Department of Economics
The Ohio State University
Economics 817: Game Theory

Syllabus and Reading List

James Peck and David Schmeidler   M-W 11:30 - 1:18
Autumn 2007   Derby 47
www.econ.ohio-state.edu/jpeck/Econ817.htm

Course Objectives: This course aims to thoroughly treat the field of Game Theory, and provide you with useful tools for understanding current research and performing your own research in the field. The course follows the organization of the text by Osborne and Rubinstein, supplemented by a few "classic" articles.

Course Requirements: Students will present a game theory article to the class, and write a short 3-5 page referee's report (on another article that was not presented in class). The presentation and referee's report each count for 45% of the grade. In addition, there will be 3 or 4 homework assignments, which count for the remaining 10%. Study groups are allowed on the homework assignments, in which you can discuss the questions and talk about how to solve them. However, you need to write up the answers individually and without help, and indicate on your writeup the names of the people in your study group. Homework grades are based on full credit for a good faith effort, zero credit otherwise.

Textbook: Osborne, M. J. and A. Rubinstein, "*A Course in Game Theory*," The MIT Press, 1994. We will use the abbreviation, O-R.

Other sources (not required):

Fudenberg and Tirole, "*Game Theory*," The MIT Press, 1992.
Myerson, "*Game Theory: Analysis of Conflict*," Harvard University Press, 1991.

I. Games in Strategic (Normal) Form

1. Nash Equilibrium, Strictly Competitive Games, Bayesian Games.
O-R, chapter 2.

2. Mixed-strategy Nash Equilibrium, Correlated Equilibrium.
O-R, chapter 3.

Aumann, R. J., "Subjectivity and Correlation in Randomized Strategies," *Journal of*

Mathematical Economics, 1974.

3. Rationalizability and Iterative Elimination of Strictly Dominated Actions.

Pearce, D. G., "Rationalizable Strategic Behavior and the Problem of Perfection," *Econometrica* 52 1984, 1029-1050.

O-R, chapter 4.

4. Common Knowledge, Agreeing to Disagree, and Speculation.
O-R, chapter 5.

Aumann, R. J., "Agreeing to Disagree," *Annals of Statistics*, 1976.

II. Extensive Form Games with Perfect Information.

1. Extensive form games with perfect information, subgame perfect equilibrium, the one-deviation property, Kuhn's theorem and backwards induction, exogenous uncertainty, simultaneous moves.
O-R, chapter 6.

2. Repeated Games and Folk Theorems.
O-R, chapter 8.

Fudenberg, D. and E. Maskin, "The Folk Theorem in Repeated Games with Discounting or with Incomplete Information," *Econometrica* 54(3), 1986, 533-554.

III. Extensive Form Games with Imperfect Information.

1. Extensive form games, mixed and behavioral strategies.
O-R, chapter 11.

2. Sequential Equilibrium.
O-R, chapter 12.

3. Perfect Bayesian Equilibrium for games with observable actions, signaling games.
O-R, chapter 12.

4. Refinements of Sequential Equilibrium: The Intuitive Criterion, Trembling Hand Perfection.
O-R, chapter 12.

IV. Cooperative Game Theory

O-R, chapter 13.

V. Articles in Game Theory.

Strategic Form and Bayesian Games:

1. Global Games

Morris, S. and H.-S. Shin, "Unique Equilibrium in a Model of Self-Fulfilling Currency Attacks," *American Economic Review* 88(3), June 1998, 587-97.

Carlsson, H. and E. van Damme, "Global Games and Equilibrium Selection," *Econometrica* 61(5), September 1993, 989-1018.

2. Common Knowledge

Aumann, R. J., "Correlated equilibrium as an expression of Bayesian rationality," *Econometrica*, January 1987, 1-18.

Milgrom, P. and N. Stokey, "Information, Trade, and Common Knowledge," *J. Econ. Theory*, 26, 1982, 17-27.

Morris, S., "Trade with Heterogeneous Prior Beliefs and Asymmetric Information," *Econometrica*, Vol. 62, No. 6, 1994, 1327-1348.

3. Mechanism Design

Myerson, R., and M. Satterthwaite, "Efficient Mechanisms for Bilateral Trading," *Journal of Economic Theory*, 29 (1983), 265-281.

Cremer, J. and R. McLean, "Full extraction of the surplus in Bayesian and dominant strategy auctions," *Econometrica* (1988), 1247-1258.

4. Oligopoly

Vives, X., "Aggregation of Information in Large Cournot Markets," *Econometrica* 56 (1988), 851-876.

Dasgupta, P. and E. Maskin, "The existence of equilibrium in discontinuous economic

games, II: Applications," *Review of Economic Studies*, 53 (1986), 27-41.

5. Market Games

L. S. Shapley and M. Shubik, "Trade using one commodity as a means of payment," *J. Polit. Econ.* 85 (1977), 937-968.

J. Peck and K. Shell, "Liquid markets and competition," *Games Econ. Behav.* 2 (1990), 362-377.

Extensive Form Games:

6. Timing Games.

Bulow, J. and P. Klemperer, "Rational frenzies and crashes," *J. Polit. Econ.*, 102 (1), 1994, 1-23.

Chamley, C. and D. Gale, "Information Revelation and Strategic Delay in a Model of Investment," *Econometrica* 62 (1994), 1065-1085.

Bulow, J. and P. Klemperer, "The Generalized War of Attrition," *American Economic Review* 89 (1999), 175-189.

Brunnermeier, M. K. and J. Morgan, "Clock Games: Theory and Experiments," Princeton University Working Paper, October 2006.

7. Bargaining with Imperfect Information.

Ausubel, L. M. and R. Deneckere, "Durable Goods Monopoly with Incomplete Information," *Review of Economic Studies* 59 (1992), 795-812.

Gul, F., H. Sonnenschein, and R. Wilson, "Foundations of Dynamic Monopoly and the Coase Conjecture," *Journal of Economic Theory* 39 (1986), 155-190.

8. Sender-Receiver Games.

Crawford, V. P. and J. Sobel, "Strategic Information Transmission," *Econometrica* 50(6), 1982, 1431-1451.

Battaglini, M., "Multiple Referrals and Multidimensional Cheap Talk," *Econometrica* 70(4), 2002, 1379-1401.

9. Repeated and Multi-stage Games with Imperfect Information

Abreu, D., D. Pearce, and E. Stacchetti, "Toward a Theory of Discounted Repeated Games with Imperfect Monitoring, *Econometrica* 58(5), September 1990, 1041-1063.

Cripps, M. W., G. Mailath, and L. Samuelson, "Imperfect Monitoring and Impermanent Reputations," *Econometrica*, March 2004, 407-432.

Bagwell, K., "Commitment and Observability in Games," *Games and Economic Behavior*, February 1995, Vol. 8, Number 2, 271-280.