

# 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
  1. Lab Experiments in the Field
    - ▶ Aka Artefactual (what?) Field Experiment
  2. Framed Field Experiments
  3. Natural Field Experiments
  4. Policy Experiments (Social Experiments)
  5. Natural Experiments
  6. 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, 2<sup>nd</sup> 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?!
- ▶ Henrich et al. (2001, 2004)
  - ▶ Social preferences in different small societies
- ▶ Tanaka et al. (2010)
  - ▶ Risk preferences in small villages of Vietnam

# 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

# Lab Experiments in the Field

- ▶ Hanoi Tower Game:
  - ▶ McDaniel and Rutstrom (2001):
- ▶ Computerized vs. Montessori
  - ▶ Children in Montessori can violate constraints when exploring
  - ▶ 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...