Experimental approaches to institutions

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Economic experiments?

- Until recently, Economics was regarded as a science that could only use observation of real-world phenomena.
- But if we are interested on reforming existing institutions, this process becomes slow and costly to society.
- Experiments are an alternative.

Economic experiments?

- On Monday, Roberto gave you an overview of field and natural experiments on institutions.
- They have many advantages but come at a cost. For instance, the identification problems Sebastian will tell you about on Friday.
- The purpose of this workshop is to look at a third kind: Laboratory experiments.

Outline

1. Why laboratory experiments?
2. Modelling institutions in experiments.
3. The state of affairs:
   - Public good games.
   - Strategic information transmission.

Why laboratory experiments?

- There are three main advantages in running economic experiments in the lab:

1. Control.
2. Control.
3. ...

Control

"*Control is the essence of experimental methodology*"
(Vernon Smith, 1976).

- In lab experiments you can control, up to a certain extent, all the variables.
- Through the experimental design you can control:
  - Actions.
  - Pool of subjects (lower selection-bias).
  - Preferences.
  - Context and beliefs.
  - Frequency and type of interactions.

Controlling preferences

- Contrary to Experimental Psychology, in economic experiments subjects receive monetary rewards.
- You determine how and how much subjects are paid (e.g., randomly).
- Actually, paying is in itself a form of control.
- Problems:
  - Size of stakes.
  - Endowment effect.
  - Aspirations.
  - Loss aversion.

Controlling context

- In experiments on institutions, context can be very important.
- As a matter of fact, lack of context is one of the main criticisms to lab experiments.
- There is currently a very strong debate:
  - On the one hand, real people act in real situations not in abstract ones: The **artificiality critique**.
  - But background can differ a lot across subjects and severely interfere with results (via beliefs, for instance), so abstract situations level the playfield.
  - Lack of background also helps **replicability** and hence **internal validity** (unlike in field experiments).

Controlling context

- In any case, **framing** is always a problem.
- Moreover, there is an **experimental induced-demand effect**: subjects may do what they believe you want them to do.
- In the end it is up to the experimenter to decide how much context to provide.
- For instance, whether to label actions as “cooperate” or “defect” in a PD must depend on the purpose of your study.

An example

- Abbink & Brandts (2007) explore a model in which a dominant and a dominated region first interact through a voting process that can lead to different degrees of autonomy.
- If this process fails then both regions engage in a costly (and probabilistic) political conflict that can only produce extreme outcomes.
- The theoretical model predicts that conflict does not occur because it is wasteful.
- But in reality we observe conflict…

An example

- Their underlying conjecture is that purely emotional forces prevent agreements from being reached.
- The authors are precisely interested in eliciting emotions.
- Subjects were students in a catalan university.
- Players were labelled “citizens” living in two “regions” of a “country”, and they first voted on “levels of autonomy” and later decide whether to “open a conflict”.

An example

"*We expected the parallelism between experiment and real-life environment to be improved if the language in the experiment echoes the one used in real life*"

(Abbink and Brandts, 2007).

- In other words, they hoped to increase the **external validity** of the experiment.
- Perhaps not surprisingly, "citizens" of the dominated region rejected generous proposals.
- And substantial resources were spent in "conflict".

Modelling institutions in experiments

- Experiments on institutions typically study them through games:

1. Institutions as norms.
2. Institutions as rules of the game.
3. Institutions as outcomes.

- I will illustrate these three ideas through experiments on public good games and sender-receiver games.

Institutions as norms

- The most basic type of institutions are conventions or customs.

  E.g., people drive on the right.

- Cooperation in the prisoners dilemma or coordination in the stag-hunt game can be thought as institutions.
- These **institutions arise from behaviour**.
- Experiments in this area look at whether these conventions also arise in the lab.

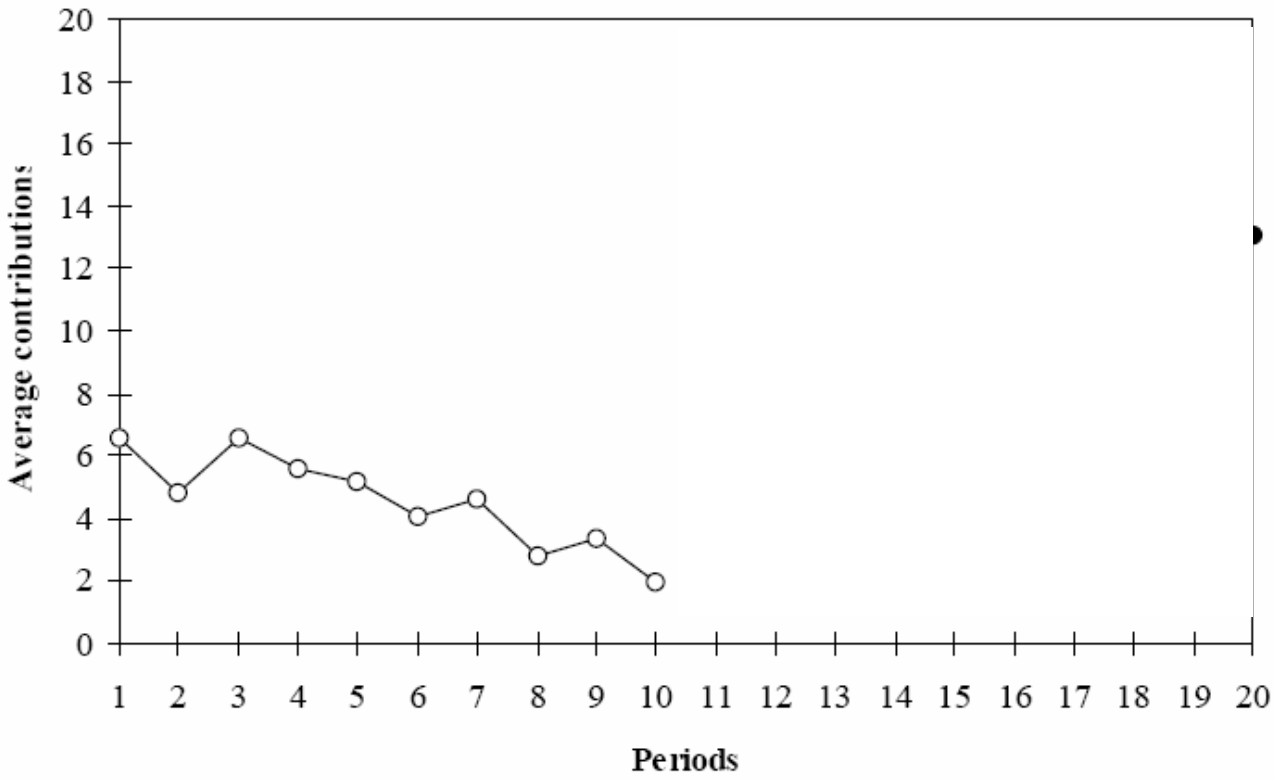
  E.g., Do people cooperate/ coordinate? Do they contribute to public goods? Tell the truth?

Example 1a: Public goods

- Fehr and Gachter (2000) analyze public good games with and without punishment, one-shot and repeated.
- Subjects are given tokens that they can keep or contribute to a common fund.
- In the stranger, one shot version (10 rounds, changing partners) the NE predicts that nobody contributes to the public fund.
- Severe inefficiency ensues.
- This is a completely decentralized setting.
- Results back this prediction.

Example 1a: Public goods

Figure 1b: Average contributions over time in the Stranger-treatment (Session 3)



Example 2a: Truth-telling

- Sanchez-Pages and Vorsatz (2007) study truth-telling in a sender-receiver game.
- Nature selects a state (equal prob.)
- The sender sends a message about the state of the world to the receiver.
- The receiver then takes an action that is payoff-relevant for both of them.

State A	*S*	*R*
Action U	2	1
Action D	1	2

State B	*S*	*R*
Action U	1	2
Action D	2	1

Example 2a: Truth-telling

- No information about the true state of the world should be submitted by the Sender.
- She lies with probability one-half in every sequential equilibrium (50 rounds to elicit mixed strategies, changing partners).
- Results show that the percentage of truth-telling is 55%.
- Messages contain some information.
- To a certain degree, truth-telling emerges as a convention.

Institutions as rules of the game

- Different institutions can be characterized as rules under which subjects operate:

1. Feasible actions.
2. Sequence of actions.
3. Information conditions.

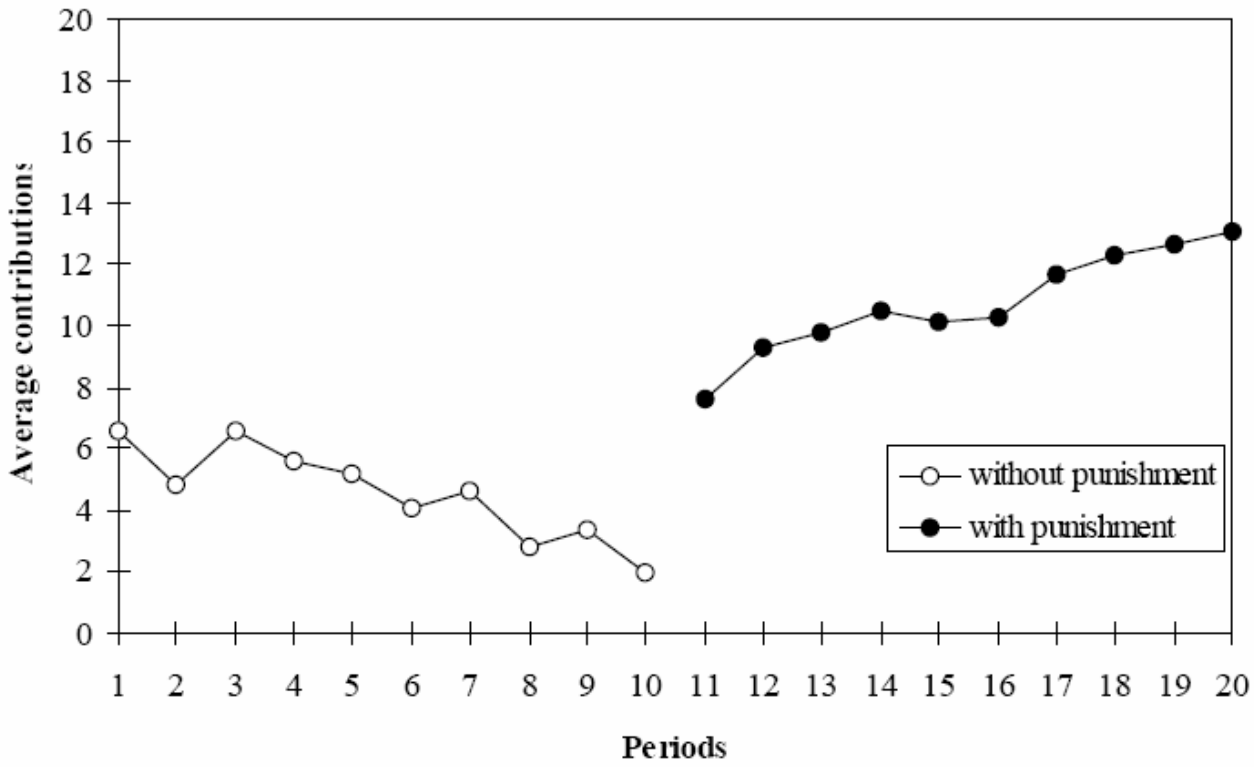
- **Institutions affect behaviour**.
- One prominent institution (or rule) in experiments is costly punishment.

Example 1b: Public goods

- Suppose we add the possibility of costly punishment (10 more rounds).
- It becomes available in a second phase of the experiment (not explicitly announced).
- No rational agent should undertake it.
- Equilibrium prediction remains unchanged.
- However, it is used often.
- And it increases contributions substantially.

Example 1b: Public goods

Figure 1b: Average contributions over time in the Stranger-treatment (Session 3)



Example 1b: Public goods

- Theses results are robust to ordering.
- Convergence to free-riding is also robust.
- Repeated interactions (i.e., 10 rounds with stable partners) do not change this pattern.
- Average contributions are larger though (and reach full cooperation with punishment).

Example 2b: Truth-telling

- Suppose receivers can choose whether to accept payoffs or to reduce the payoffs of both participants to zero.
- Again, no receiver should ever reduce the payoffs.
- Subjects do punish deceivers when they trusted (25%).
- But that does not improve truth-telling!!

Institutions as outcomes

- Institutions can also emerge endogenously (Sanchez-Pages and Straub, 2008).
- There is a two-way relationship: **Institutions affect behaviour but behaviour also determines whether they emerge or not**.
- And how many subjects will join.
- This can account for the institutional heterogeneity we observe in the real-world.

Institutions as outcomes

- The endogeneity of institutions in experiments rests on **individual heterogeneity**.
- It is well-established by now that subjects come in different “flavours”:

1. 30%-40% pure “egoists”.
2. 15%-25% conditional cooperators.
3. 5% - 10% altruists and unconditional cooperators.

The Separability Hypothesis

- Punishments are normally exerted by a core of subjects.
- In the sender-receiver game, 25% of subjects accounted for 90% of all punishments.
- This group told the truth in 70,66% of all observations.
- The rest of subjects behaved according to equilibrium.

The Separability Hypothesis

- In the public good game, sanctioners not always contribute more.
- The no-punishment treatment did not allow cooperators to enforce cooperation.
- However, the punishment treatment allowed them to discipline selfish subjects.
- Note that this did not occur in the sender-receiver game.

Institutional selection

- Now suppose we give subjects the option of joining one type of institution.

  E.g. decentralized vs. punishment.

- Given this heterogeneity, different types will self-select into different institutions.

Example 1c: Public goods

- Guerek et al. (2006) run an experiment in which individuals choose between a sanctioning and a non-sanctioning institution to play a public good game.
- Subjects only interact with those who chose the same institution (30 repetitions).
- They find that a small number of conditional cooperators is sufficient to establish higher aggregate payoffs in the SI
- In the end, the SI attracts all participants and becomes the sole “winner” of institutional competition.

Example 1c: Public goods

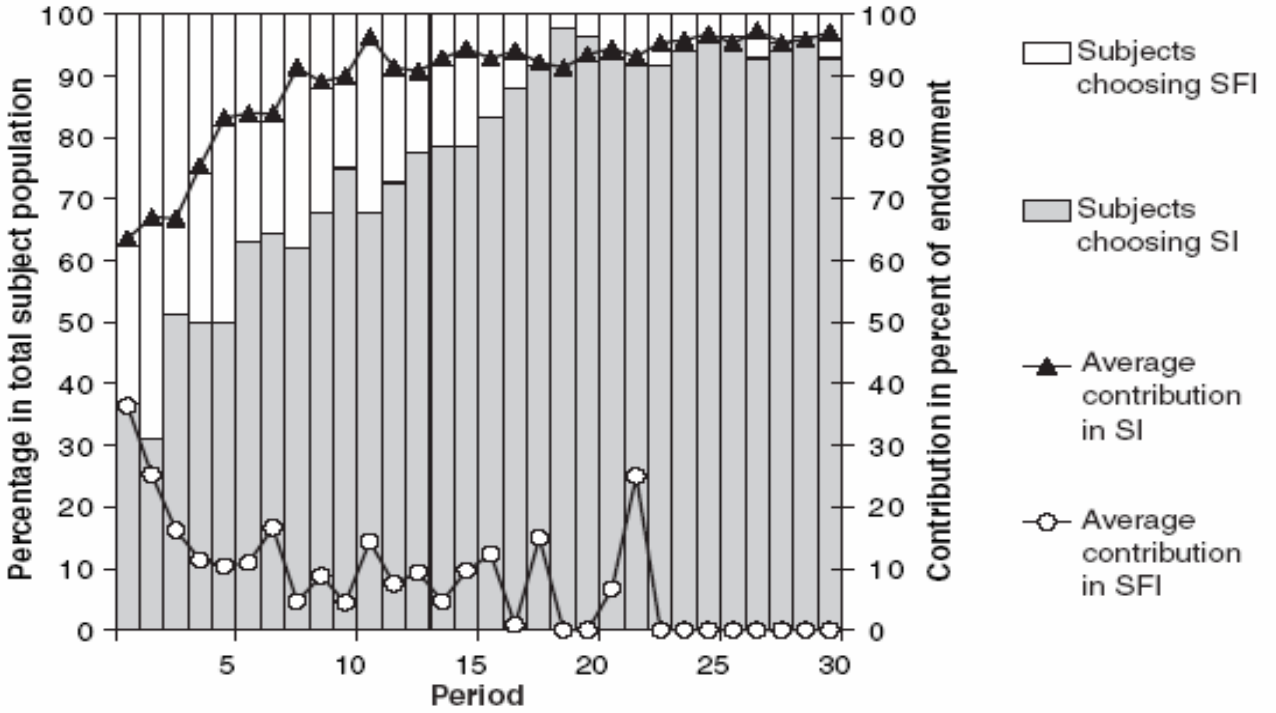


Fig. 1. Subjects' choice of institution and their contributions. The average contributions in both institutions over the 30 periods of the interaction are measured as the percentage of endowment contributed to the public good.

Example 2c: Truth-telling

- Peeters et. al (2007) run an experiment in which subjects are first randomly assigned to a sanctioning treatment or a sanction-free treatment.
- In the sanctioning institution receivers can punish senders.
- After 60 rounds they have to select which institution they want to join for 40 additional rounds.
- Note that in this case, the sanction-free institution does not offer a payoff advantage.

Example 2c: Truth-telling

- Results show that subjects who frequently punish liars often choose the sanctioning institution (50%).
- Whereas the rest mostly choose the sanction-free institution (80%).
- Therefore, the two institutions (or sub-societies) coexist in the end.
- And they exhibit different degrees of truth-telling (55% vs. 62%).

External validity

- We observe that almost all societies enforce their rules through punishments.
- Some clubs use costly monitoring or electronic registration techniques while other clubs just rely on their member's compliance.
- Some firms use incentive contracts to enforce truth-telling by CEOs, while other firms rely on intrinsic motivation.
- The specific type of behaviour that is to be enforced (cooperqation, honesty) may determine which institutions are successful.

Conclusions

- Lab experiments constitute an extremely fertile field for research on institutions.
- Personal advice: Experimental design is key. Think very carefully what is the most suitable to answer your question.
- Don’t chase headlines. That can be counterproductive.
- Quite often small truths can be...

  ...more truthful!

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Thank you!