

Experimental Economics

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Course Syllabus
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1 Content and Objectives

The proposed course is an introduction to the theory and practice of experimental economics. Since the ultimate goal is to design and run economic experiments, we shall complement the review of the existing experimental literature with a special focus on methodological and design issues.

2 Prerequisites

1. First year course in Microeconomics.
2. First year course in game theory.
3. Given these prerequisites, the course will be self-contained.

3 Course Structure

TEACHING. Lectures and simulated experimental sessions for a total of 30 hours.

COURSE MATERIAL.

1. We will use Kagel and Roth [18], Davis and Holt [11] and Friedman and Sunder [14] as reference manuals. Additional sources will be made available to course participants as the course proceeds.
2. Electronic papers will be distributed to course participants.
3. Further references are provided below.

GRADING. There is no final exam. To obtain course credits, participants will be required prepare a presentation and write a literature survey on a selected topic. Moreover, students will be evaluated on the basis of their participation to the design, realization, implementation and analysis of an experiment, which will be run at the end of the course.

4 Course Outline

4.1 Part I: Theory

4.1.1 Experimental Economics: an Historical Overview

- Smith [26]: main objectives:
 1. Test a theory, or discriminate between theories.
 2. Explore the causes of a theory's failure.
 3. Establish empirical regularities as a basis for new theory.
 4. Compare environments/institutions
 5. Evaluate policy proposals/institution design
- Main results: brief historical overview: Davis and Holt [11], Ch. 1, Kagel and Roth [18], Ch. 1, Cooper and Kagel [7]

4.2 Part II: Practice

4.2.1 Experimental Design

- Hypothesis testing *vs* “free-form” experiments
- Frames
- Matching
- Instructions (unbiasedness, examples, de/briefing, information). Use of practice rounds.
- (Economic) incentives and nature of rewards. Techniques for payoff calibration.
- Replicability
- Control
- Deception and procedural irregularities.

4.2.2 Computerized experiments

- The Experimental lab
- Software programming: [13]

4.2.3 Implementation

- Recruitment
- Setting up a session
- Conducting the experiment

4.2.4 Writing up

- Reading and analyzing the experimental data
1. Descriptive statistics
 2. *Experiments*: maximum-likelihood structural estimation.
- Presenting the results

4.3 Part III: Experimental Project(s)

The content of this section changes every year, depending on the projects (whose number also depends on course participation) we run for that year. In what follows, we present the basic reading list of the two projects we run for A. Y. 2011-12.

4.3.1 Social Preferences over Utilities

This research proposal builds upon some recent papers (both theoretical and experimental) of Edi Karni *et al.* [20], [21], [22] (K&A hereafter), on the use of random mechanisms to implement procedural justice. These models describe situations in which subjects unilaterally decide on the distribution of the probabilities with which an indivisible prize is to be allocated to them, rather than to (an)other subject(s). Unlike Fisman *et al.* [12], whose protocols involve subjects allocating “tokens” between themselves and other subject(s) in a deterministic fashion, here subjects allocate *probabilities*. As a consequence, both *risk* and *distributional* concerns are most likely to affect their overall evaluations.

At the core of K&A modeling, there is an axiomatic representation of subjects' preferences in such situations, which yields *concave preferences* over winning probabilities. Strikingly enough, *this result has nothing to do with subjects' risk attitudes*, but it is a straightforward implication of subjects' *inequality aversion* (with this latter assumption corroborated by their experimental evidence). This is because, since the model is concerned about the probability of winning a *single* fixed price, very mild assumptions on subjects' preferences (basically, *monotonicity*, as winning the price is assumed to be strictly preferred to not winning anything at all) implies that subjects, conditional on their distributional concerns, are assumed to optimally allocate their (and others') winning probabilities, as if they were allocating deterministic tokens.

Despite this evident drawback, we believe that K&A is an ideal setting to study the interplay between risk and distributional concerns, in situations in which people take unilateral decisions over the risk profiles of others. The aim of this research proposal is precisely to analyze, both theoretically and experimentally, natural extensions of K&A's model in which risk and distributional concerns *are no longer independent*.

4.3.2 Ambiguity and public good games

There is a strand of literature that applies elements of individual decision theory to analyze strategic uncertainty. More specifically, elements of Prospect Theory (Kahneman and Tversky, [19], [31]) -such as loss aversion and probability weighting- have been used to explain, for example, over-bidding in private value auctions, or mixing in matching pennies games.¹ Along the same lines, Iturbe *et al.* [16] calculate the "Prospect Equilibria" of a Voluntary Contribution Threshold Game (VCTG) in which players, depending on the frame, have to contribute either to provide a public good, or to avoid its deterioration. Their theoretical conjecture (more contribution in the loss frame) is then brought to the lab, where the evidence confirms the theory, provided that the contribution threshold is sufficiently high.

In all these examples the strategic situations individual face are, essentially, framed as individual decision problems with (strategic ambiguity). In this respect, it seems natural to look inside the (nowadays vast) literature on ambiguity to see how this literature can help in explaining subjects' behavior, and to frame it into tractable models.

¹See Goeree and Offerman (2003), Armantier and Treich (2002) and Goeree *et al.* (2002, 2003).

There is a specific feature of Iturbe *et al.* [16] that makes it a ideal framework to disentangle risk and (strategic) uncertainty, which refers to the fact that subjects face two independent sources of uncertainty in the game:

1. that arising from the asymmetric information over the group cost profiles (iid drawn from a uniform distribution);
2. that arising from the other group members' contribution decision.

The aim of this paper is to use the experimental evidence of Iturbe *et al.* [16] (combined with additional treatments, which were not used in the paper) to test a structural model in which subjects' decision on whether to contribute in Iturbe *et al.* [16] Public Good Game is framed as an individual decision problem under *both* risk and uncertainty, in which risk comes from the asymmetric information of the cost profiles of the other group members and uncertainty is purely *strategic*, i.e. it refers to other group members' likelihood to contribute.

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