UNIVERSITY OF ATHENS

Department of Economics

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Topics in Game Theory

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Course Description

Game theory is the study of multi-person decision problems. It concerns the behaviour of decision makers whose decisions are interdependent. Its major applications are to economics, business, politics, tactical and strategic military problems, law, evolutionary biology, social psychology and, most recently, computer science.

In this course we will introduce students to formal game theoretic analysis. The aim of the course is to provide students with understanding of the theory of strategic interaction and endow them with basic modelling capabilities.

Required Texts

The main textbooks will be

- o Drew Fudenberg and Jean Tirole (1991), *Game Theory*, MIT Press.
- o Martin Osborne and Ariel Rubinstein (1994), A Course in Game Theory, MIT Press.

Those who want a more introductory treatment should look at

- Martin Osborne (2003), An Introduction to Game Theory, Oxford University Press.
- Robert Gibbons (1992), *Game Theory for Applied Economists*, Princeton University Press.

Grading

The course will meet for 3 hours lecture sessions per week. All students must analyze and present a preassigned paper for each major topic discussed in the class. No other requirements are needed.

Course Outline

The following is a rough overview of the topics and the order in which they will be covered. Depending on the interests and the inclinations of the group, the topics and their weight may change a little.

1. Introduction

2. Signalling Games and Information Transmission

Theory: Signalling, Costly signals; Costless signals; Cheep talk.

Applications: Strategic Communication.

Assignments:

- CHO, I.-K. and D. KREPS (1987): "Signalling Games and Stable Equilibria", *Quarterly Journal of Economics*, 102: 179-222.
- CRAWFORD, V. and J. SOBEL (1982): "Strategic Information Transmission", *Econometrica*, 50: 1431-1451.
- SPENCE M. (1973): "Job Market Signalling", *Quarterly Journal of Economics*, 87: 296-332.
- o MYERSON, R. (1986): "Multi-Stage Games with Communication," Econometrica, 54: 323-358

3. Screening and Mechanism Design

Theory: Mechanism design; Revelation principle; Spence-Mirrlees condition.

Applications: Auctions; Price discrimination; Regulation; Public procurement.

Assignments:

- MYERSON, R. (1981): "Optimal Auction Design", Mathematics of Operations Research, 6: 58-73.
- MYERSON, R. (1983): "Mechanism Design by an Informed Principal", *Econometrica*, 51: 1767-1797.
- MYERSON, R. And M. SATTERTHWAITE (1981): "Efficient Mechanisms for Bilateral Trading", *Journal* of Economic Theory, 28: 265-281.

4. Bargaining

Theory: Nash bargaining solution; Rubinstein's alternating offers model.

Applications: Bankruptcy; Wage negotiations; Joint venture.

Readings/Assignments:

- CHATTERJEE, K. and W. SAMUELSON (1983): "Bargaining under Incomplete Information," Operations Research, 31: 835–865.
- o NASH, J. (1950): "The Bargaining Problem," Econometrica, 18: 155-162.
- RUBINSTEIN, A. (1982): "Perfect Equilibrium in a Bargaining Model," *Econometrica*, 50: 97-109.

5. Repeated Games

Theory: Finitely repeated games; Infinitely repeated games; Folk theorem; Cooperation; Reputation.

Applications: Product quality; Collusion.

Readings/Assignments:

- FUDENBERG, D. and E. MASKIN (1986): "The Folk Theorem in Repeated Games with Discounting or with Incomplete Information," *Econometrica*, 54: 533–556.
- KREPS, D., P. MILGROM, J. ROBERTS and R. WILSON (1982): "Rational Cooperation in the Finitely Repeated Prisoners' Dilemma", *Journal of Economic Theory*, 27: 245-252.
- BENOIT, J.-P. and V. KRISHNA (1985): "Finitely Repeated Games," *Econometrica*, 53: 905–922.

6. Equilibrium Calibration

Theory: Adverse selection; Winner's Curse; Experimental Economics.

Applications: Beyond Nash

Assignments:

- McKELVEY, R and T. PALFREY (1995), "Quantal Response Equilibria for Normal Form Games", *Games and Economic Behavior*, 10: 6–38
- EYSTER, E. And M. RABIN (2005): Cursed Equilibrium. *Econometrica*, 73: 1623–1672

7. Introduction to Strategic Voting

Theory: Strategic Voting.

Applications: Information Aggregation; Optimal Committee Design.

Assignments:

- AUSTEN SMITH D. and J.S.BANKS (1996): "Information Aggregation, Rationality, and the Condorcet Jury Theorem", *The American Political Science Review*, 90.1: 34-45
- FEDDERSEN, T. and W. PESENDORFER (1998): "Convicting the Innocent: The Inferiority of Unanimous Jury Verdicts Under Strategic Voting", *The American Political Science Review*, 92.1: 23–35

8. Introduction to Voting Experiments

Theory: Experimental Economics; Voting Experiments.

Applications: Voting Behavior in the Laboratory.

Assignments:

- BATTAGLINI, M., R. MORTON and T. PALFREY (2010): "The Swing Voter's Curse in the Laboratory, *Review of Economic Studies*, 77: 61-89
- GOEREE, J and L. YARIV (2009): "An Experimental Study of Jury Deliberation," *IEW Working Papers* 438, Institute for Empirical Research in Economics University of Zurich.
- PALFREY, T. (2009): "Laboratory Experiments in Political Economy", Annual Review of Political Science, 12: 379-388