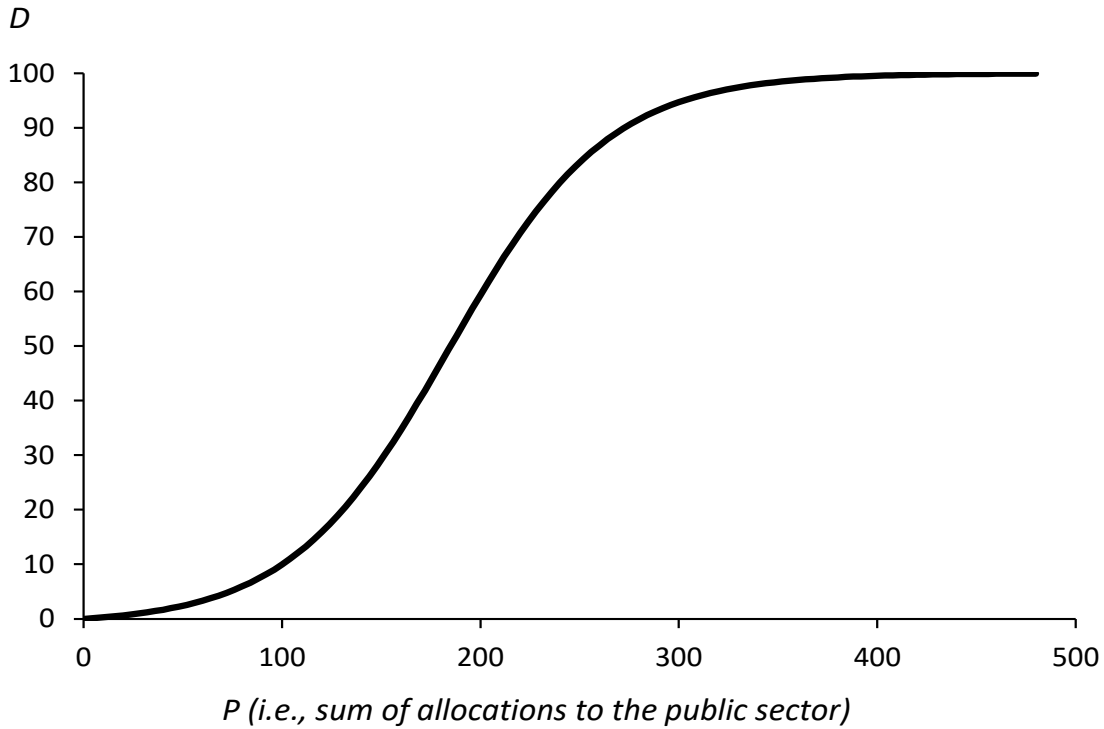
  V rises linearly from 5 to 17 as P rises from 0 to 192. (192 = 8*24)

  D is a logistic function of P, which has its inflection pt. at P = 192.

V and D as functions of $P = \Sigma p_i$



V(P) = own earnings from each token used for private activity



D(P) = uniform direct benefit of the public good (received alike by every participant)

Own income as a function of own and others' allocations to the public sector.

Average allocation of 23 others	Own allocation to public sector					
	0	4	8	12	16	20
0	100	84	66	46	24	1
4	223	185	145	103	59	13
8	379	320	258	193	127	62
12	431	364	296	229	162	94
16	439	371	303	235	167	99
20	440	372	304	236	168	100

The V and D functions and this table are shown to subjects in the instructions. It is explained that (i) the shaded cells are situations in which one's allocation matches the average allocation of others, that (ii) among them, earnings are highest when all allocate 8 to the public sector, and that (iii) one earns more the less one personally allocates to the public sector.

Experimental Design – Main Stage Problem

- Each participant's earnings in a period's main stage are given by

  $y_i = b_i * V(\Sigma p_i) + D(\Sigma p_i)$ We call Σp_i P.

  where b_i = allocation to private activity, pi = allocation to public sector,

  $b_i + p_i = 20$.

  V rises linearly from 5 to 17 as P rises from 0 to 192. (192 = 8*24)

  D is a logistic function of P, which has its inflection before P = 192.

- Thus, total income is maximized when P = 192.
- Each individual i is better off the larger is P and the smaller is p_i.

Part 2: will subjects do civic tasks to create the welfare-enhancing, tax-enforcing government?

- In **Part 2** (**15 periods**), each period includes the same main stage allocation problem, but play may take place with a ***deterrent formal sanction*** if enough "civic engagement" occurs in a period's "pre-stage."
- In "**pre-stage**" prior to main stage, subjects allocate *time* (40 sec.) between "civic tasks" and "private tasks." "Civic tasks" raise the probability of playing the main stage under a penalty scheme, but they yield no revenue. "Private tasks" give revenue to the task completer.
- Foregoing private task earnings is the opportunity cost of civic engagement. We make those earnings high enough so that **it is never privately payoff-maximizing to do even one civic task**. But in one set of treatments the opportunity cost is more than twice as high as the other.
- In some treatments, there is feedback about civic tasks completed within a fixed membership "**social circle**" of 6 participants (1/4 of the session's participants). Treatment names distinguish Local Social Interaction (*Yes*) from its absence (*No*).

Experimental Design – Treatment Variation

- We call the treatments *LowYes*, *LowNo*, *HighYes*, *HighNo*.

Private task earns 10

		Local social interaction	
		No	Yes
Opportunity cost of civic tasks	Low	*LowNo*	*LowYes*
	High	*HighNo*	*HighYes*

Private task earns 22

Pre-stage Tasks (beginning of every Part 2 period)

- Two steps:

  Step 1: read a description of an individual characterizing him or her with respect to two features or dimensions.

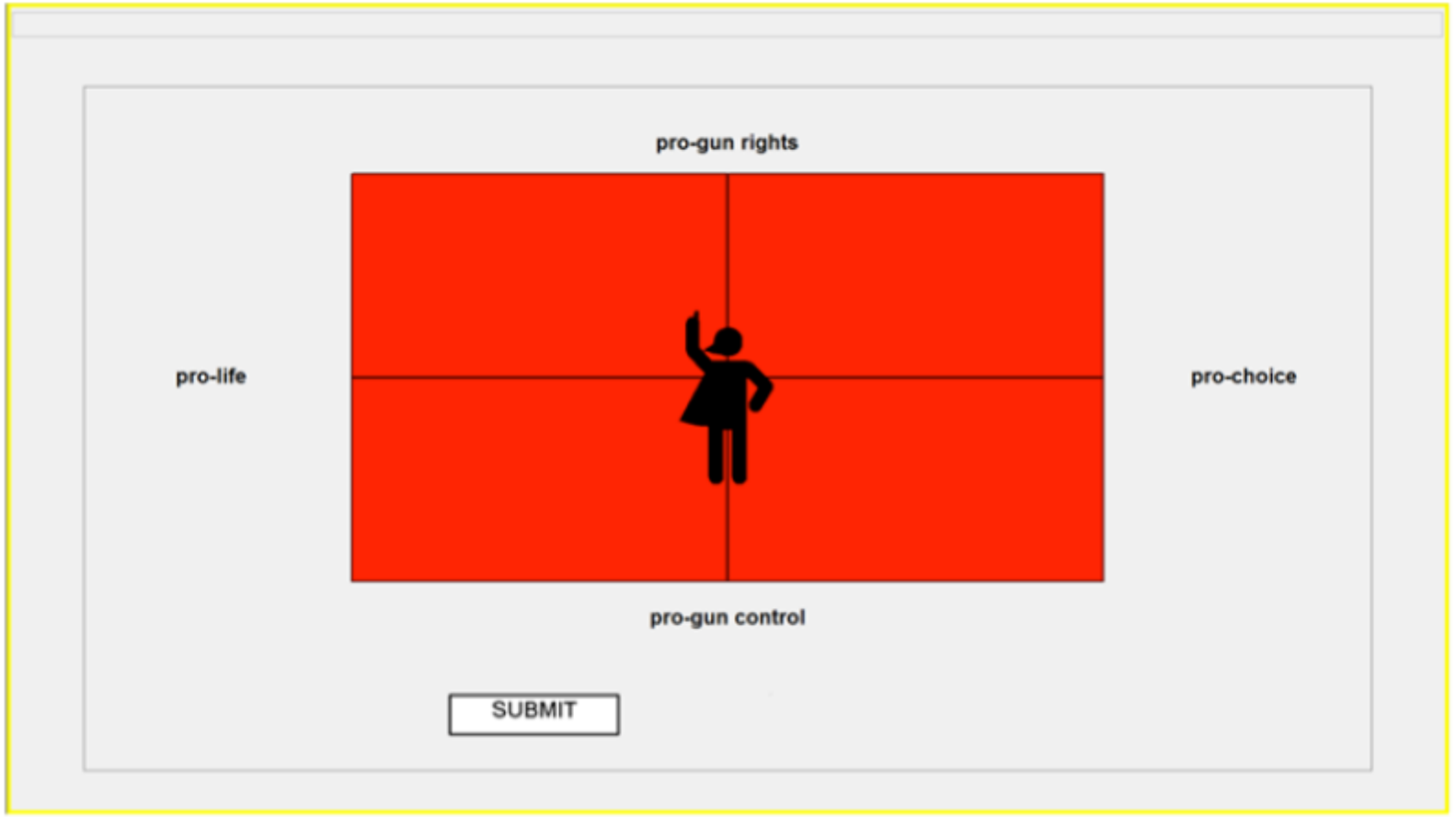
  Step 2: move an icon to the corresponding quadrant of a grid, and drop it in place.

There is immediate feedback of whether the selected quadrant was the right one, yielding the contribution to a civic engagement fund or to own earnings.

- Subjects initially take about 20 seconds per correctly completed task, get better with repetition, and ultimately take about 8 - 10 seconds per task.

Example of civic task

"Senate candidate Wendy White favors unrestricted gun ownership and is committed to a woman's right to choose whether to continue or to terminate a pregnancy."

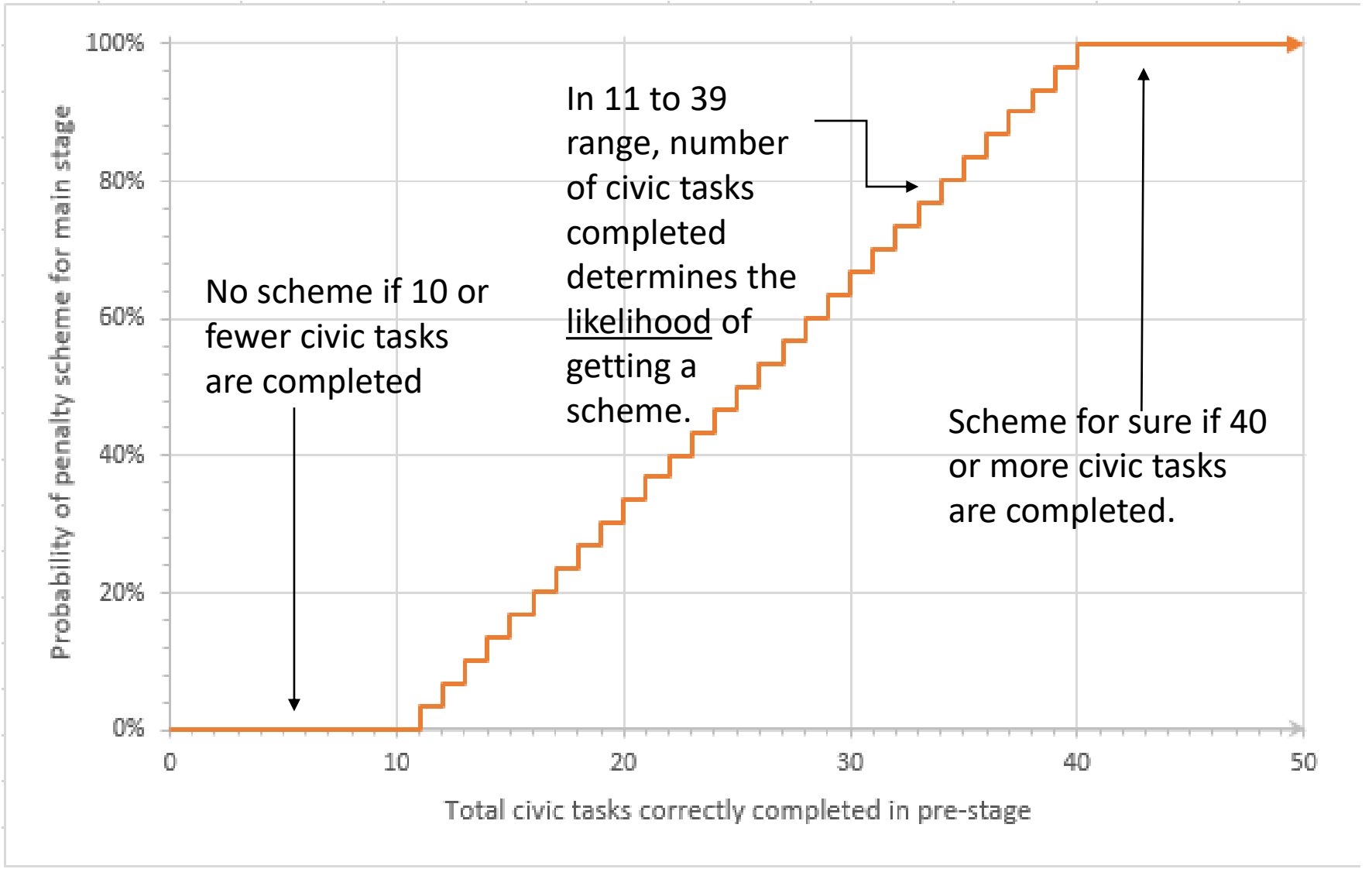


- Private tasks are the same but the characteristics are dimensions of “consumer” space.
- Example: the dimensions are (i) preference for restaurant versus home meals, and (ii) preference for gourmet dishes versus simple foods.

Experimental Design – Pre-stage Problem

Impact of correctly completed tasks:

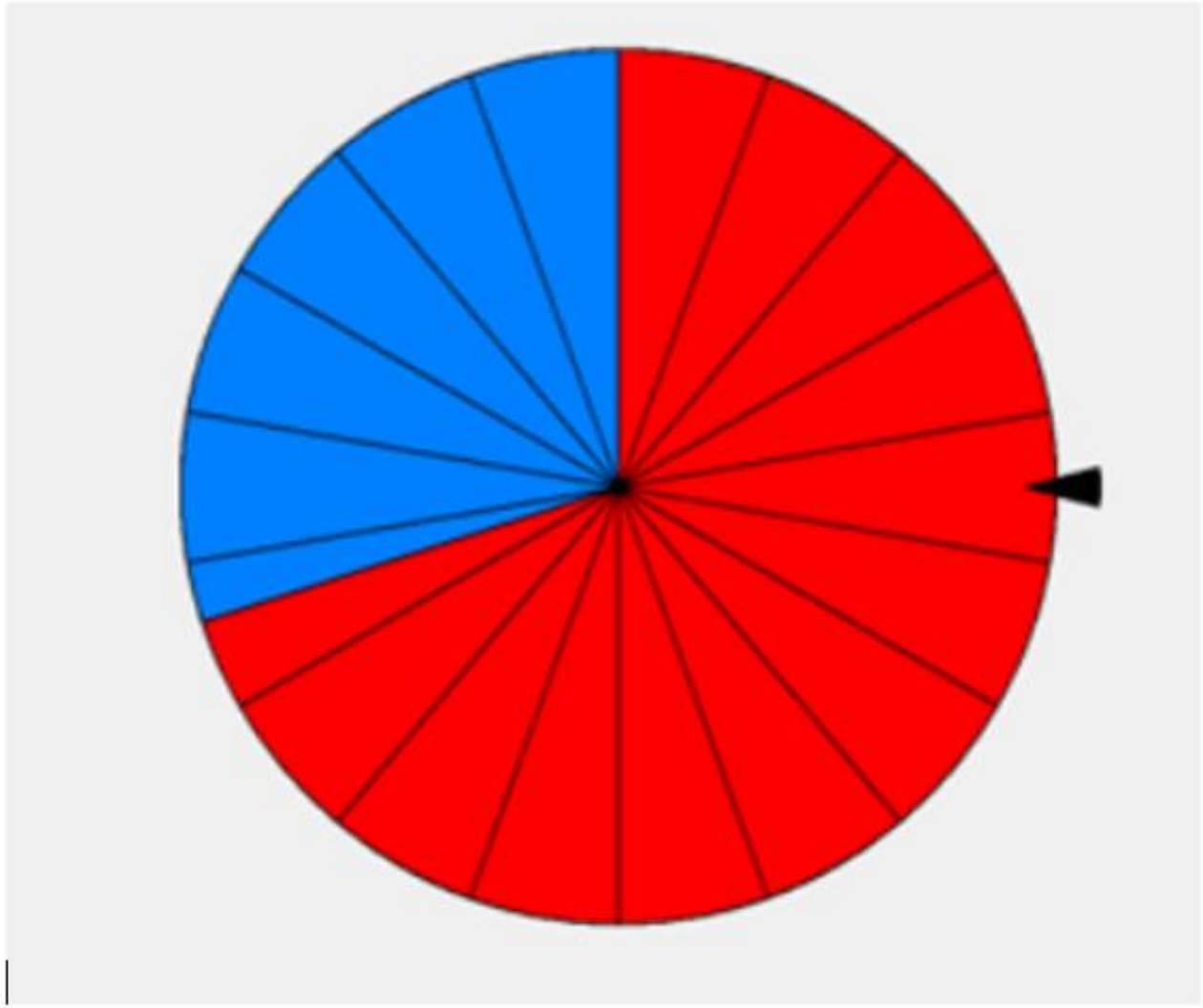
- Each private task generates **10** or **22** points of earnings, depending on the treatment (*Low* means low opp. cost, 10; *High* means high one, 22).
- There is a penalty scheme with certainty if the 24 subjects complete 40 or more civic tasks. There is no penalty scheme if they complete 10 or fewer civic tasks.
- There is a penalty scheme with probability (n – 10)/30 if the 24 subjects complete 11 to 39 civic tasks. n = # civic tasks performed
- The probabilistic structure is crucial to making civic engagement a social dilemma … because no single civic task ever changes expected earnings by more than its opportunity cost.



The probability of the 24 subjects playing under a penalty scheme in the period's main stage increases by 3-and-1/3% with each civic task completed, from the 11th to the 40th task.

Each step is too small to make it privately profitable to do a civic task, since it means foregoing the payoff from a private task.

The random draw's realization is announced before the main stage allocation decisions of that period.



(Relative sizes of red (no scheme) vs. blue (scheme) areas changes depending on number of civic tasks done.)

Figure A.1 Spinning wheel image from random choice screen.

Experimental Design – Pre-stage Problem

- If 11 to 39 civic tasks are completed, the random draw is conducted before the period's main stage; whether there is a scheme or no scheme is announced before main stage decisions are taken.
- Resolving uncertainty before the main stage is necessary to assure that the pre-stage entails a social dilemma. If main stage play took place with unresolved uncertainty, there would be a critical number of civic tasks at which it became privately profitable to contribute to the public sector in the main stage (for risk-neutral subjects), hence whether to do a civic task would be a **coordination problem**, not a social dilemma.
- Our set-up assures **it is never privately profitable to complete a civic task.**
- However, the opportunity cost (10 points if do a private task instead) is modest since main stage earnings are 100 in equilibrium without a penalty scheme and 258 in equilibrium with a penalty, so getting the scheme changes expected earnings by 158; all doing 1.6 tasks at cost 16 could assure this gain, implying a high rate of return in average though not marginal terms.

Experimental Design – Treatment Variation

- As mentioned, we vary whether a private task generates **10** points of earnings or **22** points of earnings.
- We also vary whether there is small group feedback about civic "pro-sociality":

In low social interaction treatments, there are no interactions below the 24 person session level. Subjects only learn the total number of civic tasks completed by all 24.

In high social interaction treatments, each subject belongs to a 6 member "social circle" in which he/she is identified by fixed identifier A, B, …, F within the social circle. (Members remain anonymous, scattered around the lab.)

- You can inform fellow circle members each time you complete a civic task. …

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- You can inform fellow circle members each time you complete a civic task. …
- Each member is shown how many civic tasks each other has completed, gives feedback on a 5 choice scale, and learns his/her average feedback from the others, and the others' average feedback.

Predictions

- The standard theory prediction is the same regardless of treatment; no civic tasks will be done, so there will never be a penalty scheme and there will always be free riding in the main stage.
- A plausible behavioral prediction is that:

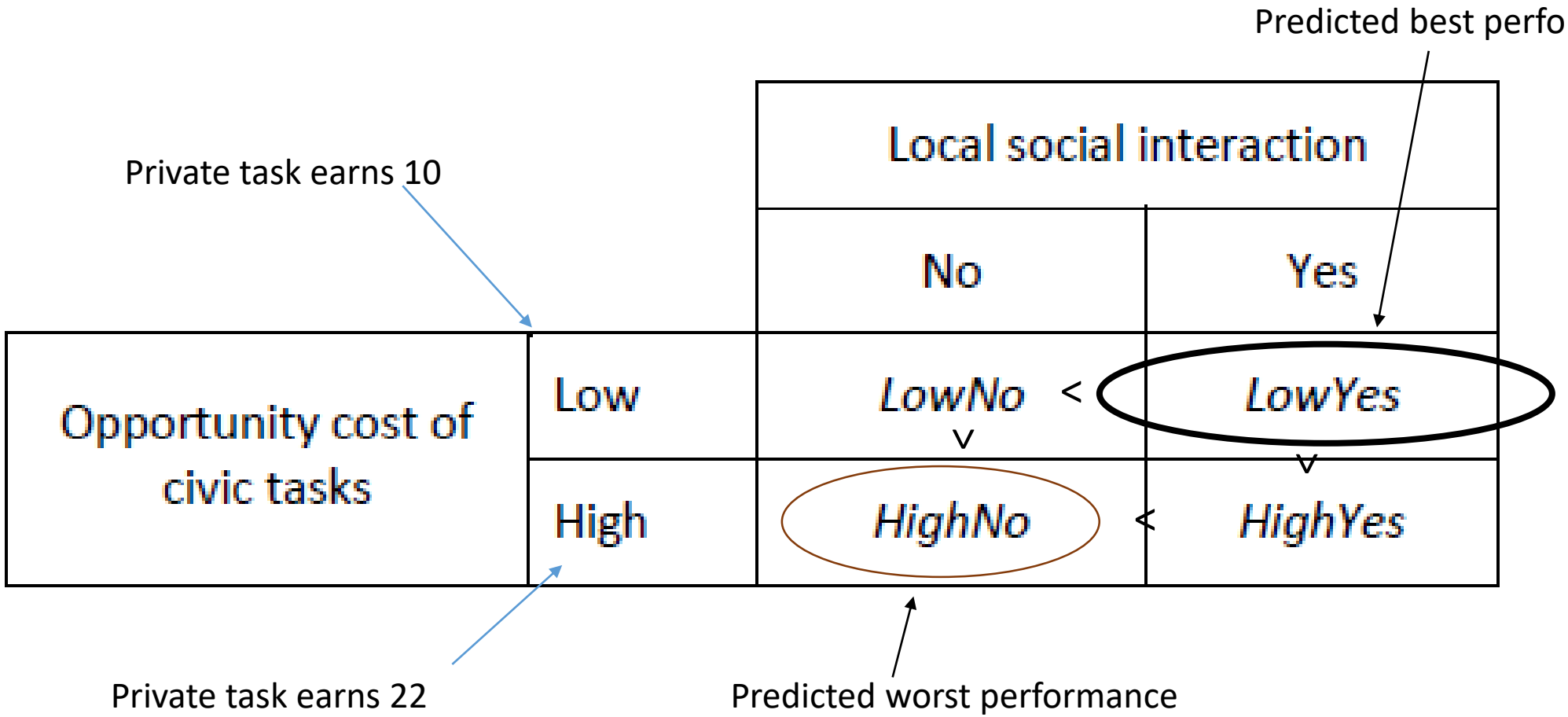
  - More civic tasks will be done in *Low* (10 point) than in *High* (22 point) treatments.

  - More civic tasks will be done in local social interaction (*Yes*) than in no social interaction (*No*) treatments.

  - Possibly: there may be more rapid decay in the number of civic tasks done per period when the opportunity cost is higher, and when there is no small group social interaction.

Experimental Design – Treatment Variation

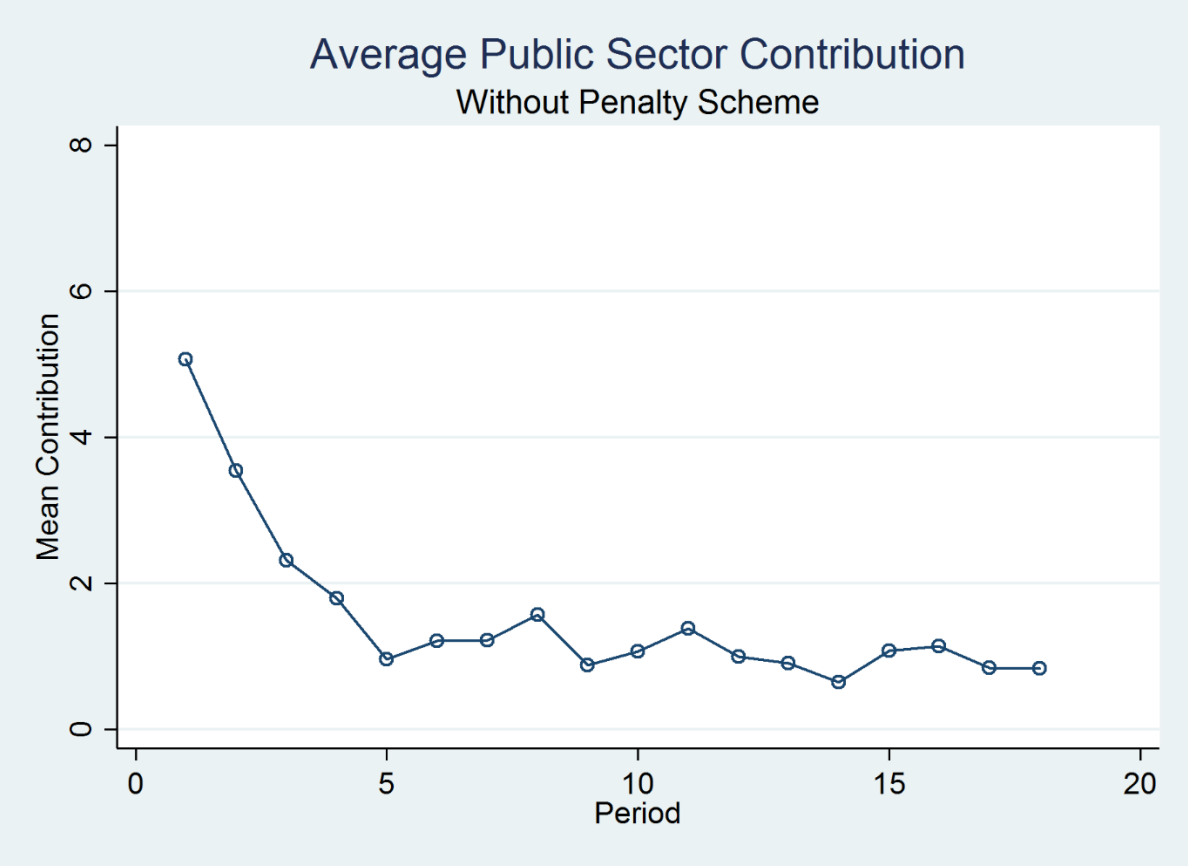
- We call the treatments *LowYes*, *LowNo*, *HighYes*, *HighNo*.



IV. Experimental Results

- Each session generates only one fully independent observation (despite many hundreds of decisions by 24 subjects).
- We have 5 sessions per treatment.
- Almost all conducted in 2017.

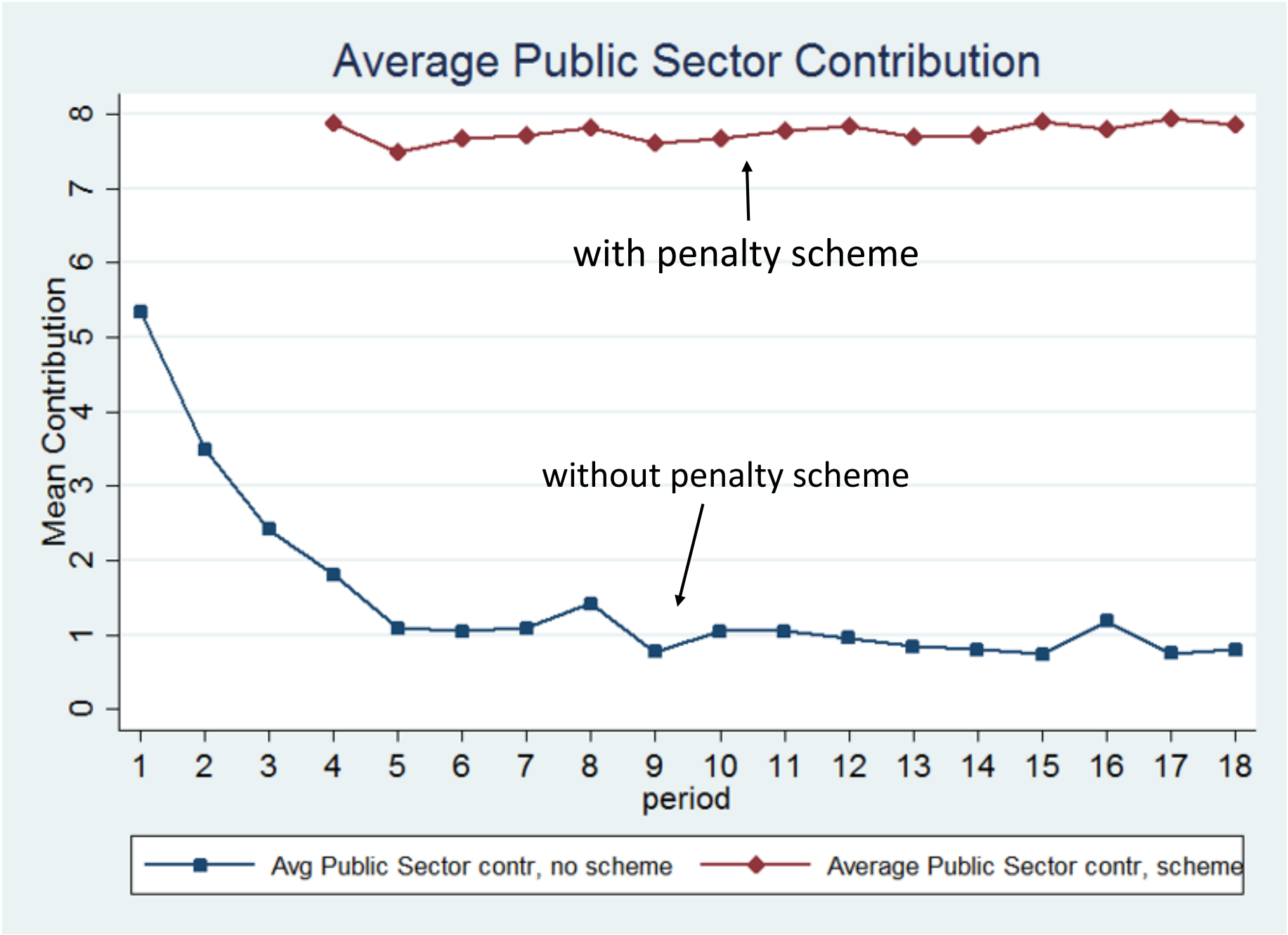
Result 1. **Main Stage**. Most subjects initially allocate tokens to the public sector but the amount allocated quickly declines in the absence of a penalty scheme.



This graph shows average per subject allocation to the public sector in **periods without a penalty scheme**.

It includes all observations of periods 1 – 3, and in periods 4 – 15, includes the average in a session only if a penalty scheme was not achieved.

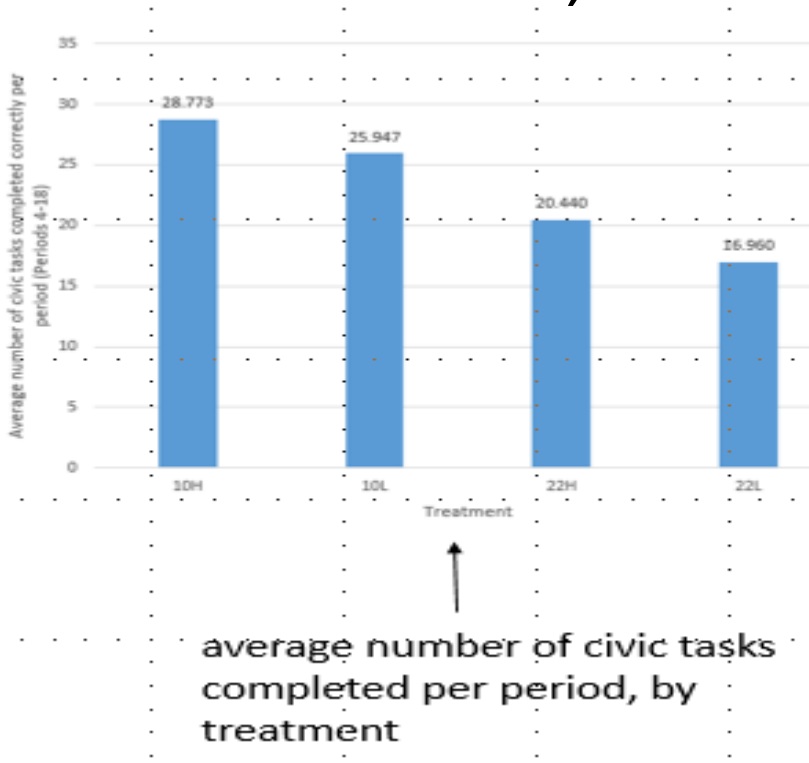
Recall that 8 units is the socially optimal allocation. Hence the first period allocation is somewhat above the usually-observed 50% of optimum, but the second is below that 50% level.



When the scheme is in place, the large majority of subjects contribute 8, which is privately optimal.

Note: There is no sign that having achieved the scheme previously makes contributions higher also in periods the scheme isn't achieved.

Result 2. Some civic tasks are completed, averaging **28.8** tasks per period (1.2 per subject) in *LowYes*, **25.9** tasks (1.1 per subject) in *LowNo*, **20.4** tasks (0.9 per subject) in *HighYes* and **16.7** tasks (0.7 per subject) in *HighNo*. Remember: **40** or more means scheme for sure, **10** or less means no scheme for sure.



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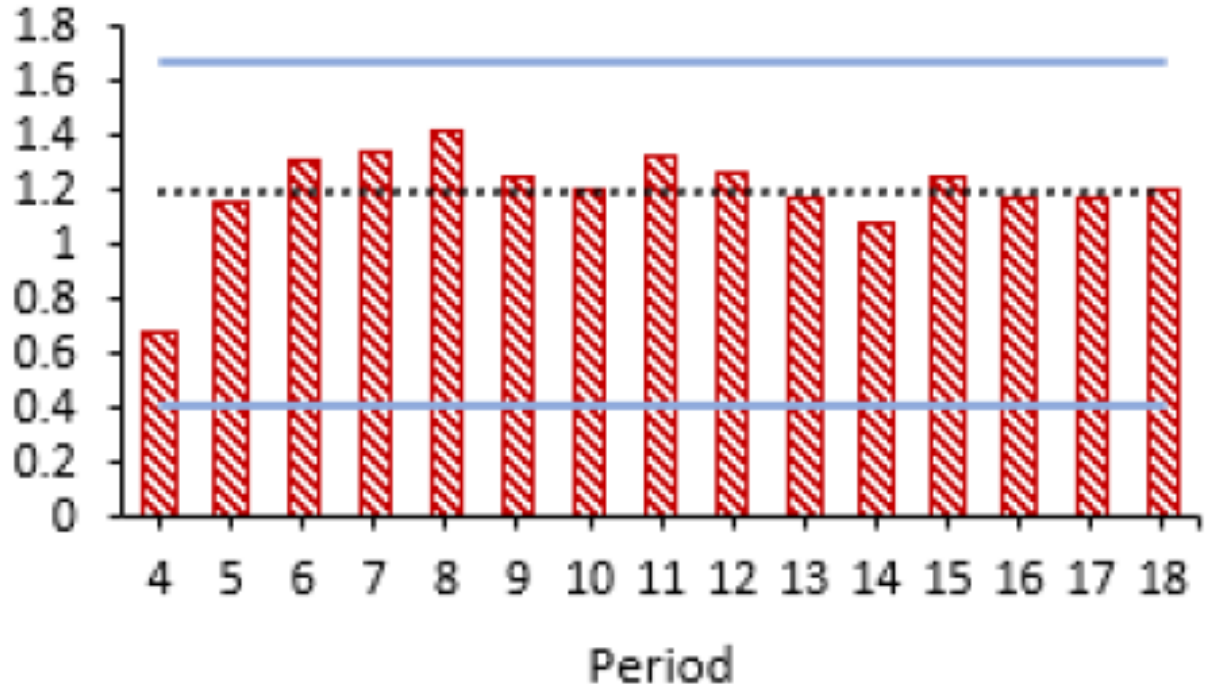
Differences (of civic tasks completed) are most statistically significant between *Low* and *High* cost in non-parametric tests, but differences based on local social interaction are also significant in linear regressions that control for trend (shown below).

Result 2. Some civic tasks are completed, averaging 29.6 tasks per period in 10-High, 27.4 tasks in 10-Low, and 17.8 tasks in 22-Low.

Result 3. Unlike allocations to the public sector in the main stage without penalty and linear public goods games, the amount of civic engagement does not decline with repetition.

Civic tasks versus private tasks completed, by period.

Figure 5: *Average civic by treatment and period*



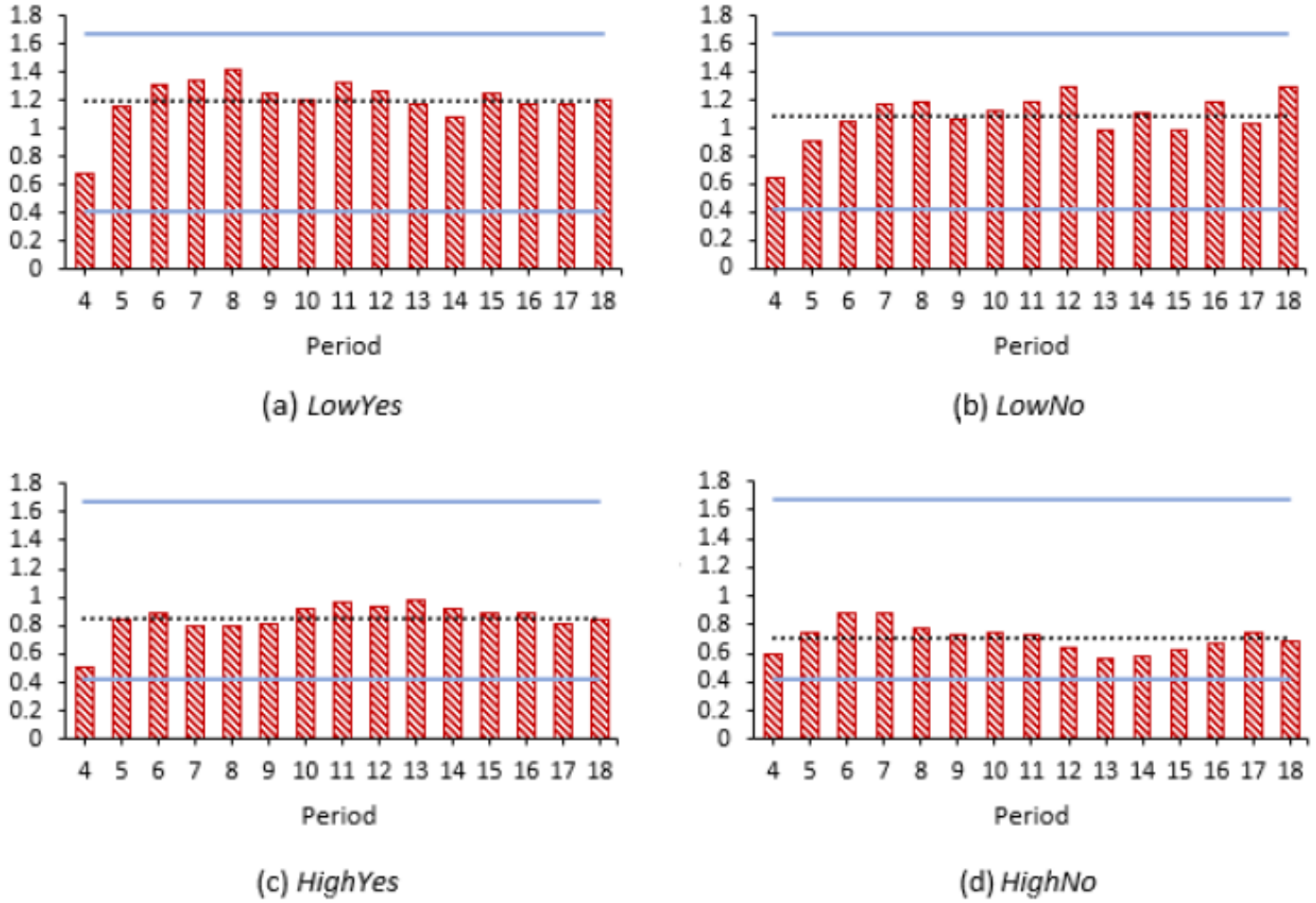
As subjects become better at completing tasks, their average total approaches 4 tasks, of which a little over 1 is civic, the rest private.

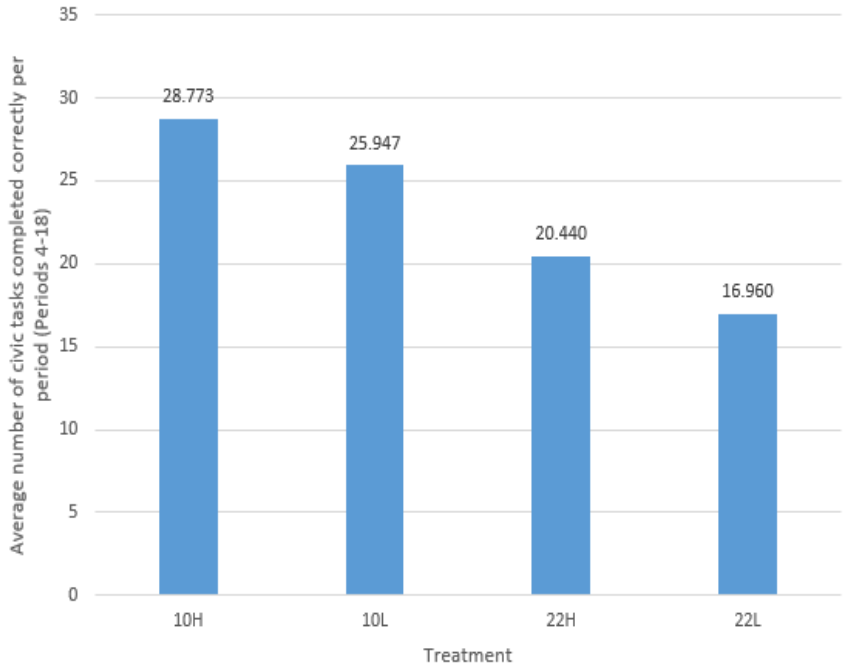
In *LowYes*, there is an initial upward trend in civic tasks; the overall trend remains slightly upward, no trend in periods 9 – 18, 10 – 18, 11 -18, …, 15 – 18.

In regressions, we find the number of civic tasks done is responsive to past random draw outcomes with respect to whether there is or is not a penalty scheme. I.e., there is some “hot hand” phenomenon.

Civic tasks vs. private tasks completed, all treatments

Figure 5: *Average civic by treatment and period*





average number of civic tasks completed per period, by treatment

share of Part 2 periods in which scheme is achieved, by treatment

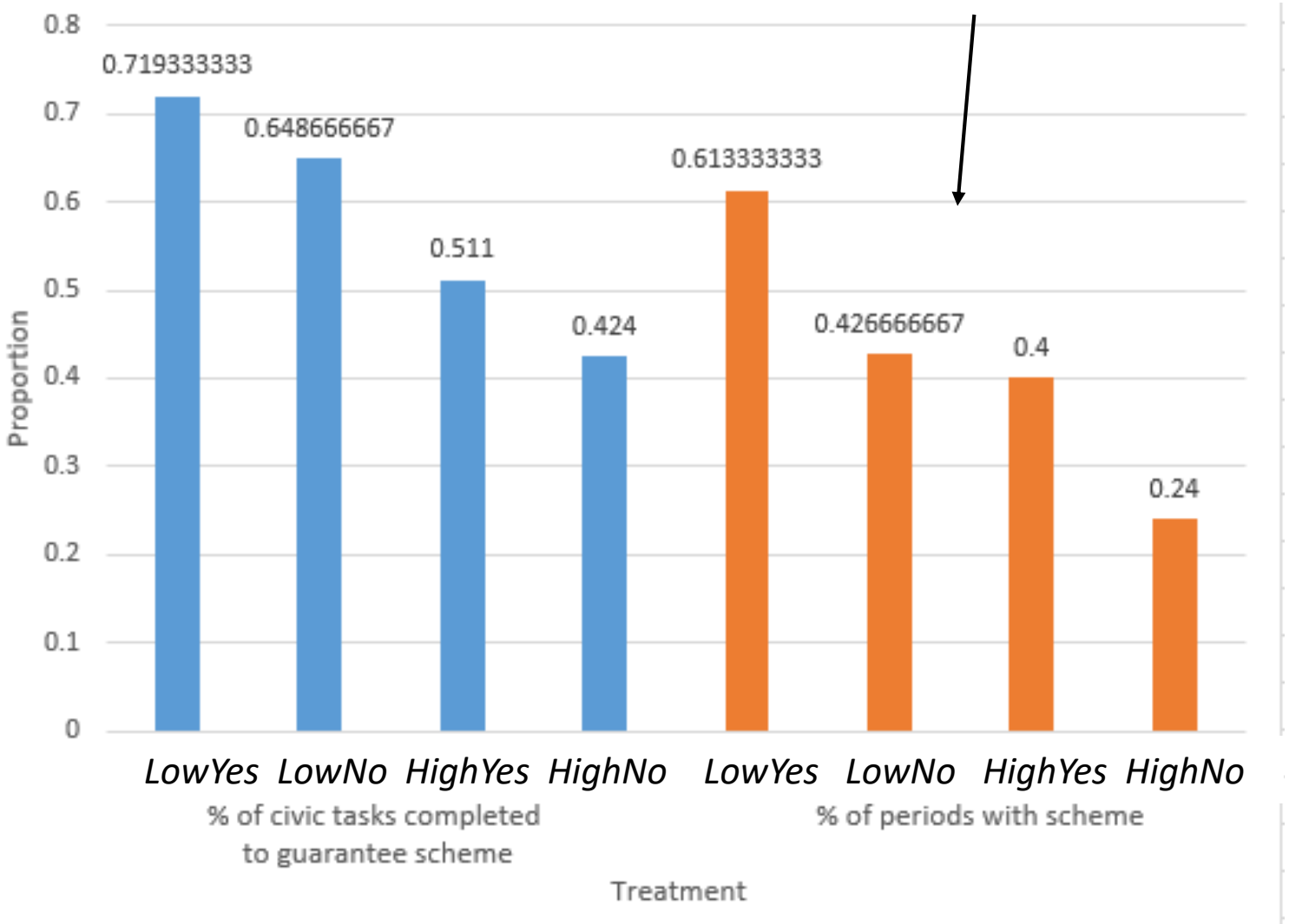


Table 1: *Dynamics of subjects' civic task completions: subject-level analysis*

Dependent variable: The number of civic tasks completed by subject *i* in period *t*.

Independent Variable:	(1)	(2)	(3)	(4)	(5)	(6)
(i) *LowYes* dummy	1.361***	1.140***	.979***	.734***	.597***	.460**
	(.218)	(.227)	(.211)	(.250)	(.153)	(.180)
(ii) *LowNo* dummy	1.039***	.882***	.679***	---	---	---
	(.248)	(.200)	(.247)			
(iii) *HighYes* dummy	.593**	.524***	.440**	---	---	---
	(.248)	(.159)	(.236)			
(iv) $p_{i,1}$ {own contribution in pd. 1}	.122***	.099***	.110***	.104***	.086***	.102***
	(.029)	(.021)	(.020)	(.031)	(.025)	(.024)
(v) $p_{i,3}/[p_{-i,3} + p_{i,3}]$ {own pd. 3 contribution divided by session average}	.391***	.298***	.300***	.332***	.245***	.262***
	(.059)	(.046)	(.056)	(.084)	(.046)	(.082)
(vi) $t_{C,i,t-1}$ {# of own civic tasks completed in pd. *t*-1}	---	.403***	.384***	---	.389***	.367***
		(.035)	(.043)		(.052)	(.054)
(vii) $t_{C,-i,t-1}$ {avg. # of 23 other persons' civic tasks completed in pd. *t*-1}	---	-.048	.026	---	---	---
		(.099)	(.113)			
(viii) $t_{C,SC-i,t-1}$ {lagged avg. # of civic tasks of others within own social circle}	---	---	---	---	.160***	.181**
					(.055)	(.071)
(ix) $t_{C,OthSS,t-1}$ {lagged avg. # of civic tasks by others outside own social circle}	---	---	---	---	-.246**	-.0002
					(.103)	(.145)
Controls for Randomness	No	No	Yes	No	No	Yes
Constant	-1.792***	-1.711***	-1.784***	-.959***	-.932***	-1.325***
	(.269)	(.204)	(.169)	(.232)	(.200)	(.201)
# of Observations	7,200	6,720	5,712	3,600	3,360	3,024
# of left-censored observations	3,697	3,429	2,836	1,666	1,535	1,393
Wald χ^2	157.37	431.17	714.72	91.78	253.73	325.05
Prob > Wald χ^2	.0000***	.0000***	.0000***	.0000***	.0000***	.0000***
p-value for Wald χ^2 tests of coeff. diff.:						
H_0: (i) ≤ (ii)	.1467	.0653*	.1058	---	---	---
H_0: (i) ≤ (iii)	.0022***	.0011***	.0028***	---	---	---
H_0: (ii) = (iii)	.0505*	.0512*	.2758	---	---	---
H_0: (viii) ≤ (ix)	---	---	---	---	.0014***	.2778
VIF [#1]	1.51 [1.40]	2.13 [1.54]	2.41 [1.62]	1.21 [1.14]	1.90 [1.46]	1.71 [1.30]

Random effects Tobit regressions with one observation per session x period,

Two indicators of own cooperativeness in Part 1 (no scheme) predict doing civic tasks in Part 2.

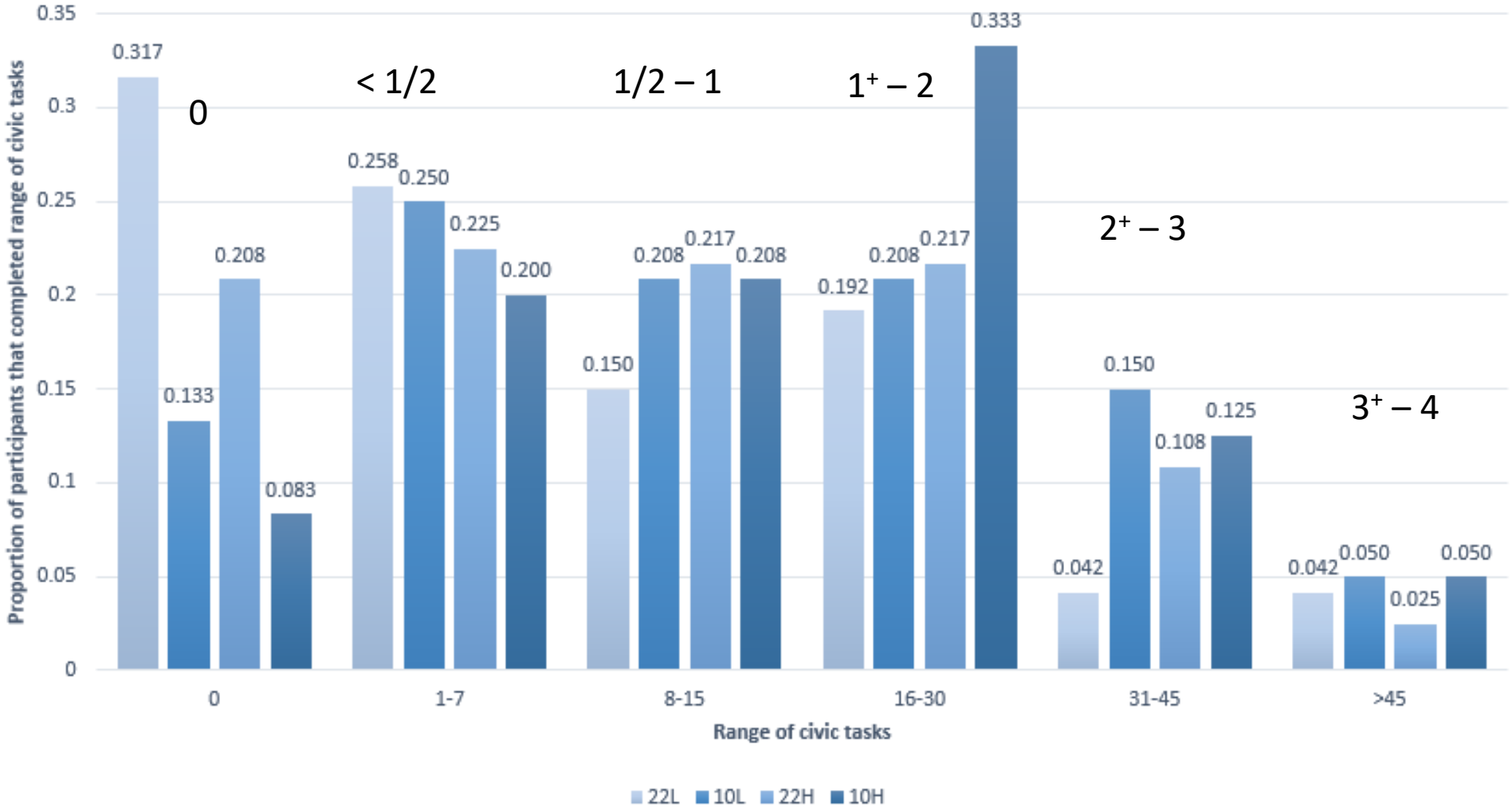
Own civic engagement in Part 2 shows persistence over time.

Subjects respond positively to other social circle members' past civic tasks in the *Yes* treatments, but not to civic tasks done by other session participants as a whole, and perhaps negatively to civic tasks done by other session participants outside of their own social circle.

findings at individual level

- In high social interaction (*Yes*) treatment(s), evaluations are given in the expected way (*more civic tasks, better evaluation*).
- *Response to evaluations?* Regressions find subjects whose civic tasks are a little below average increase tasks if criticized by social circle members, but those who almost always do no civic tasks are if anything negatively affected by such criticism
- There is evidence of *heterogeneity of pro-sociality*: those who contribute more to the public sector in Part 1 also do more pre-stage civic tasks in Part 2.
- There's considerable variation in how many civic tasks subjects do, with the large majority averaging more than ½ task per period on average, a majority in the *LowYes* and *LowNo* treatments averaging more than 1 task per period.

Categorizing individuals' levels of civic engagement



findings at individual level

- In high social interaction (*Yes*) treatment(s), evaluations are given in the expected way (more civic tasks, better evaluation).
- There is evidence of heterogeneity of pro-sociality: those who contribute more to the public sector in Part 1 also do more pre-stage civic tasks in Part 2.
- There's considerable variation in how many civic tasks subjects do, with the large majority averaging more than ½ task per period on average, a majority in the 10H and 10L treatments averaging more than 1 task per period.
- There are significant correlations between civic task completion and exit survey responses about voting, following politics, etc., whereas these things are not correlated with contributing to the public good in the main stage. Predictors of main stage contribution to public sector are different (e.g., math GRE). This would be consistent with having some *external validity*.

V. Concluding discussion

- We study a two-order social dilemma, with pre-stage (2nd order dilemma) payoffs low relative to the higher-payoff main stage.
- We suggest that the main difference between the pre-stage dilemma (how much to “civically engage” to “create the state”) and the “main stage” dilemma (whether to contribute to support the public sector) is the proportion of overall potential earnings at stake.
- Other differences are (a) framing the main stage like a macro-economy and the pre-stage like civic engagement to create a state, and (b) allocating tokens in main stage versus allocating time to real tasks in the pre-stage.
- Given that there is close to complete free-riding in the main stage in later periods that have no penalty scheme, there is an average earnings difference of about 158 points in main stages with versus without the scheme (258 vs. 100 points).

Discussion

- Our finding that completion of civic tasks doesn't decay over time when the opportunity cost is modest (10 points per task) stands in sharp contrast to results in other finitely repeated VCM / PGG experiments.
- We interpret the result as supporting the possibility that people will incur small costs (like voting and reading or watching the news), setting aside free riding incentives to some extent, to solve a bigger problem of state creation and maintenance.
- Of course, in the real world, there may also be more intrinsic or social motivation to civically engage. A lot of public schooling, e.g., is about socializing people into a sense of citizenship.

Discussion

- What do we make of the fact that the subjects succeed in achieving government only most of the time, not always?

  - There are some dynamics of “courting danger” by letting the probability of having a scheme be “high enough” which arise due to our design details.

  - We can see the number of civic tasks often tick up after a “bad” outcome of the random draw. More analysis of the behavioral reactions to randomness remains to be done.

  - But these things are largely peripheral to our core concern, results of a design feature that was necessary, given a feasible session size, for still assuring the pre-stage has social dilemma features.

Discussion

- Failure to achieve the penalty scheme every time is in a sense reassuring: it shows that subjects do get the incentive to free ride; it is simply that enough of them decide to set it aside to some degree.
- Even in *Low* treatments, our cost of pre-stage civic engagement relative to main stage public sector contributions is very high relative to the way this ratio is in the real world. A more realistic ratio would have civic engagement cost a hundredth (1/100) or thousandth (1/1000) as much as now, and successful scheme creation would occur almost always.
- That completion of civic tasks doesn't decline despite subjects "getting it" (that it is privately attractive not to engage) strengthens our finding that cooperation on the "inexpensive, 2nd order public good" is different from the usual 1st order pattern.

Questions?

Thank you.