

Undergraduate Experimental Economics, 179
Professor Muriel Niederle
Economics 334, Phone: 723 7359;
niederle@stanford.edu, www.stanford.edu/~niederle
Office hours: Wednesday 5 – 6 p.m. and by
appointment)

Class webpage:

There is no textbook, but a useful book to have is:

The Handbook of Experimental Economics, John
Kagel and Alvin E. Roth, editors, Princeton
University Press, 1995.

There will also be supplementary readings,
particularly as the course progresses.

This course will be an introduction to experimental
economics, its methods, and some of the major
subject areas that have been addressed by laboratory
experiments. An effort will be made to concentrate
on *series* of experiments, in order to see how
experiments build on one another and allow
researchers with different theoretical dispositions to
narrow the range of potential disagreement.

Why concentrate on *series* of experiments?

Because we learn a lot more from a series of experiments than from the individual experiments:

"Another way of dealing with [experimental research] errors is to have friends who are willing to spend the time necessary to carry out a critical examination of the experimental design beforehand and the results after the experiments have been completed. An even better way is to have an enemy. An enemy is willing to devote a vast amount of time and brain power to ferreting out errors both large and small, and this without any compensation. The trouble is that really capable enemies are scarce; most of them are only ordinary. Another trouble with enemies is that they sometimes develop into friends and lose a good deal of their zeal. It was in this way that the writer lost his three best enemies." (von Bekesy, 1960, pp8-9)

While the history of experimental economics can be traced back much further, only since the 1980's have we begun to see many series of experiments, in which groups of experimenters with different theoretical predispositions looked at the same phenomena in the laboratory.

What are some of the uses to which laboratory experiments have been put in economics?

“Speaking to Theorists”

testing theories under precisely controlled and/or measured conditions that are typically unavailable in field data

(The development of game theory gave particular impetus to experimental economics in the 1950's, as game theory offered testable theories of economic behavior that depended on the fine structure of both the strategic environment and the preferences of the players.)

“Searching for Facts”

looking for regularities, and exploring and documenting unanticipated regularities (including those that come from violations of the predictions of existing theories)

- What are the effects of introducing monetary aspects into a relationship?
- Is there discrimination?
- What are reasons for the gender gap in earnings, jobs, the glass ceiling effect? Are women less able, or do they behave differently, even controlling for their ability?
- A lot of behavioral regularities emerge, which by now are well documented.
- How do people play games? Choose between lotteries?

“Searching for Meaning”

formulating new theories, to explain newly observed regularities, and devising new experiments to help distinguish among such theories

- How can we best describe the behavior of participants in a laboratory?
- How should we think of equilibria/robustness to equilibria, when some players are not rational?
- There are a few theories to try to capture issues of fairness, that grew out of the experimental literature.

“Whispering in the Ears of Princes”

policy oriented experiments (and now, particularly, market design...)

- How should you sell spectrum? In what kind of auctions to maximize efficiency/revenue/reduce collusion?
- How should you organize markets, as for example the market for medical residents?

Field Experiments:

A growing area of research is the use of field experiments. Many of the regularities we found in the experimental lab have been replicated in field experiments (i.e. experiments, where subjects interact in a more known environment, and are not “just” college students)

“What is a good experiment?”

The answer depends on what you are testing or exploring, and who you are talking to.

Loosely speaking, a good experiment is one that controls for the most plausible alternative hypotheses that might explain what is being observed, and therefore allows you to distinguish among them. But what are the most plausible alternative hypotheses may depend on who you are talking to (which is why economists and psychologists sometimes run rather different experiments concerning roughly similar phenomena). The most plausible alternative hypotheses may also depend on recent developments in theory, in the laboratory (yours or someone else's), or in the field. So a “good experiment” is a creature of its time (and may even make itself obsolete, as when it controls for a hypothesis which it discredits, making those controls unnecessary in future experiments).

This is why I am not going to give you any strict methodological guidelines, axioms, precepts, rules. Good experimental methodology grows out of the questions the experiment is designed to answer.

One of the first goals of experimental design is to protect *ourselves* from fooling ourselves into believing what we want to believe.

Science is done by people who are following up on their intuitions, and (often) investigating hypotheses that they believe to be true. The same intuition that causes you to believe the hypothesis might give you a good idea of situations in which the conclusions of the hypothesis will hold. But if there are other reasons that those conclusions might hold, you have to make sure that you haven't just created a situation that gives you the results you expect, but not for the reason that you believe.

One rule I will tell you is that of good conduct. You should not only not fool yourselves, but also not the readers. See Al Roth's "Let's Keep the Con out of Experimental Econ.: A Methodological Note" (1994).

An Early Experimental Design “Dew it both ways” Judges Chapter 6

And Gideon said to God: 'If You will save Israel by my hand, as You have said, look, I will put a fleece of wool on the threshing-floor; if there be dew on the fleece only, and it be dry upon all the ground, then shall I know that You will save Israel by my hand, as You have said.'

And it was so; for he rose up early on the next day, and pressed the fleece together, and wrung dew out of the fleece, a bowlful of water.

And Gideon said to God: 'Do not be angry with me, and I will speak just this once: let me try just once more, I ask You, with the fleece; let it now be dry only upon the fleece, and upon all the ground let there be dew.'

And God did so that night; for it was dry upon the fleece only, and there was dew on all the ground.

Are there any limitations to what parts of economics might benefit from controlled experimentation in the laboratory?

I can't think of any... 😊

Obviously, laboratory experiments will most directly address questions in microeconomics. But that doesn't mean that experimental evidence won't help us better understand even the largest scale macro phenomena. (Think of the analogy with biology, which has a comparable range, from molecular biology to medicine to the evolution of species. You can't bring the fossil record into the lab, but our understanding of it and what it says about evolution is vastly increased by experiments on fruit flies, plant breeding, etc.)

The Success of experiments:



**KUNGL.
VETENSKAPSAKADEMIEN**
THE ROYAL SWEDISH ACADEMY OF SCIENCES

English
French
German
Swedish

Press Release: The Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel 2002

9 October 2002

The Royal Swedish Academy of Sciences has decided that the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel, 2002, will be shared between

Daniel Kahneman

Princeton University, USA

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

and

Vernon L. Smith

George Mason University, USA

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

Psychological and experimental economics

The following is a rough guide to the topics that will be discussed in the quarter—it is subject to revision as we see how the class progresses (some topics may take more or less than one lecture).

Introduction

Individual choice:

Endowment effect,
fairness.
Uncertainty

Games:

Bargaining games
Fairness
Learning

Using Experiments to Explore:

Discrimination
Gender Differences
The effects of Incentives
Field Experiments on those issues

Market Experiments

Topic suggestions are welcome!

Grading:

The major class assignment will be to design an experiment. Students registered for a grade should have a subject area by the middle of the quarter, and should plan to meet with me several times in the second half of the quarter to discuss the development of a detailed experimental design.

There will be a late midterm (date to be announced), to test your knowledge on how to design experiments.

There will be 2 homeworks, where I ask you to read papers, and write comments on them, and think of new experiments that relate to the paper you read.

You can skip one homework, but I will not accept any excuses for a homework turned in late.

As for the final Design:

I am prepared to entertain designs put together by a pair of students.

Some class time near the end may be devoted to student presentations.

A quick note about my philosophy of teaching/learning, and how to get the most out of this class.

This class consists of four chief parts:

In class lectures, discussions, and demonstrations.

Readings and homework's about them

(late) Midterm

Your experimental design (and the out of class discussions with me that will be part of that).

I'm going to try to make the four parts complements rather than substitutes.

In class, I'm going to try to give you a feel for design issues that may not be clear from the readings, even from reading the original papers. I'm not going to try to simply review as many experiments as possible in class—that's what the Handbook chapters are for. Read them, to get a broad overview. The individual papers that will be assigned will help us focus on specific design issues.

As the quarter progresses, you will be better able to start to think about questions on which you might want to do an experiment, and how it might be designed. Let me know when you're ready to make an appointment to talk about it. Everyone should make an appointment with me well before the quarter ends!