

Game Theory, Advanced Topics: Learning and Experimentation

Instructor: Johannes Hörner, joh.horner@gmail.com.

Lectures: Wed 10:00–12:30pm, Auditorium 5.

Office Hours: By appointment.

The standard background textbook that I occasionally refer to is:

Textbook: Fudenberg, D. and J. Tirole, *Game Theory*, MIT Press, 1991.

This course will cover a variety of topics on learning and experimentation.

Course Outline (Tentative)

1. Bargaining under incomplete information

(a) Private Values and the Coase conjecture.

- i. Ausubel, L.M., and R.J. Deneckere, 1989. “Reputation in bargaining and durable goods monopoly,” *Econometrica*, **57**, 511–531.
- ii. Fudenberg, D., D.K. Levine, and J. Tirole, 1985. “Infinite-horizon models of bargaining with one-sided incomplete information.” *Game-Theoretic Models of Bargaining*, 73–98.
- iii. Gul, F., H. Sonnenschein, and R. Wilson, 1986. “Foundations of dynamic monopoly and the coase conjecture,” *Journal of Economic Theory* **39**, 155–190.

(b) Common Values.

- i. Deneckere, R., and M.-Y. Liang, 2006. “Bargaining with interdependent values,” *Econometrica*, **74**, 1309–1364.

(c) The role of information

- i. Daley, B., and B. Green, 2012. “Waiting for News in the Market for Lemons,” *Econometrica*, **80**, 1433–1504.
- ii. Hörner, J., and N. Vieille, 2009. “Public vs. Private Offers in the Market for Lemons,” *Econometrica*, **77**, 29–69.

2. Reputational bargaining

- (a) Abreu, D., and F. Gul, 2000. “Bargaining and reputation.” *Econometrica*, **68**, 85–117.
- (b) Abreu, D., and D. Pearce, 2015. “A Dynamic Reinterpretation of Nash Bargaining with Endogenous Threats,” *Econometrica*, **83**, 1641–1655.

- (c) Abreu, D., F. Gul, and D. Pearce, 2015. “One-sided uncertainty and delay in reputational bargaining,” *Theoretical Economics*, **10**, 719–773.

3. Reputation, Communication and Experimentation

(a) Just Talking

- i. Aumann, R.J., and M. Maschler (1995). *Repeated Games with Incomplete Information*, MIT Press.
- ii. Aumann, R. J. and S. Hart (2003). “Long Cheap Talk,” *Econometrica*, **71**, 1619–1660.
- iii. Crawford, V. P. and J. Sobel (1982). “Strategic Information Transmission,” *Econometrica*, **50**, 1431–1451.
- iv. Krishna, V. and J. Morgan (2004). “The art of Conversation: eliciting information from experts through multi-stage communication,” *Journal of Economic Theory*, **117**, 147–179.
- v. Goltsman, M., J. Hörner, G. Pavlov and F. Squintani (2009). “Mediation, Arbitration and Negotiation,” *Journal of Economic Theory*, **144**, 1397–1420.
- vi. Ely, J.C. (2017): “Beeps,” *The American Economic Review*, 107, 31–53.
- vii. Renault, J., Solan, E. and N. Vieille (2017). “Optimal Dynamic Information Provision,” *Games and Economic Behavior*, **104**, 329–349.

(b) Just Acting

- i. Holmström, B. (1999). “Managerial Incentive Problems: a Dynamic Perspective,” *Review of Economic Studies*, **66**, 169–182. (Originally published in 1982 in Essays in Honor of Professor Lars Wahlbeck.)
- ii. Keller, G., Rady S. and M. Cripps (2005). “Strategic Experimentation with Exponential Bandits,” *Econometrica*, **73**, 39–68.
- iii. Bolton, P. and C. Harris (1999): “Strategic Experimentation,” *Econometrica*, **67**, 349–374.
- iv. Bonatti, A. and J. Hörner (2011). “Collaborating,” *American Economic Review*, **101**, 632–663.
- v. Callander, S. (2011). “Searching and Learning by Trial and Error,” *American Economic Review*, **101**, 2277–2308.11

(c) Influencing

- i. Che, Y.-K., and J. Hörner (2018). “Recommender Systems as Mechanisms for Social Learning,” *Quarterly Journal of Economics*, 133, 871–925.
- ii. Kremer, I., Y. Mansour, and M. Perry (2014): “Implementing the ‘Wisdom of the Crowd’,” *The Journal of Political Economy*, 122, 998–1012.

4. More general tools: From Markov Decision Processes to stochastic games (lecture notes).