

Field Experiments

現場實驗

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Harrison and List (JEL 2004)

- What Consists a Field Experiment?
- Various Types of Field Experiments
 - Lab Experiments in the Field
 - Aka Artefactual (what?) Field Experiment
 - Framed Field Experiments
 - Natural Field Experiments
 - Policy Experiments (Social Experiments)
 - Natural Experiments
 - Thought Experiments (and Neuro!)

What is a Field Experiment?

- Field:
- "...an investigation, study, etc., carried out in the **natural environment** of a given material, language, animal, etc. and not in the laboratory, study, or office."
 - Oxford English Dictionary, 2nd Ed.
- What are the components of a **natural environment**?

Six Factors of the Field

- Nature of the **Subject Pool**
- Nature of the **Information** Subjects Bring In
- Nature of the **Commodity**
- Nature of the **Task** or **Trading Rule** Used
- Nature of the **Stakes**
- Nature of the **Location** (Environment)

Categories of Experiments

1. (Conventional) Lab Experiments
2. Lab Experiments **in the Field**
 - Non-standard subject pool (or location?)
 - Neutral Context: **Artefactual** Experiment
 - Field Context: **Framed Field Experiment**
3. Natural Field Experiment

Why are They Important?

- In the Field, the key to evaluate treatment effects is to construct a **counterfactual** by
- **Controlled Experiments** (most convincing)
- **Natural Experiments** (Cannot have outcome shocks correlated with treatment)
- **Propensity Score Matching (PSM)**
- **Instrumental Variables (IV)**
- **Structural Estimation** (impose structure)

Lab Experiments in the Field

- **Neutral Context:** Artefactual Field Experiment
 - Not "Artificial," but **Artefactual** (what?)
- **Subject Pool:** Students used for convenience
 - Are they representative?
- **Selection Bias to the Lab**
 - Who will come? Is this correlated with behavior?
 - Risk averse people might not want to come (and make risky choices in the experiment)

Lab Experiments in the Field

- **Recruitment Bias** (Rutstrom, IJGT 1998)
- Elicit values of a private commodity
- \$0 → \$2 → \$10 show-up affect who comes
- Can correct with relevant characteristics
- Same as exit polls correcting selection bias

Lab Experiments in the Field

- **Are Students Different?** (Harrison-Lesley96)
- Can we mimic large survey results using only a student sample?
 - A statistical model with student data and demographics **predicts** national survey results
- Students are representative **conditional on** their socio-demographic characteristics!
 - Problem is whether they are diverse enough...

Lab Experiments in the Field

- **Are Students Different?**
- If age affects behavior, how can students of age 18-24 predict that of age 18-70?
- Could be even worse if unobservable characteristics (can affect behavior)
- At least try to collect a batch of individual characteristics for **conditional** comparison

Lab Experiments in the Field

- Lichtenstein and Slovic (1973)
 - Preference reversals in downtown Las Vegas
- Kagel, Battalio and Walker (1979)
 - How prices, weekly feedback on usage, conservation info. affect electricity demand
 - Volunteers vs. random sample
- Binswanger (1980, 1981)
 - Holt and Laury (2002) in India

Lab Experiments in the Field

- Smith, Suchanek and Williams (1988)
 - Asset Bubbles
 - One experiment was done with professional and business people in the Tucson community
 - Still had a bubble (but with heavy volume and did not burst at the end) – more of a bubble?!
- Recall: Henrich et al. (2001, 2004) and Tanaka et al. (2010)

Lab Experiments in the Field

- Field Context: Framed Field Experiments
- Information Subjects Already Have
 - Neutral context could mean that you have no control over the context subjects might impose
- Commodity
 - Induced demand vs. Things they know
 - Hanoi Tower Game: Computerized McDaniel and Rutstrom (2001) vs. Montessori
 - Children in Montessori can violate constraints when exploring, but subjects in computerized settings cannot
 - Field Substitutes (Can this affect behavior?)

Lab Experiments in the Field

- Task Nature: Is this their everyday life task?
- Harrison and List (2003)
 - Do pro-sports card-dealers suffer the winner's curse in auctions?
 - They have heuristics developed to avoid the winner's curse (but specialized for dealers)
- Would other heuristics help people avoid **money pumps**?

Lab Experiments in the Field

- Stakes (Monetary or Mental)
- Poor Country/Double Stakes
 - Slonim and Roth (1998), Holt and Laury (2001)
- Target People who really Care
- Bohm (1972)
 - Swedish TV program for a closed community
 - Six procedures all produce the same bids
- Follow-up: Bohm (JPubE 1984)

Natural Field Experiment

- Natural Field Experiment
 - Conducted in an existing economic institution so subjects don't even know it is an experiment
 - (Why isn't this deception? Part of real life!)
- Levine and Plott (1977)
 - Levine's flying club wants to design fair agenda
 - Plott suggested Levine to propose the agenda that would lead to his desired outcome
 - Later surveys elicited preferences
- Back to the Lab: Levine and Plott (1978)

Natural Field Experiment

- List and Lucking-Reiley (2002)
- Charitable Contribution Solicitation
 - Raise \$3,000 to buy a computer
 - Assign different seed money amounts (10%, 33%, 67%) and refund (if goal is not met)
 - 3000 HH with income $>$ \$70k; donated before

Other Field Experiments

- Policy Experiments (Social Experiments)
 - Evaluate Policy Effectiveness by randomizing between treatment and control group
 - Ester Dufflo, Michael Kremer are experts who work in developing countries (Kenya, India,...)
- Natural Experiments
 - Simply observe naturally occurring controlled comparisons between treatments

Other "Field" Experiments

- Thought Experiments
 - Are **thought experiments** really field experiments?
- Neuroeconomic Experiments are **real thought experiments**
 - Neuronal activity are measured during their **natural reaction** to stimulus!
 - Key: Monitor the natural mental process when the experimental treatment is administered

Conclusion

- Field Experiment try to make experiments **less artificial**
- But why are lab experiments **unnatural**?
 - Because of its **neutral language**?
- Just need to conduct experiments **naturally**!
 - Neutral language is only a benchmark...