

# Experimental Economics

by Ernesto Reuben

## *Description*

This course is an introduction to experimental economics, its methods, and some of the recent applications. Each week we will study a different subject and illustrate the different experimental techniques employed. Students will participate in a series of experiments and will acquire hands on experience designing and running an experiment in their area of interest. The class will cover experiments on decision making under risk, bargaining, bounded rationality, collective action, social norms, cultural influences, and market behavior. We will also review the even newer tools of neuroeconomics. We will concentrate on how experimental designs build on one another and allow researchers to isolate potential explanations. As part of the course, we will learn how to program in zTree, a software program particularly useful for running laboratory experiments that require interaction between subjects.

## *Course Organization*

Each week there will be a discussion session and a lab session. During the discussion, we will cover large sections of the experimental economics literature and also run short experiments to acquire hands on experience and understand the experiment from the subjects' perspective. During the lab session we will learn how to design and program a computerized experiment using zTree. By the end of the course students will be capable of carrying out a complex experiment.

## *Course Topics*

Below are the topics to be discussed and the reading list. Papers marked with an \* are highly recommended reading.

### **Recommended readings applicable to the whole course**

- Camerer, C.F. (2003). *Behavioral Game Theory*. Princeton University Press.  
Davis, D. and Holt, C. (1993). *Experimental Economics*. Princeton University Press.  
Holt, C. (2006). *Markets, Games, & Strategic Behavior*. Addison Wesley.  
Kagel, J.H. and Roth, A.E. (1995). *Handbook of Experimental Economics*. Princeton University Press.

- \* Fischbacher U. (1999). Zurich toolbox for readymade economic experiments, experimenter's manual. Working Paper No. 21. Institute for Empirical Research in Economics, University of Zürich.

## **Economics as an experimental science**

We discuss the use of experiments as a research method. We learn how to design and conduct experiments, but also discuss the strengths and weaknesses of different experimental approaches. We will also have a crash course in neuron-imaging techniques, covering their strengths and weaknesses.

- Why experimental economics?
- How to design an experiment.
- Strengths and weaknesses of the experimental method.
- Field and laboratory experiments.
- Neuroeconomics, measuring brain activity.

Camerer, C., Loewenstein, G., and Prelec, D. (2005). Neuroeconomics: How neuroscience can inform economics. *Journal of Economic Literature* 43: 9-64.

Constable, R.T. (2006). Challenges in fMRI and its limitations. In Faro, S.H., and Mohamed, F.B. (Eds.) *Functional MRI: Basic Principles and Clinical Applications*. Springer.

\* Harrison, G.W. and List, J.A. (2004). Field Experiments. *Journal of Economic Literature* 42: 1013-59.

Hertwig, R. and Ortmann, A. (2004) Economists and Psychologists Experimental Practices: How They Differ, Why They Differ, And How They Could Converge. In Brocas, I. and Carillo J.D. (eds.) *Economics and Psychology*. Oxford University Press: 253-72.

Loewenstein, G. (1999). Experimental Economics from the Vantage-Point of Behavioral Economics. *Economic Journal* 109: 25-34.

\* Roth, A.E. (1995). Introduction to Experimental Economics. In Kagel, J.H. and Roth, A.E. (eds.) *Handbook of Experimental Economics*. Princeton University Press. Chapter 1.

Rustichini, A. (2005). Neuroeconomics: Present and future. *Games and Economic Behavior* 52: 201-12.

Samuelson, L. (2005). Economic Theory and Experimental Economics. *Journal of Economic Literature* 43: 65-107.

Smith, V.L. (2002). Method in Experiment: Rhetoric and Reality. *Experimental Economics* 5: 91-110.

## **Coherent arbitrariness**

We continue with individual decision-making experiments. We focus on how framing can affect individuals' revealed preferences.

Ariely, D., Loewenstein, G. and Prelec, D. (2006). Tom Sawyer and the Construction of Value. *Journal of Economic Behavior & Organization* 60: 1-10.

\* Ariely, D., Loewenstein, G. and Prelec, D. (2003). Coherent Arbitrariness: Stable Demand Curves without Stable Preferences. *Quarterly Journal of Economics* 118: 73-106.

Cubitt, R., Munro, A., and Starmer, C. (2004). Testing Explanations of Preference Reversal. *Economic Journal* 114: 709-26.

Tversky, A., Slovic, P., and Kahneman, D. (1990). The causes of preference reversal. *American Economic Review* 80: 204-17.

Tversky, A. and Thaler, R.H. (1990). Preference reversal. *Journal of Economic Perspectives* 4: 201-11.

## **Bayesian updating and the winner's curse**

In the first part of the lecture will shortly discuss under which circumstances individuals learn to be Bayesian.

- Learning to be Bayesian.
- Winner's curse.
- Winner's curse and learning.

\* Charness, G. and Levin D. (2005). When Optimal Choices Feel Wrong: A Laboratory Study of Bayesian Updating, Complexity, and Psychological Affect. *American Economic Review* 95: 1300-1309.

Charness, G. and Levin, D. (2009). The Origin of the Winner's Curse: A Laboratory Study. *American Economic Journal: Microeconomics* 1:1, 207-236.

Charness, G., Karni, E., and Levin, D. (2007) Individual and group decision making under risk: An experimental study of Bayesian updating and violations of first-order stochastic dominance. *Journal of Risk and Uncertainty* 35: 129-148.

\* Friedman, D. (1998). Monty Hall's Three Doors: Construction and Deconstruction of a Choice Anomaly. *American Economic Review* 88: 933-946.

Kagel, J.H. and Levin, D. (2002). Common Value Auctions and the Winner's Curse: Lessons from the Economics Laboratory. In Kagel, J.H. and Levin, D. (eds.) *Common Value Auctions and the Winner's Curse*. Princeton University Press.

Kagel, J.H. and Levin, D. (1986). The Winner's Curse and Public Information in Common Value Auctions. *American Economic Review* 76: 894-920.

Palacios-Huerta, I. (2004). Learning to Open Monty Hall's Doors. *Experimental Economics* 6: 235-251.

Slembeck, T., and Tyran, J.R. (2004). Do Institutions Promote Rationality? An Experimental Study of the Three-Door Anomaly. *Journal of Economic Behavior & Organization* 54: 337-350.

## **Social preferences**

We discuss theoretical models of social preferences and how they have been tested in various experiments.

- Inequity aversion
- Maximin preferences and efficiency
- Fairness or envy?
- Intentions and reciprocity

Bolton, G. and Ockenfels, A. (2005). A stress test of fairness measures in models of social utility. *Economic Theory* 25: 957-982.

Bolton, G. and Ockenfels, A. (1999). A Theory of Equity, Reciprocity, and Competition. *American Economic Review* 100: 166-93.

Brandts, J., Saijo, T., and Schram, A. (2004). How Universal is Behavior? A Four Country Comparison of Spite and Cooperation in Voluntary Contribution Mechanisms. *Public Choice* 119: 381-424.

Charness, G. and Rabin, M. (2002). Understanding Social Preferences with Simple Tests. *Quarterly Journal of Economics* 117, 817-69.

Charness, G. and D. Levine (2007). Intention and Stochastic Outcomes: An Experimental Study. *Economic Journal* 117: 1051-1072.

Dufwenberg, M. and Kirchsteiger G. (2005). A theory of sequential reciprocity. *Games and Economic Behavior* 47: 268-98.

Dufwenberg, M., Gächter, S., and Hennig-Schmidt, H. (2006). The Framing of Games and the Psychology of Strategic Choice. Working paper.

Engelmann, D. and Strobel M. (2004). Inequality aversion, efficiency and maximin preferences in simple distribution experiments. *American Economic Review* 94: 857-69.

Falk, A. and Fischbacher, U. (2005). A theory of reciprocity. *Games and Economic Behavior* 54: 293-315.

Falk, A., Fehr, E., and Fischbacher, U. (2003). On the Nature of Fair Behavior. *Economic Inquiry* 41: 20-26.

Falk, A., Fehr, E., and Fischbacher, U. (2008). Testing Theories of Fairness - Intentions Matter. *Games and Economic Behavior* 62: 287-303.

- \* Fehr, E. and Schmidt, K. (2006). The Economics of Fairness, Reciprocity and Altruism – Experimental Evidence and New Theories. In Kolm, S.C., and Ythier, J.M. (eds.) *Handbook on the Economics of Giving, Reciprocity and Altruism* Elsevier.
- Fehr, E. and Schmidt, K. (1999). A Theory of Fairness, Competition and Cooperation. *Quarterly Journal of Economics* 114: 817-68.
- Fehr, E., Naef, M., and Schmidt, K., (2006) Inequality aversion, efficiency and maximim preferences in Simple Distribution Experiments: Comment. *American Economic Review* 96: 1912-1917.
- Fischbacher, U., Fong, C.M., and Fehr, E. (2003). Fairness, Errors and the Power of Competition. Working paper.
- Kagel, J.H. and Wolfe, K.W. (2001). Tests of fairness models based on equity considerations in a three-person ultimatum game. *Experimental Economics* 4: 203-219.
- Leibbrandt, A. and López-Pérez, R. (2008). The Envious Punisher: Understanding Second and Third Party Punishment with Simple Games. Working Paper.
- Moll, J., de Oliveira-Souza, R., Eslinger, P.J., Bramati, I.E., Mourao-Miranda, J., Andreiuolo, P.A., and Pessoa, L. (2002). The neural correlates of moral sensitivity: A functional magnetic resonance imaging investigation of basic and moral emotions. *The Journal of Neuroscience* 22: 2730-6.
- Sobel, J. (2005): Interdependent Preferences and Reciprocity. *Journal of Economic Literature* 43: 392-436.

## **Public Goods**

We discuss social dilemmas and the different reasons people cooperate. We focus on the effects of different institutions.

- Public good games (the voluntary contributions mechanism)
- Reasons for cooperation
  - Conditional cooperation
  - Strategic cooperation
- Centralized institutions (taxation and competition)
- Decentralized institutions (communication, punishment, and rewards)
- Endogenous formation of institutions that promote cooperation

Andreoni, J. (1988). Why Free Ride? Strategies and Learning in Public Goods Experiments. *Journal of Public Economics* 37: 291-304.

- Brandts, J. and Schram, A. (2001). Cooperation or Noise in Public Goods Experiments: Applying the Contribution Function Approach. *Journal of Public Economics* 79: 399-427.
- \* Bochet, O., Page, T., Putterman, L. (2006). Communication and Punishment in Voluntary Contribution Experiments. *Journal of Economic Behavior & Organization* 60: 11-26.
- Bornstein, G. (2003). Intergroup Conflict: Individual, Group, and Collective Interests. *Personality and Social Psychology Review* 7: 129-145.
- Bornstein, G. and Erev, I. (1994). The Enhancing Effect of Intergroup Competition on Group Performance. *International Journal of Conflict Management* 5: 271-281.
- Bornstein, G., Erev, I., and Rosen, O. (1990). Intergroup Competition as a Structural Solution to Social Dilemmas. *Social Behaviour* 5: 247-260.
- Croson, R.T.A. (1996) Partners and strangers revisited. *Economics Letters* 53: 25-32.
- Falkinger, J., Fehr, E., Gächter, S. and Winter-Ebmer, R. (2000). A Simple Mechanism for the Efficient Provision of Public Goods: Experimental Evidence. *American Economic Review* 90: 247-64.
- Fehr, E. and Gächter, S. (2000). Cooperation and Punishment. *American Economic Review* 90: 980-94.
- Fischbacher, U., Gächter, S., and Fehr, E. (2001): Are People Conditionally Cooperative? Evidence from a Public Goods Experiment. *Economics Letters* 71: 397-404.
- \* Fischbacher, U., Gächter, S (2009). Social Preferences, Beliefs, and the Dynamics of Free Riding in Public Good Experiments. *American Economic Review* forthcoming.
- Gächter, S. and Thoeni, C. (2005). Social Learning and Voluntary Cooperation among Like-minded People. *Journal of the European Economic Association* 3: 303-14.
- Isaac, R.M. and Walker, J.M. (1988). Communication and Free-Riding Behavior: The Voluntary Contribution Mechanism. *Economic Inquiry* 26: 585-608.
- Isaac, R.M., Walker, J., and Thomas, S. (1984). Divergent evidence on free riding: An experimental examination of possible explanations. *Public Choice* 43: 113-49.
- Keser, C. and van Winden, F. (2000). Conditional Cooperation and Voluntary Contributions to Public Goods. *Scandinavian Journal of Economics* 102: 23-39.
- \* Kosfeld, M., Okada, A., and Riedl, A. (2009). Institution Formation in Public Goods Games. *American Economic Review* forthcoming.
- \* Ledyard, J.O. (1995). Public Goods: A Survey of Experimental Research. In: Kagel, J.H. and Roth, A.E. (eds.). *Handbook of Experimental Economics*. Princeton University Press. Chapter 2.
- Nalbantian, H.R. and Schotter, A. (1997). Productivity Under Group Incentives: An Experimental Study. *American Economic Review* 87: 314-341.

- Palfrey, T. and Prisbrey, J. (1997). Anomalous behavior in public goods experiments: How much and why? *American Economic Review* 87: 829-46.
- Reuben, E. and S. Suetens (2009). Revisiting Strategic versus Non-Strategic Cooperation. CentER discussion paper 2009-22. Tilburg University.
- Reuben, E. and Tyran, J.R. (2009). Everyone is a Winner: Promoting Cooperation through All-Can-Win Intergroup Competition. Discussion paper no. 4112. IZA.
- Sausgruber, R. and Tyran, J.R. (2007). Pure Redistribution and the Provision of Public Goods. *Economic Letters* 95: 334-338.
- Sefton, M., Shupp, R. and Walker, J. (2007). The Effect of Rewards and Sanctions in the Provision of Public Goods. *Economic Inquiry* 45: 671-690.
- Sutter, M., Haigner, S., and Kocher, M. (2008). Choosing the carrot or the stick? Endogenous institutional choice in social dilemma situations. Working paper.
- Tan, J.H.W. and Bolle, F. (2007). Team Competition and the Public Goods Game. *Economics Letters* 96: 133-139.
- Zelmer, J. (2003). Linear Public Goods Experiments: A Meta-Analysis. *Experimental Economics* 6: 299-310.

## **Punishment and cooperation**

We discuss decentralized punishment, its benefits, and some of its negative effects.

- Altruistic punishment and cooperation
  - Long-run benefits
  - Implementing punishment
- Punishment across societies
- Effectiveness of punishment (costs, counter-punishment, intentions)
- Emotions and punishment
  - Why punish?
  - Why punishment works?

Anderson, C. and Putterman, L. (2006). Do non-strategic sanctions obey the law of demand? The Demand for Punishment in the Voluntary Contribution Mechanism. *Games and Economic Behavior* 54: 1-24.

Ben-Shakhar, G., Bornstein, G., Hopfensitz, A., and van Winden, F. (2007). Reciprocity and emotions in bargaining using physiological and self-report measures. *Journal of Economic Psychology* 28: 314-323.

Bosman, R., and van Winden, F. (2002). Emotional hazard in a power-to-take game experiment. *Economic Journal* 112: 147-69.

Brosnan, S.F. and de Waal, F.B.M. (2003). Monkeys reject unequal pay. *Nature* 425: 297-299.

- Carpenter, J. P. (2006). The Demand for Punishment. *Journal of Economic Behavior & Organization* 62: 522-542.
- Egas, M. and Riedl, A. (2005). The economics of altruistic punishment and the maintenance of cooperation. *Proceedings of the Royal Society B – Biological Sciences* 275: 871-878.
- Falk, A., Fehr, E., and Fischbacher, U. (2005). Driving forces behind informal sanctions. *Econometrica* 73: 2017-30.
- Fehr, E. and Fischbacher, U. (2004). Third Party Punishment and Social Norms. *Evolution and Human Behavior* 25: 63-87.
- Fehr, E. and Gächter, S. (2000). Cooperation and Punishment. *American Economic Review* 90: 980-94.
- \* Fehr, E. and Gächter, S. (2002). Altruistic punishment in humans. *Nature* 415: 137-40.
- Gächter, S., Renner, E., and Sefton, M. (2008). The Long-Run Benefits of Punishment. *Science* 322: 1510.
- Güerke, O., Irlenbusch, B., and Rockenbach, B. (2006). The competitive advantage of sanctioning institutions. *Science* 312: 108-11.
- Haselhuhn, M. and Mellers, B.A. (2005). Emotions and cooperation in economic games. *Cognitive Brain Research* 23: 24-33.
- \* Hopfensitz, A. and Reuben, E. (2009). The Importance of Emotions for the Effectiveness of Social Punishment. *Economic Journal* forthcoming.
- Knoch, D., Pascual-Leone, A., Meyer, K., Treyer, V., Fehr, E. (2006). Diminishing Reciprocal Fairness by Disrupting the Right Prefrontal Cortex. *Science* 314: 912-915.
- Ostrom, E., Walker, J., and Gardner, R. (1992). Covenants with and without a sword: Self governance is possible. *American Political Science Review* 86: 404-17.
- Masclot, D., Noussair, C., Tucker, S. and Villeval, M.C. (2003). Monetary and Non-Monetary Punishment in the Voluntary Contributions Mechanism. *American Economic Review* 93: 366-80.
- Nikiforakis, N.S. (2008). Punishment and Counter-punishment in Public Goods Games: Can we Still Govern Ourselves? *Journal of Public Economics* 92: 91-112.
- Nikiforakis, N.S. and Normann, H.T. (2008). A Comparative Statics Analysis of Punishment in Public Goods Experiments. *Experimental Economics* 11: 358-369.
- Noussair, C. and Tucker, S. (2005). Combining Monetary and Social Sanctions to Promote Cooperation. *Economic Inquiry* 43: 649-660.
- \* Quervain, D., Fischbacher, U., Treyer, V., Schellhammer, M., Schnyder, U., Buck, A., and Fehr, E. (2004). The Neural Basis of Altruistic Punishment. *Science* 305: 1254-8.
- Reuben, E. and Riedl, A. (2009). The Disadvantage of Privileged Groups. *Journal of Conflict Resolution* 53: 72-93.

- Reuben, E. and Riedl, A. (2008). Norm enforcement in heterogeneous populations. Working Paper.
- Sanfey, A.G., Rilling, J.K., Aronson, J.A., Nystrom, L.E., and Cohen, J.D. (2003). The Neural Basis of Economic Decision-Making in the Ultimatum Game. *Science* 300: 1755-8.

## Trust

We discuss the well-known trust game and the main motivations for both being trusting/mistrusting and acting in a trustworthy/untrustworthy manner.

- Trust game
- Does the trust game measure trust?
- Trust and guilt aversion

- Berg, J., Dickaut, J., and McCabe, K. (1995). Trust, Reciprocity and Social History. *Games and Economic Behavior* 10: 122-42.
- Bohnet, I., Greig, F., Herrmann, B., Zeckhauser, R. (2008). Betrayal Aversion: Evidence from Brazil, China, Oman, Switzerland, Turkey, and the United States. *American Economic Review* 98: 294-310.
- \* Bohnet, I. and Zeckhauser, R. (2004). Trust, risk and betrayal. *Journal of Economic Behavior & Organization* 55: 467-484.
- \* Charness, G. and Dufwenberg, M., (2006). Promises and Partnership. *Econometrica* 74: 1579-1601.
- Cox, J.C. (2004). How to Identify Trust and Reciprocity. *Games and Economic Behavior* 46: 260-81.
- Eckel, C. and Wilson R. (2004). Is Trust a Risky Decision? *Journal of Economic Behavior & Organization* 55: 447-465.
- Ellingsen, T., Johannesson, M., Tjøtta, S., and Torsvik, G., (2008). Testing Guilt Aversion. Working paper. Stockholm School of Economics.
- Fehr, E., Fischbacher, U., and Kosfeld, M. (2005). Neuroeconomic foundations of trust and social preferences. *American Economic Review* 346-51.
- Fehr, E., Fischbacher, U., von Rosenbladt, B., Schupp, J., and Wagner, G. (2003). A Nation-Wide Laboratory. Examining Trust and Trustworthiness by Integrating Behavioral Experiments into Representative Surveys. CESifo working paper 866.
- Glaeser, E., Laibson, D., Scheinkman, J., and Soutter, C. (2000). Measuring Trust. *Quarterly Journal of Economics* 115: 811-846.
- Houser, D., Schunk, D., and Winter, J. (2006). Trust Games Measure Trust. Discussion Paper 1350. University of Munich.

- \* Kosfeld, M., Heinrichs, M., Zak, P.J., Fischbacher, U., and Fehr, E. (2005). Oxytocin Increases Trust in Humans. *Nature* 435: 673-676.
- McCabe, K., Houser, D., Ryan, L., Smith, V., and Trouard, T. (2001). A Functional Imaging Study of Cooperation in Two-Person Reciprocal Exchange. *Proceedings of the National Academy of Sciences* 98: 11832-11835.
- Naef, M. and Schupp, J. (2009). Measuring Trust: Experiments and Surveys in Contrast and Combination. Discussion paper 4087. IZA.
- Sapienza, P., Toldra, A., and Zingales, L. (2008). Understanding Trust. Working Paper. Northwestern University.
- Reuben, E., Sapienza, P., and Zingales L. (2009). Is Mistrust Self-Fulfilling? *Economics Letters* forthcoming.

### **Antisocial behavior**

We look at the “darker” side of human behavior and explore situations in which people go out of their way to harm others.

- Antisocial punishment
- Conflict and rent-seeking
- Punitive games

- Abbink, K. and Sadrieh, A. (2008). The Pleasure of Being Nasty. Working paper. University of Amsterdam.
- Abbink, K., Brandts, J., Herrmann, B., and Orzen, H. (2009). Inter-Group Conflict and Intra-Group Punishment in an Experimental Contest Game. *American Economic Review* forthcoming.
- Carter, J.R. and Anderton, C.H. (2001). An experimental test of a predator-prey model of appropriation. *Journal of Economic Behavior & Organization* 45:83-97.
- Cherry, T.L., Frykblom, P., and Shogren, J. (2002). Hardnose the dictator. *American Economic Review* 92: 1218-1221.
- Duffy, J. and Kim, M. (2005). Anarchy in the laboratory (and the role of the state). *Journal of Economic Behavior & Organization* 56: 297-329.
- Durham, Y., Hirshleifer, J., and Smith, V.L. (1998). Do the rich get richer and the poor poorer? Experimental tests of a model of power. *American Economic Review* 88: 970-983.
- Fonseca, M.A. (2006). It's not how you play the game, it's winning that matters: An experimental investigation of asymmetric contests. Working Paper. Columbia University.

- Gächter, S., Herrmann, B. (2007). The limits of self-governance when cooperators get punished: Experimental evidence from urban and rural Russia. CeDEx Discussion Paper No. 2007-11.
- Gächter, S., Herrmann, B., and Thöni, C. (2008). Antisocial Punishment Across Societies. *Science* 319: 1362-1367.
- Herrmann, B. and Orzen, H. (2008), The Appearance of Homo Rivalis: Social Preferences and the Nature of Rent-seeking. CeDEx Discussion Paper No. 2008-10.
- Lacomba, J.A., Lagos, F.M., Reuben, E., and van Winden, F. (2008). Breaking the Violence: Attaining Peaceful Relations in Games of Conflict. Mimeo.
- Zizzo, D.J. (2003). Money burning and rank egalitarianism with random dictators. *Economics Letters* 81: 263-266.
- Zizzo, D.J. and Oswald, A.J. (2001). Are People Willing to Pay to Reduce Others' Incomes? *Annales d'Economie et de Statistique* 63-64, 39-62.

## Voting

We discuss some of the experimental literature on voting.

- Retrospective voting and convergence to the median voter
- Lobbying and divergence from the median voter
- Costly voting and turnout
- Expressive voting

- Aragones, E. and Palfrey, T. (2004). The Effect of Candidate Quality on Electoral Equilibrium: An Experimental Study. *American Political Science Review* 98: 77-90.
- Battaglini, M., Morton, R., and Palfrey, T. (2009). The Swing Voters Curse in the Laboratory. *Review of Economic Studies* forthcoming.
- Casella, A., Gelman, A., and Palfrey, T.R. (2006). An Experimental Study of Storable Votes. *Games and Economic Behavior* 57: 123-154.
- Collier, K.E., McKelvey, R.D., Ordeshook, P.C., and Williams, K.C., (1987). Retrospective Voting: An Experimental Study. *Public Choice* 53: 101-130.
- Feddersen, T., Gailmard, S., and Sandroni, A. (2007) Moral Bias of Voters in Large Elections: Theory and Experimental Evidence. Working Paper.
- Forsythe, R., Myerson, R., Rietz, T., and Weber, R. (1993). An Experiment on Coordination in Multi-candidate Elections: The Importance of Polls and Election Histories. *Social Choice and Welfare* 10: 223-247.

- Gailmard S. and Palfrey, T.R. (2005). An Experimental Comparison of Collective Choice Procedures for Excludable Public Goods. *Journal of Public Economics* 89: 1361-98.
- Giertz, T. and Großer, J. (2006). Candidates, voters, and endogenous group formation: An experimental study. Working Paper.
- Großer, J. and Reuben, E. (2009). The Politics of Redistribution and Market Efficiency: An Experimental Study. Mimeo.
- Großer, J., Reuben, E., Tymula, A. (2010). An experimental study of interest groups and candidate competition. Mimeo
- Großer, J. and Schram, A. (2006). Neighborhood Information Exchange and Voter Participation: An Experimental Study. *American Political Science Review* 100: 235-248.
- Guarnaschelli, S., McKelvey, R.D. and Palfrey, T. (2000). An Experimental Study of Jury Decision Rules. *American Political Science Review* 94: 407-23.
- \* Levine, D. and Palfrey, T. (2007). The Paradox of Voter Participation: A Laboratory Study. *American Political Science Review* 101: 143-158.
- McKelvey, R.D. and Ordeshook, P.C. (1990). A Decade of Experimental Research on Spatial Models of Elections and Committees. In Hinich, M.J. and Enelow, J. (eds.) *Government, Democracy, and Social Choice*. Cambridge University Press: Cambridge.
- \* Palfrey, T. (2006). Laboratory Experiments in Political Economy. In Weingast, B. and Wittman, D. (eds.) *Handbook of Political Economy*. Oxford University Press: Oxford.
- Schram, A. and Sonnemans, J. (1996). Voter Turnout as a Participation Game: An Experimental Investigation. *International Journal of Game Theory* 25: 385-406.
- Tyran, J.R. (2004): Voting when Money and Morals Conflict. *Journal of Public Economics* 88: 1645-64.
- Tyran, J.R. and Sausgruber, R. (2006). A Little Fairness may Induce a Lot of Redistribution in Democracy. *European Economic Review* 50: 469-85.

## **Markets, aggregation and strategic environment**

We discuss how institutions, in particular markets, mitigate or multiply individual-level “anomalies”.

- Double-Auction Markets
- Asset Markets
- Strategic environment: complements vs. substitutes

- Boone, C., Declerck, C., and Suetens, S. (2008). Subtle social cues, explicit incentives and cooperation in social dilemmas. *Evolution and Human Behavior* 29: 179-188.
- \* Camerer, C.F. and Fehr, E. (2006). When Does "Economic Man" Dominate Social Behavior? *Science* 311: 47-52.
- \* Fehr, E. and Tyran, J.R. (2005). Individual Irrationality and Aggregate Outcomes. *Journal of Economic Perspectives* 19: 43-66.
- Fehr, E. and Tyran, J.R. (2007). Money Illusion and Coordination Failure. *Games and Economic Behavior* 58: 246-268.
- Fehr, E. and Tyran, J.R. (2008). Limited Rationality and Strategic Interaction. The Impact of the Strategic Environment on Nominal Inertia. *Econometrica* 76: 353-394.
- Gode, D.K. and Sunder, S. (1993). Allocative Efficiency of Markets with Zero-Intelligence Traders: Markets as a Partial Substitute for Individual Rationality. *Journal of Political Economy* 101: 119-37.
- Haruvy, E. and Noussair, C. (2005). The Effect of Short Selling on Bubbles and Crashes in Experimental Spot Asset Markets. *Journal of Finance* 61: 1119-57.
- Holt, C.A. (1998). Industrial Organization: A Survey of Laboratory Research. In Kagel, J.H. and Roth, A.E. (eds.). *Handbook of Experimental Economics*. Princeton University Press. Chapter 5.
- Hommel, C., Sonnemans, J., Tuinstra, J. van de Velden, H. (2005). Coordination of Expectations in Asset Pricing Experiments. *Review of Financial Studies* 18: 955-80.
- Kluger, B.D. and Wyatt, S.B. (2004). Are Judgment Errors Reflected in Market Prices and Allocations? Experimental Evidence Based on the Monty Hall Problem. *Journal of Finance* 59: 969-98.
- Porter, D.P. and Smith, V. (2003). Stock Market Bubbles in the Laboratory. *Journal of Behavioral Finance* 4: 7-20.
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### **Loss aversion**

We discuss individual decision-making experiments. We focus on loss aversion in both risky and riskless decision-making. We also discuss parametric and non-parametric estimates of probability weighting functions.

- Loss aversion
  - Risky and riskless measurements of loss aversion
  - Evaluation periods
  - Measuring probability weighting functions
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