

Research methodology and effective writing

Lecture VI - Economic experiments

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Suggested reading:

- Dudenhefer, P. (2009). A guide to writing in Economics. EcoTeach Center and Department of Economics, Duke University.
- Neugeboren, R. H., & Jacobson, M. (2005). Writing Economics. Harvard University.
- Johnson, J. B., Reynolds, H. T., & Mycoff, J. D. (2015). Political science research methods. Cq Press.
- Friedman, S., Friedman, D., & Sunder, S. (1994). Experimental methods: A primer for economists. Cambridge University Press.

What is Economics?

- The study of how a society allocates scarce resources.
- We develop models and hypotheses about the way agents behave given their environment and institutions.
- "Economics unfortunately cannot perform the controlled experiments of chemists or biologists because [it] cannot easily control other important factors. Like astronomers or meteorologists, [it] generally must be content largely to observe." (Samuelson and Nordhaus (1985): Economics)
- Really?
- Experimental Economics is concerned with testing these hypotheses.
- Behavioral Economics is concerned with modifying the models.

The future of research is interdisciplinary

- My dissertation research program was called “Economic experiments in project management”
- Why using economics methodology to study a management problem? Traditional management methods do not seem to solve it.
- The future of research is interdisciplinary. There is a good chance that the answer to your question lies in a slightly different field.
- Look for methods, expertise, insights outside the box. (E.g. Behavioral economics brings on psychological insights to bear on economic phenomena)
- In one of our papers, we address a management problem with a theory from psychology while using economics methodology

Experimental Economics

- Methodology in which laboratory and field economies are created in order to conduct economic experiments.
- Pioneered mainly by Vernon Smith and Charles Plott
- Empirical tool that enables economists to understand the extent to which an individual's decision and behavior are affected by various testable factors
- Data collection (decisions of real people) in a controlled, specifically designed environment in order to address economic research questions.
- Setting captures essential elements of an economic problem.
- Attempt to discover clean causal links (causality).
- Offers counterfactuals.
- Intersection between economics / hard sciences.

Typology of economic experiments

- Conventional lab experiments
 - Standard subject pool of students
 - Abstract framing
 - Imposed set of rules
- Artefactual field experiment
 - Like a conventional lab experiment but a non-standard subject pool
- Framed field experiment
 - Same as an artefactual field experiment but field context in either the commodity, task, or information set that the subjects can use
- Natural field experiment
 - Same as a framed field experiment but the environment is one where subjects naturally undertake these tasks and do not know they are in an experiment

Motivation for experiments

- Economic theories devised to explain:
 - 1) market activity between many people
 - 2) strategic interaction between few people
 - 3) individual decision making
- How can we tell how successful a theory is predicting subsequent outcomes?
- Traditional Solution
 - Collect survey data on as many Z variables as thought might be relevant, and use econometric techniques to test for whether historical variation in X can predict variation in Y while controlling for variations in other Z variables.
- Complementary Solution
 - Create a decision environment that simulates the real world environment of interest, and randomly assign people between treatments in that environment where X is varied. Structure the design so that Z factors are either held constant across treatments, or else “average out” between treatments due to random assignment. See if Y varies across treatments as theory predicts.
 - "The trick is to notice that economies created in the laboratories might be very simple relative to those found in nature, but they are just as real. Real people motivated by real money make real decisions, real mistakes and suffer real frustrations and delights because of their real talents and real limitations."

Why not just use survey?

- Say you want to study altruism... how about to use a survey?
- But... do respondents tell truth? How can we know that they are not lying?
- Economists are sceptical when it comes to data from surveys.
- They rather look on what people do than what people say.

How does it work?

- Volunteers are recruited, they come to the laboratory and are randomly assigned to roles within the experiment.
- They read the instructions and learn about how the environment works, usually they also need to pass control questions to assure common understanding.
- Interactions are strictly anonymous. Participants are more likely to behave fairly, altruistically, or generously when there might be a way for the experimenter to observe their behavior.
- We never lie. Not deceiving subjects is an essential factor that increases the credibility of the research and the experimentalist. The discipline made a choice, and it is strictly forbidden to deceive subjects and lie to them.
- Participants are paid in cash according to their decisions.

Precepts of experimental economics

- As researchers we can control the environment and the institutions and then observe behavior.
- The key idea of the theory is that the proper use of a reward will allow the research to induce specific characteristics in the subject, that he or she impersonates them and that his or her personal characteristics become irrelevant.
- Subjects perceive incentives according to experimenter not own preferences.
- Participants understand the connection between their decision making and payoffs.
- Incentives are significant enough to be taken in mind.
- Principles for rewards
 - Non-Satiation = agents strictly prefer any increase in reward medium
 - Saliency = rewards are increasing in the good and decreasing in the bad outcomes of the experiment
 - Dominance = rewards dominate any subjective costs associated with participation in the experiment
 - Privacy = each subject in an experiment receives information only about own payoffs
 - Parallelism = behavior is the same in and out of the lab as long as the ceteris paribus assumptions hold

Objectives of experimental economics

- Speaking to Theorists - to test a model or theory, especially for theories with predictions that are merely possible to observe (e.g., risk, information transfer, social preferences)
- Searching for Facts - establish new explanations and theories based on facts collected through experiments
- Whispering into the Ears of Princes - formulate reliable advice and to communicate, justify, and defend it
- Testing institutions and environments
- Teaching experiments

Example - An Ultimatum Game

- You have to propose how you and another person should split 100 EUR.
- If the other person agrees your proposal is implemented. But if the other person rejects your proposal, you both get 0 EUR.
- What do you offer the other person?

How do people behave in Ultimatum Games?

- Homo Economicus – anything is better than nothing, so the other person would accept 1 EUR and you should propose to keep 99 EUR
- But does this theory really hold?
- "Modal equal split offer is an extremely robust phenomenon. On average, players in the game tend to offer around 40-50% of the pie in the standard version of the game. Such offers are almost always accepted. Responders' acceptance rates decrease with smaller offers, and they approach zero quite quickly for offers below 20%."
- "The evidence from the ultimatum game clearly shows that
 - responders do not only care about their own monetary payoff but compare their payoff with that of the proposer and become frustrated when their share is much lower.
 - proposers are either aware of the responder's willingness to reject unfair offers or guided by own fairness concerns

Advantages of experiments

- Control over the economic environment and data generating process
 - Experimenter controls the conditions under which evidence is generated
 - Many details affect behavior in the field in an uncontrolled manner. In the lab they can be controlled and systematically studied.
- Possibility of implementing truly exogenous ceteris paribus changes
- Precise replicability of experimental evidence
 - Provides the basis for statistical tests
 - Critics who question the result can replicate the experiment
 - Historical data is not replicable
- We can:
 - Reproduce the structure of theoretical models - “two countries world”
 - Observe variables not observable in field data - e.g. subjective values, dishonest behavior
 - Control and manipulate variables - e.g. double the number of competitors, or customers

Subjects

- Subjects = Participants of any experiment and usually called subjects and there might be effects associated with their characteristics.
 - Subject pool: university students, professionals, highschool students, kids,... (always consider opportunity costs)
 - Effects of different fields of study
 - Socio-economic determinants: issues of gender, age etc.
 - Rewards: trading commissions, show-up fees, experimental currency units, bankruptcy problems, experiments with losses
 - Duration of an experimental session
 - Recruitment and maintaining subject history

Design

- Experimental design = Method of research in the social sciences in which a controlled experimental factor is subjected to special treatment for purposes of comparison with a factor kept constant
- Treatment vs Control
- Within vs. Between subject design
 - Within: 1 subject : N treatments (N treatments, 1 group) -> ordering effect
 - Between: 1 subject : 1 treatment (2 treatments , 2 groups)
- Pre – Post treatment (field-natural exp.)
- Decision method vs Strategy method
- Dependent observations: Random payment determination

What is Behavioral Economics?

- Analysis of non-standard, fully rational, or self-interested economic behavior.
 - cognitive limitations (probabilities / reasoning / discounting)
 - biases (default / anchoring / risk / framing)
 - pro-social instances (generosity / fairness / equality / cooperation / trust)
 - reaction to incentives (crowding-out)
- Intersection between economics and psychology.