

FROM THE LAB TO THE FIELD

Expanding experimental economics

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CIRAD

December, 3, 2021

- What is an experiment ?
- What is an economic experiment?
- Why running experiments about economic issues?

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- **Highlights: Treatment effect / Randomization / Control / Validity.**

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- **Research question:** does social discrimination affect individual performance?
- **Hypothesis:** salience of social identity affects individual performance (comparative effect).
- **Background:** castes system in India.
- **Protocol:** maze solving task (individual performance).
 - 1 rupee per maze solved.
 - Packet of 15 mazes to solve in 15 minutes.
 - Subjects: 6th and 7th graders (F: 6ième & 5ième).
 - Groups of 6 boys supervised by an adult (teacher).

- Treatments

- Concealed identity in mixed groups (**A**), $n = 156$
- Revealed identity in mixed groups (**C**): subjects' names and caste publicly announced (3 of each caste), $n = 120$
- Revealed identity in uniform groups (**CS**): same as C but 6 participants are from the same caste, $n = 60$

Results

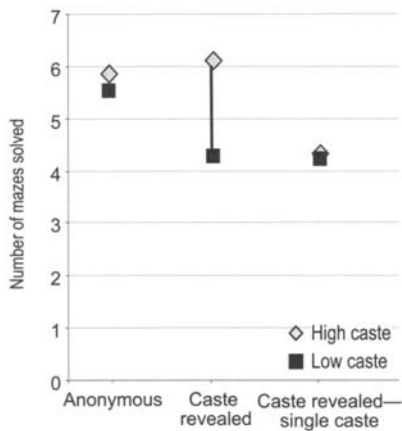


FIGURE 1. AVERAGE NUMBER OF MAZES SOLVED, ROUND 2

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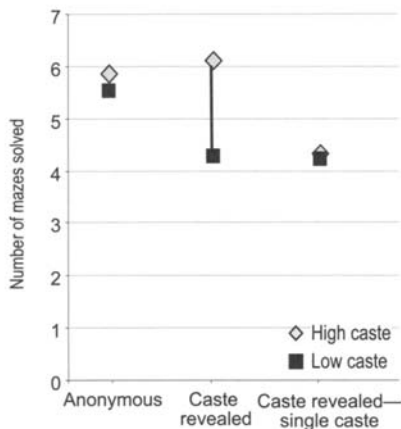


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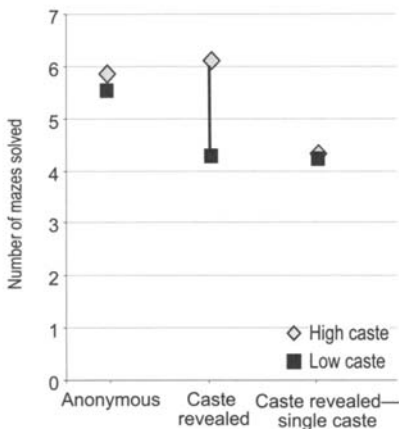


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- Concealed identity treatment (*Anonymous*): no difference in performance between low and high caste.
- Revealed identity treatment: performance of low caste individuals drops by 20%

- Possible reasons: "*poor versus rich*" effect? *intimidation* effect? *identity* effect?
- "**poor versus rich**" effect: reminding the cast origin discourage low cast members. Controlling for class, parents' education, occupation and land does not affect the result
- "**Intimidation**": Are low caste students intimidated by the presence of high caste students? Performance of low caste students is the same in uniform groups (CS treatment) than in mixed groups (C).
- **Pure identity effect.**
In CS the performance of high caste students shrinks by 21% compared to C.

Example 2: In search of economic man

Henrich et al. (2001)

- Most experimental findings in economics based on experiments with student subjects from developed countries.
- **WEIRD** effect
Western **E**ducated **I**ndustrialized **R**ich **D**emocratic countries.
- Raises two major issues: **external validity** and **universality**.
- **Research strategy**: study generosity in small-scale societies based on the **dictator game** and **ultimatum game**.

Ultimatum game

- **Two player game** (initial distribution $(10, 0)$).
- First mover decides how much to propose ($0 \leq x \leq 10$) to the second mover.
- Second-mover decides: *accept* or *reject*.
- If the second-mover *accepts* the payoffs are: $(10 - x, x)$.
- If the second-mover *rejects* the payoffs are: $(0, 0)$.
- Game-theory prediction (subgame perfect (*Nash*) equilibrium): second-mover always accepts if $x \geq \varepsilon$, where ε is the smallest possible transfer.
- Stylized WEIRD experimental findings:
 - generous offers by the first-mover (33% – 50%)
 - rejections of low offers by the second-mover ($x < 10\%$).



Group	Country	Mean offer ^a	Modes ^b	Rejection rate ^c	Low-offer rejection rate ^a
Machiguenga	Peru	0.26	0.15/0.25 (72)	0.048 (1/21)	0.10 (1/10)
Hadza (big camp)	Tanzania	0.40	0.50 (28)	0.19 (5/26)	0.80 (4/5)
Hadza (small camp)	Tanzania	0.27 (38)	0.20 (8/29)	0.28 (5/16)	0.31
Tsimané	Bolivia	0.37	0.5/0.3/0.25 (65)	0.00 (0/70)	0.00 (0/5)
Quichua	Ecuador	0.27	0.25 (47)	0.15 (2/13)	0.50 (1/2)
Torguud	Mongolia	0.35	0.25 (30)	0.05 (1/20)	0.00 (0/1)
Khazax	Mongolia	0.36	0.25		
Mapuche	Chile	0.34	0.50/0.33 (46)	0.067 (2/30)	0.2 (2/10)
Au	PNG	0.43	0.3 (33)	0.27 (8/30)	1.00 (1/1)
Gnau	PNG	0.38	0.4 (32)	0.4 (10/25)	0.50 (3/6)
Sangu farmers	Tanzania	0.41	0.50 (35)	0.25 (5/20)	1.00 (1/1)
Sangu herders	Tanzania	0.42	0.50 (40)	0.05 (1/20)	1.00 (1/1)
Unresettled villagers	Zimbabwe	0.41	0.50 (56)	0.1 (3/31)	0.33 (2/5)
Resettled villagers	Zimbabwe	0.45	0.50 (70)	0.07 (12/86)	0.57 (4/7)
Achuar	Ecuador	0.42	0.50 (36)	0.00 (0/16)	0.00 (0/1)
Orma	Kenya	0.44	0.50 (54)	0.04 (2/56)	0.00 (0/0)
Aché	Paraguay	0.51	0.50/0.40 (75)	0.00 (0/51)	0.00 (0/8)
Lamelara ^e	Indonesia	0.58	0.50 (63)	0.00 (3/8)	0.00 (4/20)

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- Methodological issues in running lab-in-the field experiments
 - stakes, currency
 - language
 - experimenter effects
 - confounding factors (eg : gender, education, ...)

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- Some farmers are present-biased : favour immediate utility compared to future utility (70% in the sample)
- Behavioural bias favors procrastination: *I'll do it tomorrow !*

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- Standard policy: high cost and heavy subsidy on fertilizers
- Alternate policy: low cost and small discount on fertilizer immediately after harvest
- Predicted impact of the two policies on fertilizers use is the same.

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- Policy 2 = free delivery (after harvest)
- Policy 1 = 50% rebate on fertilizers (later in the season)
- Impact of policy 2 : 47-70% increase in fertilizer use (> policy 1)

Example 4: Predictors of lockdown compliance in South Africa

Nicholls, Iyrbarek, Farolfi, Jourdain, Mungatana & Willinger (2021)

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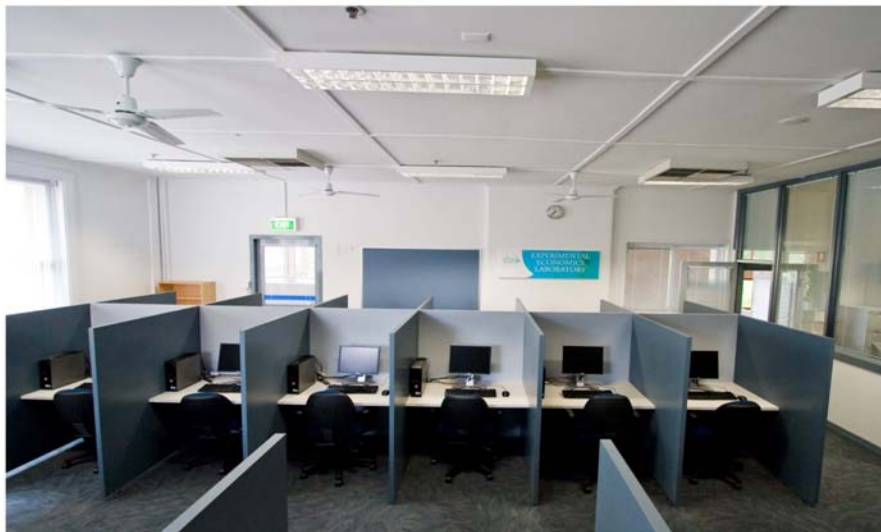
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- Preference elicitation is necessary!
- Experimental design: web questionnaire with incentivized tasks: public good game, dictator game, risk tolerance and impatience.

- Example 1 is a lab experiment
- Example 2 is a lab-in-the-field experiment
- Example 3 is a field experiment
- Example 4 is a web experiment



Lab in the field

A field experiment on provision of a club good with farmers of the region of Kairouan (Tu)



A field experiment on risk-taking and cooperation in Arequipa (Peru)



A field experiment on risk-perception and risk-taking in the region of Yogyakarta (Indonesia)



Field experiment on local adaptation to volcanic risk at mount Semeru (Indonesia)



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 - 4 Teaching economics

- Control
- Validity
- Specific ingredients of economic experiments

- **Control:** *Extend to which the researcher can manipulate the environment and choose the treatments variables*
 - Lab experiments: high control
 - Lab in the field experiments: low control, but control over participants and treatments
 - Field experiment: no control over the environment, but control over treatments
 - Web experiment: low control over participants but high control over treatments
 - Natural occurring data : no control

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- **Validity**
 - Internal validity:** *ability to establish causality based on observed correlation between facts.*
 - External validity:** *ability to generalize the relationships found in an experiment outside the lab (e.g., other persons, times and settings).*

- Lab experiment: high internal validity, low external validity
- Field experiment: low internal validity, high external validity
- Lab-in-the field experiment: intermediary between lab and field (closer to lab)
- Web-experiment: intermediary between lab and field (closer to field).

Specific "ingredients" of economic experiments

- Participants are real individuals (e.g. students, doctors, farmers, children, retired. . .)
- Participants get real incentives (e.g. money prizes, candy,. . .)
- Participants (usually) know that they are involved in an experiment (not for field exp)
- No deception

A short portrait gallery:

Nobel prize winners in economics



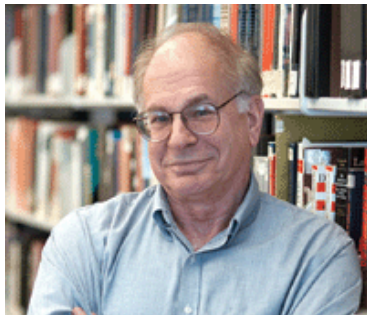
Abijith Banerjee, Ester Duflo, Mickaël Kremer, Nobel prize 2019
“for their experimental approach to alleviating global poverty”



« ..pour ses contributions à
l'économie comportementale »

Richard Thaler, Nobel Prize in Economics, 2017.

Nobel Prize in Economics, 2002.



«for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty »

Daniel Kahneman



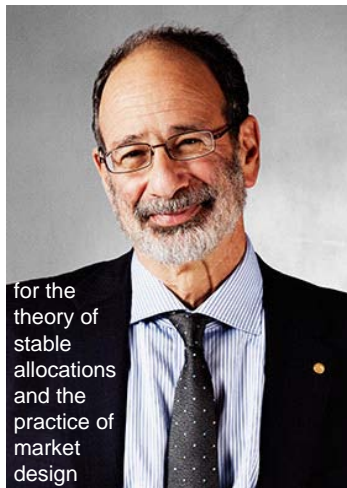
« for having established laboratory experiments as a tool in empirical economic analysis, especially in the study of alternative market mechanisms »

Vernon Smith

Indirect contributors



Elinor Ostrom (2009)



Al Roth (2017)

Topics related to experimental economics

- Neuro-economics
- Behavioural economics

General references

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