

Experimental Economics

6 ECTS

TERM 3

ELECTIVE

Professor

Prof. Rosemarie Nagel

Prerequisites to enroll

- Knowledge in economic theory, game theory, statistics, and econometrics.
- An interest to tackle research questions with experimental methods.
- A commitment to engage in a research project with original ideas in small groups.

Overview and objectives

Experimental economics is a grown field in economics and business administration. It provides a method to test theoretical predictions, explore human behavior in specific economic environments, help design institutions, advise on policy, and search for patterns and regularities in economic wheeling and dealing. The range of experimental testbeds can be from lab experiments, field experiments, surveys, and psychological and neuroscientific methods.

This course will link applied game theory, decision theory, industrial organization, markets, institutional design, macroeconomics, etc., with behavioral and experimental economics, field experiments, and neuroeconomics.

We expect that this course will help students think that economics can be an experimental science. Students will learn mainly through “learning by doing,” which provides a working knowledge of experimental techniques and methods for conducting laboratory, field experiments, surveys, etc. As a start, students will be guided by a selection of the experimental and behavioral economics literature to search for interesting economic, psychological, and behavioral research questions addressed with a feasible and original experimental design. These experiments will be run in class, by email, online, etc. The motivation and results are summarized as in a professional paper with statistical and econometric techniques. Students will also participate as subjects in various replications of experiments from the literature and the experiments designed by the students. This course requires involvement, own ideas, and an experiential learning journey.

Course outline

The course will be divided into two parts:

I. In the first part, we will cover a broad range of selected topics in which experimental methods are applied. Students will discuss recommended reading material. Also, in groups of 3, students will replicate one classical experiment, using instructions from the literature and running it with their class mates. In this first part, we will discuss questions like:

- Should we graft fairness into the game theory?
- “I think that you think that I think etc..” Is this how people reason?
- Women don’t ask? and other gender differences.
- Too many possible solutions: how theory and experiments can help make predictions when there are multiple solutions.
- How can we model learning to describe observed behavior?
- Auctions in the lab and the field.
- Experiments extendable to macroeconomics?
- What can those fMRI-brain scans do for Economics?
- External validity? A link between the field and the lab.

- Can there be too much choice?

We will also introduce

- The experimental facilities for programming your experiments like ztree, classEX, surveys, online programs (qualtrics, amazon Turk, etc.)
- Non-parametric statistics.

II. During the second part, every student (or a group of two-three) will design and run a novel experiment, typically with classmates, thus being an experimenter, and a subject in many experiments.

Course Requirements

- Replication and discussion of a classical experiment (in groups of three).
- Four one-page discussions of class material and commenting on other students posts.
- Presentation of one statistical test.
- Design, performance, and presentation of an original experiment (alone or in groups of two or three).
- Scientific paper (about 10-15 page) with original experiment.

Evaluation

The grade will be based on class participation, one-page discussions, performance as experimenter, presentations (30%), and final paper (70%).

Materials

General Literature:

Camerer, C. (2003), Behavioral Game Theory: Experiments in Strategic Interaction, Princeton University Press.

Dhami, S. (2016). The Foundations of Behavioral Economic Analysis. Oxford.

Friedman, D. and Sunder, S. (1994). Experimental Methods - A Primer for Economists. Cambridge University Press.

Kagel, J. and Roth, A.E. (eds.), Handbook of Experimental Economics, Princeton: Princeton University Press. (Vol. I, 1995; Vol. II, 2016)

Siegel, S. and Castellan, N. (1988). Nonparametric Statistics for Behavioral Science. McGraw-Hill, Inc.

Introduction and History of Experimental Economics:

Camerer, C. (1997). Progress in Behavioral Game Theory. Journal Economic Perspectives, vol 11, no 4, Fall , 167-188.

Roth, A. E. (1995), "Introduction to experimental economics", in Kagel, J., A. E. Roth, The Handbook of Experimental Economics, Princeton, 1-98.

Selten, R. (1997). Features of Experimentally Observed Bounded Rationality. EEA 97, Toulouse, Presidential Address.

Smith, V. (1987) "Experimental Methods in Economics", in J. Eatwell et al (eds), The New Palgrave: A Dictionary of Economics, New York.

Rubinstein, A. (2003). "Economics and Psychology"? The Case of Hyperbolic Discounting, International Economic Review 44 (2003), 1207-1216.

Individual Decision Making

Berns, G. S., D. Laibson, and G. Loewenstein (2007) "Intertemporal choice – toward an integrative framework," *Trends in Cognitive Sciences*, 11(11), pp. 482-8. Laibson, hyperbolic discounting.

Camerer, C. (1995) "Individual Decision Making" , in Kagel, J. and A. E. Roth, Handbook of Experimental Economics, Princeton: Princeton University Press.

Iyengar, S. S., Jiang, W., & Huberman, G. (2004). How much choice is too much? Contributions to 401 (k) retirement plans. In O. S. Mitchell, & S. Utkus (Eds.),

Pension design and structure: New lessons from behavioral finance (pp. 83-96).
Oxford: Oxford University Press.

Kahneman, D. and A. Tversky (1979), "Prospect theory: An analysis of decision making under risk, *Econometrica* 47:263-91

Holt, C. and Laury, S. (2005) "Risk Aversion and Incentives: New Data without Order Effects," (with Susan Laury) *American Economic Review*, 95(3), 902-912.

McClure, S., K. Ericson, D. Laibson, G. Loewenstein, and J. Cohen (2007) "Time Discounting for Primary Rewards." *Journal of Neuroscience.*, 27: 5796–5804.

Starmer, C. (2000). Developments in non-expected utility theory: The hunt for a descriptive theory of choice under risk. *Journal of Economic Literature*. 38, 332-382.

Bargaining

Roth, A.E (1995). Bargaining Experiments. In Kagel, J., A. E. Roth, The Handbook of Experimental Economics. Princeton, 253-331.

Camerer, C. and Thaler, R. (1995). Anomalies: Ultimatums, Dictators, and Manners. *Journal of Economic Perspectives* 9 (2): 209-219.

Roth, A., Prasnikar, V., Okuno-Fujiwara, M. and Zamir, S. (1991). Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: Some experimental Evidence. *American Economic Review* 81, 1068-1095.

Camerer, C. 2003 Behavioral Game Theory, chapter Bargaining.

Coordination

Camerer, C, Coordination, Behavioral Game Theory, Princeton University Press, 2003, chapter coordination.

Ochs, J. (1995). Coordination Problems. In Kagel, J., A. E. Roth, The Handbook of Experimental Economics, Princeton: 195-249.

Van Huyck, J., Battalio, R. and Beil, R. (1990). Tacit Coordination Games, Strategic Uncertainty and Coordination Failure. *American Economic Review* 80, 234-48.

Weber, R.A. (2006). "Managing Growth to Achieve Efficient Coordination in Large Groups." *American Economic Review*, 96 (1): 114-126.

Social preferences

Fehr, E., and K.Schmidt A. Theory of Fairness, Competition and Cooperation, *Quarterly Journal of Economics* 114, (1999), 817-868

Rabin, M. (1993). Incorporating Fairness into Game Theory and Economics. *American Economic Review*, 83(5), 1281-1302.

Gender, Discrimination

Bohren, J.A., A. Imas, and M. Rosenberg (2019). "The Dynamics of Discrimination: Theory and Evidence." *American Economic Review* 109(10): 3395–3436

Bertrand, M. and S. Mullainathan (2004). "Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination," *American Economic Review*, 94(4): 991-1013.

Gneezy, U., M. Niederle, A. Rustichini, "Performance in Competitive Environments: Gender Differences", *Quarterly Journal of Economics*, CXVIII, August 2003, 1049 – 1074.

Mobius, M.M. and T. S. Rosenblat (2006), "Why Beauty Matters," *American Economic Review*. 96(1): 222-235.

Niederle, M. (2016). "Gender." *Handbook of Experimental Economics*, second edition, Eds. John Kagel and Alvin E. Roth, Princeton University Press: 481-553.

Niederle, M. and L. Vesterlund, "Do Women Shy away from Competition? Do Men Compete too Much?" *Quarterly Journal of Economics*, 2007, 122(3):: 1067-1101.

Incentives and Reciprocity

Gneezy, U. and A. Rustichini (2000). "Pay Enough or Don't Pay At All," *Quarterly Journal of Economics*, 115(3): 791-810.

Nagin, D.S., J. B. Rebitzer, S. Sanders and L. J. Taylor (2002). "Monitoring, Motivation and Management: The Determinants of Opportunistic Behavior in a Field Experiment," *American Economic Review*, 92(4): 850-873.

Fehr, E. and A. Falk (1999). "Wage Rigidity in a Competitive Incomplete Contract Market," *Journal of Political Economy*, 107(1): 106-134.

Gneezy, U. and J. A. List (2006). "Putting Behavioral Economics to Work: Field Evidence on Gift Exchange," *Econometrica*, 2006, 74(5): 1365-1384.

Brown, M., A. Falk and E. Fehr (2004). "Relational Contracts and the Nature of Market Interactions" *Econometrica* Vol. 72 (3): 747-780.

Levels of reasoning

Alaoui L, Penta A. (2016). Endogenous Depth of Reasoning. *The Review of Economic Studies* **83**(4): 1297-1333.

Bosch-Domènech, A., J. García-Montalvo, R. Nagel, A. Satorra (2002), One, Two, (Three), Infinity ...: Newspaper and Lab Beauty-Contest Experiments, *American Economic Review* Dezember 2002, Vol 92 No.5, pp 1687-1701.

Crawford VP, Costa-Gomes MA, Iriberry N. (2013). Structural Models of Nonequilibrium Strategic Thinking: Theory, Evidence, and Applications. *Journal of Economic Literature* **51**(1): 5-62.

Goldfarb A, Xiao M. 2011. Who Thinks About the Competition? Managerial Ability and Strategic Entry in Us Local Telephone Markets. *American Economic Review* **101**(7): 3130-3161.

Nagel, R. (1995). Unraveling in Guessing Games: An Experimental Study. *American Economic Review* 85,5, 1313-1326.

Thaler, R. (1997). Giving Markets a Human Dimension. *Financial Times*, section Mastering Finance 6, June 16, 1997.

Learning

Camerer, C and Ho, T. (1998). "Experienced weighted Attraction Learning in Games: Estimates from Weak-Link Games." In *Games and Human Behavior, Essays in Honor of Amnon Rapoport*. Eds. D. Budescu, I. Erev, and R.Zwick. Publisher: Lawrence Erlbaum Associates, Inc., New Jersey.

Erev, I. and Roth, A. (1998). "On the need for Low Rationality, Cognitive Game Theory: Reinforcement Learning in Experimental Games with Unique Mixed Strategy Equilibria." *American Economic Review*, 88, 848-881.

Nagel, R. and F. Tang (1998). Experimental Results on the Centipede Game in Normal Form: An Investigation on Learning. *Journal of Mathematical Psychology* 42,(2), pp.256-384.

Stahl, D. (1996). Bounded Rational Rule Learning in Guessing Games. *Games and Economic Behavior*, 16(2), 303-330.

Bereby-Meyer, Y., Roth, A. (2006) Learning in Noisy Games: Partial Reinforcement and the Sustainability of Cooperation, *American Economic Review*, Vol. 96 (4), pp .1029-1042.

Auctions

Kagel, J. H. (1995). Auctions: A Survey of Experimental Research. In Kagel, J., A. E. Roth, The Handbook of Experimental Economics, Princeton, p. 501-557.

Kagel, John H. and Levin, D. (1986). The Winner's Curse and Public Information in Common Value Auctions. AER , December, p. 894-920.

Harrison, G. (1989). Theory and Misbehavior in First Price Auctions. AER September, p.749-762.

Rust, J., J. H. Miller and R. Palmer (1992). Behavior of Trading Automata in a Computerized Double Auction Market. In D. Friedman and J. Rust (eds.) The Double Auction Market: Institutions, Theories and Evidence, Addison-Wesley.

McCabe, K. A., S. J. Rassenti, and V. L. Smith (1992). Designing a Uniform Price Double Auction. In D. Friedman and J. Rust (eds.) The Double Auction Market: Institutions, Theories and Evidence, Addison-Wesley.

Kagel, J. (1995). Cross-game Learning: Experimental Evidence from First-Price and English Common Value Auctions. Economic Letters,49.

Kagel, J. and Levin, D. (1993). Independent Private Value Auctions: Bidder Behavior in First, Second and Third Price Auctions with Varying Numbers of Bidders. Economic Journal 103.

Macro experiments

Duffy, John (2016) Macroeconomics: A Survey of Laboratory Research, in Handbook of Experimental Economics (Volume 2), edited by John Kagel and Al Roth:1-90.

Akerlof, G.A. (2002), "Behavioral Macroeconomics and Macroeconomic Behavior," American Economic Review 92, 411-433.

Akerlof, G.A. (2007), "The Missing Motivation in Macroeconomics," American Economic Review 97, 5-36.

Duffy, J. and J. Ochs (1999), "Emergence of Money as a Medium of Exchange: An Experimental Study," *American Economic Review* 89, 847-77.

Fehr, E. and J-F. Tyran (2001), "Does Money Illusion Matter?," *American Economic Review* 91, 1239-62.

Relation between internet/field experiments and experimental economics

Harrison, Glenn and John A. List. "Field Experiments," *Journal of Economic Literature* (2004), XLII, 1009-1055.

Camerer, C., L. Babcock, G. Loewenstein and R. Thaler (1997). Labor Supply Of New York City Cab Drivers: One Day at A Time, *Quarterly Journal of Economics*, 407-441.

David H. Lucking-Reiley, J.A.List. (2000) "Demand Reduction in Multi-Unit Auctions: Evidence from a Sportscard Field Experiment". *American Economic Review*, Vol. 90(4), pages 961-972.

Kagel, John H. and A.E. Roth (2000). "The dynamics of reorganization in matching markets: A laboratory experiment motivated by a natural experiment," *Quarterly Journal of Economics*. 115(1):201-235.

Roth, A.E. and Axel Ockenfels. "Last Minute Bidding and the Rules for Ending Second-Price Auctions: Theory and Evidence from a Natural Experiment on the Internet" *American Economic Review*. vol. 92(4), pages 1093-1103

Dan Ariely, Axel Ockenfels and Alvin E. Roth (2005). An Experimental Analysis of Ending Rules in Internet Auctions. *The RAND Journal of Economics*, The RAND Corporation, vol. 36(4):890-907,

Neuro-economics

Adolphs, R. (2003), Investigating the cognitive neuroscience of social behavior, *Neuropsychologia* 42: 119-126.

Adolphs, R. (2003), Cognitive neuroscience of human social behavior, *Nature Reviews Neuroscience* 4, 165-178.

Camerer, C. , G. Loewenstein, and D. Prelec (2005) "Neuroeconomics: How neuroscience can inform economics" , *Journal of Economic Literature* Vol. XLIII: 9-64

Coricelli, G: and R. Nagel (2009) Neural correlates of depth of strategic reasoning in medial prefrontal cortex", *Proceedings of the National Academy of Sciences (PNAS): Economic Sciences*, June 9, 2009 vol. 106.

Nathalie Camille, Giorgio Coricelli, J. Sallet, Pradat-Diehl, P. J-R. Duhamel, A. Sirigu, "The Involvement of the Orbitofrontal Cortex in the Experience of Regret, *SCIENCE*, VOL 304 21 MAY 2004

King-Casas B. Tomlin, D. Anen, C. Camerer, C.S. R. Quartz, P. Read Montague Getting to Know You: Reputation and Trust in a Two-Person Economic Exchange, *SCIENCE* VOL 308 APRIL 2005 83

McCabe, K., D. Houser, L. Ryan, V. Smith, and T. Trouard (2001) A functional imaging study of cooperation in two-person reciprocal exchange, *Proceedings of the National Academy of Sciences* 98: 11832-11835.

Moll, Jorge et al (2002), The neural correlates of moral sensitivity: a functional magnetic resonance imaging investigation of basis and moral emotions, *The Journal of Neurosciences* 22: 2730-2736

Montague, P. R. and G. S. Berns (2002), Neural economics and the biological substrates of valuation, *Neuron* 36: 265-264.

Smith, K. Dickhaut, J., K. MacCabe and J.V. Pardo (2002), Neural substrates for choice under ambiguity, risk, gains and losses, *Management Science*, 48: 711-718.

Smith, A., T. Lohrenz, J. King, P. Read Montague, C. Camerer (2014). Irrational exuberance and neural crash signals, *Proceedings of the National Academy of Sciences*, 1(29): 10503-10508

Competencies

- Capacity of utilization of the theoretical instruments to analyze situations in coherent form.
- Ability to use the appropriate (statistical and numerical) techniques.
- Ability to identify and successfully search for/create the data necessary for the analysis, either grossly or in the form of more elaborate databases.
- Ability to make independent judgments and defend them dialectically.
- Ability to write formal reports.
- Acquire a solid knowledge base for the study of quantitative issues.
- Ability to Recognize and know how to use the principles of econometrics and statistics.
- Ability to work with microeconomic analysis tools and their empirical and theoretical applications.

Learning outcomes

- Students should get an overview of economic and financial theory.
- Students must be able to recognize theories and present arguments with precise examples.
- Students will have the ability to understand how markets work and explain their weaknesses.
- Students will acquire the technical tools that will allow them to perform the advanced analytics required in the second module as econometric methods.
- Students will know what the appropriate inference for each situation is.