Econ 143: Experimental Economics

Professor James Andreoni

Class: Tuesday and Thursday, 12:30pm—1:50pm,

Office Hours: Room 215 Economics, Tuesdays and Thursdays 2pm-3pm, and by appointment. Contact Professor Andreoni at andreoni@ucsd.edu to set up a time.

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Course Description: This course will be a survey of some of the recent literature on Experimental Economics. This is one of the fastest growing areas of economic research. Traditionally, economic science was conducted by observing behavior that people would report about their own choices and situations, such as responding to survey about hours worked and wages earned. For the last 30 years—and most intensively for the last 15 years—economists have increasingly turned to doing controlled experiments to learn about economic behavior. There have been thousands of studies. We will attempt to cover some of these, hopefully choosing topics that we all will find most relevant to our own lives, and our own economic interactions.

Text: There is no text for the course—no texts actually exist for this topic, since it is changing so fast. However, there will be readings for every lecture. These will be drawn from academic journals, as well as from recently completed but as of yet unpublished research papers. I will make every attempt to have these posted for you on the course website well before each lecture.

Reading Guide and Things to Know: The list of readings for each lecture is in the file called Reading List. You will be reading a lot of papers that are pretty advanced. To help, for each reading I will provide you with a guide for what sections to read and how carefully to read them. There will also be a list of "things to know" for each lecture, as well as lecture notes posted immediately after each lecture. The reading list may change slightly as the course progresses, as sometimes newer and more interesting sources come up after the start date of the class.

Format: I will try to conduct lectures in a seminar format. That means you, the students, come prepared, I ask you questions, we have a lot of discussions and input from students, and then together we try to figure out how we can use economics to understand our own and others' feelings, judgments, and decisions. We will often do classroom demonstrations of the experiments we are studying. I invite students to ask lots of questions, to be skeptical and challenge the economic models and predictions (is there something important that is missing

from the model that could improve our understanding?) and perhaps we will even dream up new economic theories and experimental tests of those theories.

Moblab: We will ask you to subscribe to MobLab, a web-based program that does demonstrations of economic experiments. You will need to bring a laptop, cell phone, or tablet with you to class to participate in the demonstrations. If you don't have one of these devices, please let the professor or the TA know and we can bring extra laptops or tablets to class. The subscription is discounted (negotiated especially for our class). To enter the class account, go to https://www.moblab.com/ and *in order to get the discount sign up using the code* : qhchtm9u

Class Project: We will be designing and conducting a class research project. The project will use a field experiment that we design ourselves. The project will require each person in the class to participate in collecting data. We will need team leaders to organize things, and data coders and analyzers. Your willingness to volunteer for these and success at completing your collection on time is will help secure your credit for this part of the course.

Exams and Grades: The course will have two midterm exams, but no final exam. The first midterm exam will be Thursday February 9, in class. **The second Midterm exam, however, will be given during the Final Exam time slot**. Each exam is designed to be completed in 75 minutes. Exams will each be worth 40%. Homework will be worth 10%, and your effort on the class project will be worth 10%.

*Please let me know **before** the end of week 2 whether you have a conflict with any exam.*

Class Project: The class project will be a lost envelope experiment on campus, where envelopes are dropped all on the same day in carefully selected classrooms across campus. Our choice of classroom will depend on the subject matter being chosen, or whether the class is for seniors or freshmen. It all depends on the question we wish to ask. We may also want to get volunteers to do the same as SDSU and USD, just to increase our sample size.

The kinds of questions we can ask:

1. Is an envelope more likely to be returned if it is dropped in a large classroom than a small classroom?
2. Are, for instance, English majors more likely to return envelopes that engineering majors?
3. What if the envelope has Valentine hearts on it, compared to a bill stamped "payment due Feb 14"?
4. Combine the all three: Drop both Valentines envelopes and bills in different classrooms of varying sizes which are known to be frequented by different majors, which are most likely to be returned?

Econ 143: Experimental Economics

Part 1: Strategic Choice

Jan 10: What is Experimental Economics all about?

Reading: Only class notes

Things to Know:

- Necessary and sufficient conditions
- Within-subjects and Between-subjects design
- Null Effects
- Experimenter Demand Effects
- Power vs. Goodness-of-Fit

Jan 12: Equilibria: Pure, Dominant, & Mixed Strategy; Multiple Equilibria

Reading:

- Van Huyck, John B., Raymond C. Battalio, and Richard O. Biel, "Tacit Coordination Games, Strategic Uncertainty, and Coordination Failure." American Economic Review, 1990, 80(1), pp. 234-48. [link]

Things to know:

- Nash equilibrium
- Dominant strategies
- Mixed Strategy
- The problem of multiple equilibria
- Using the criteria of focal points to trim equilibria
- Payoff dominance and risk dominance as focal criteria
- The minimum effort game and how risk dominance erodes trust

Jan 17: Bargaining and Fairness

Reading:

- Forsythe, Robert, Joel Horowitz, N.S. Savin and Martin Sefton. "Fairness in Simple Bargaining Games." Games and Economic Behavior, May 1994, 6(3), pp. 347—69. [link]
  - Read ALL
- Slonim, Robert and Alvin E. Roth, "Learning in High Stakes Ultimatum Games: An Experiment in the Slovac Republic." Econometrica, 66, 3, May 1988, 569-96. [link]
  - SKIM; Understand the motivation for the study, the experimental design, the figures, and be able to discuss the results.

Things to know:

- The ultimatum game has many equilibria
- Sub-game perfection as a concept

- The UG has two subgame perfect Nash equilibria
- But people play fair anyway
- Even for large stakes
- Even with experience
- How the experiments showed this
- What does this imply about preferences?

Jan 19: Trust, Fairness, and Efficiency

Reading

- Berg, Joyce, John Dickhaut, and Kevin McCabe. "Trust, Reciprocity, and Social History," *Games and Economic Behavior*, 1995, 10, 122-142. [link]
    - Read ALL
- Cox, James C. "How to Identify Trust and Reciprocity." *Games and Economic Behavior*, 2004, 46, 260–281. [link]

Things to know:

- The rules of the Trust Game.
- How the Trust Game is a simplification of trading when quality cannot be verified before the transaction occurs.
- Explain how markets would work better if we could trust each other.
- Without complete trust, many profitable exchanges aren't made.
- How is this seen in the lab?
- But people are innovative and can invent simple and inexpensive market structures to build trust
- Reputation reports, but they're prone to manipulation (as we've seen reported in the news)
- Money back guarantees can take the place of reputations
- Money back guarantees work best if people actually have a preference for fairness and will reject some unfair but profitable returns.

Part 2: Sociality and Economic Decisions

Jan 24: Privately Provided Public Goods

Reading:

- Andreoni, J., and R. Petrie (2004): "Public Goods Experiments Without Confidentiality: A Glimpse Into Fund-Raising," *Journal of Public Economics*, 88, 1605–1623 [link]
    - Read and understand the whole paper

Things to know:

- Definition of a public good
- Why, from a theoretical point of view, private provision will be inefficient (the free rider problem, or sometimes called the public goods problem)
- How does the Linear Public goods game capture the essential tension of the free rider problem?
- What is Pareto Efficiency?
- What is the predicted Nash Equilibrium?

- What are the results of the game?
- Definition of a Threshold Public Good
- How the Kiva Game captured this?
- What are the possible equilibria?
- How can we solve the multiple equilibria problem with "announcements" that make one equilibrium focal?

Jan 26: Can a Self-Interested Person Be Unselfish? Using Revealed Preference

Reading:

- Andreoni, James, and J.H. Miller,"Giving According to GARP: An Experimental Test of the Consistency of Preferences for Altruism." Econometrica, v. 70, no.2, March 2002, 737-753. [link]
    - Read, understand WARP, Describe the general result on violations of WARP
    - Don't worry about understanding the CCEI
    - Don't worry about understanding the econometrics.
- Andreoni, J., Vesterlund, L., 2001. Which is the fair sex? Gender differences in altruism. Quarterly Journal of Economics, 116 (1), 293–312. [link]
    - Skim for the general results about demand curves crossing for men and women.

Things to know:

- The definition of WARP
- Be able to illustrate data that violates Revealed Preference and data that doesn't
- Statement of Afriat's Theorem, and what it means.
- What does "power" of a test mean?
- How do we use revealed preference to show that people have act as if they have a utility over allocations between themselves and someone else?
- What is the pattern of those preferences
- There are three "pure types"
- Then we can classify others by how close they are to the pure types.
- One can use the data to predict "within sample" or "out-of-sample". What is the purpose of each?
- Are preferences "well-behaved?"
- Are preferences monotonic for everyone?
- If indifference curves bend back, what does that mean about our theory of preferences, $U(\pi s, \pi o)$?

Jan 31: Using Revealed Preference to build up a model of Fairness Preferences

Reading

- Andreoni, Brown and Vesterlund, "What Makes an Allocation Fair? Some Experimental Evidence." with Paul Brown and Lise Vesterlund, *Games and Economic Behavior*, 40, July 2002, 1-24. pdf
    - Read
- DANA, J., D.M. CAIN, AND R.M. DAWES (2006): "What You Don't Know Won't Hurt Me: Costly (But Quiet) Exit in Dictator Games," Organizational Behavior and Human Decision Processes, 100, 193–201. 1608-1619 [link]
    - Read about Only Study 1.

- DANA, J., R. A. WEBER, AND X. KUANG (2007): “Exploiting Moral Wiggle Room: Experiments Demonstrating an Illusory Preference for Fairness,” Economic Theory, 33, 67–80. 1608-1621 [link]
    - Read about only the Baseline and Treatment 1 on Hidden Information.
- James Andreoni and B. Douglas Bernheim "Social Image and the 50-50 Norm: A Theoretical and Experimental Analysis of Audience Effects." Econometrica, 77, no. 5, September 2009, 1607-1636. [link]
    - Read the introduction
    - Skip the Theory model
    - Read the experimental design, results, and conclusion.

Things to Know:

- Simultaneous, Sequential, and Best-shot public goods games.
- The equilibria of each
- The motivation for this experiment.
- The experimental design
- The outcomes of the studies
- The implications for models of fairness, and how they need to depend on what could have been chosen.
- The costly but quiet exit experiment
- Describe the set up and motivation
- What is the violation of revealed preference?
- What does it tell us about what else needs to be in fairness models?
- The moral wiggle room experiment
- Describe the setup and motivation
- What is the violation of revealed preference?
- What does it indicate needs to be part of models of fairness?
- The 50-50 norm experiment
- Describe the setup and motivation
- What is the violation of revealed preference?
- What does this tell us about how fairness enters into choices?

Feb 2: The role of empathy and social pressure in social decisions

Reading:

- Andreoni, James, and Justin M. Rao. "The power of asking: How communication affects selfishness, empathy, and altruism." *Journal of Public Economics* 95, no. 7 (2011): 513-520.[link]
    - Read
- DellaVigna, S., J. A. List, and U. Malmendier. "Testing for altruism and social pressure in charitable giving." *The quarterly journal of economics* 127, no. 1 (2012): 1.[Link]
    - Skim
- Andreoni, James, Justin Rao, Hanna Trachtman Trachtman, ``Avoiding The Ask: A Field Experiment on Altruism, Empathy, and Charitable Giving.'' with Justin M. Rao, and Hannah Trachtman, forthcoming in *Journal of Political Economy,* 2017.
    - Skim

Things to know:

- Why do we try to avoid "context" when we use lab experiments?
- Why is it important sometimes to introduce context in an organized way?
- Describe the general results of Andreoni and Rao's "Asking," "Explaining" and "Asking and Explaining" conditions. What was the surprising result?
- How do A&R address this surprising result with new "empathy conditions"?
- What were the findings?
- What are their hypotheses for why they got these findings?
- DellaVigna, et al. ask whether "altruism" or "social pressure" matters. What innovative approach do they use get people to "reveal a preference" for being asked to give?
- What is their conclusion?
- Andreoni, Rao and Trachtman (ART) take a different approach to the same question:
- What innovative approach do they take to get people to reveal a preference for *avoiding* being asked?
- About what fraction of shoppers avoid the silent bell-ringer, and about what fraction avoid a bell-ringer who verbally says "please give today?"
- About what fraction of people go out of their way to seek a chance to give?
- ART argues that avoiding being asked could be a sign that people are altruistic rather than that they are cold-hearted. Be able to state that argument in a couple of sentences.

Feb 7: Who is more generous, Rich or Poor? Exam Review

35 minutes of lecture, 45 minutes of questions and answers about the exam

Reading:

- Andreoni, James, Nikos Nikiforakis, and Jan Stoop. "Are the Rich More Generous than the Poor, or Do the Poor Just have Less Money? A Natural Field Experiment?" working paper, January 2015.
    - Read closely until the section on testing alternative hypotheses, then read the conclusion
- Mani, Anandi, Sendhil Mullainathan, Eldar Shafir, and Jiaying Zhao. "Poverty impedes cognitive function." *science* 341, no. 6149 (2013): 976-980. [link]
    - It's a short paper, cleverly written. Try to read it all.

Things to Know:

- Why it is difficult to answer the question "Are the rich more selfish than the poor?"
- How does the lost-envelope method help solve some of these problems?
- What is the hypothesis about how scarcity affects behavior, as articulated by Mani, et al.? How does this enter into the discussion about altruism of the rich and poor?

Feb 9: Midterm Exam in Class

Part 3: Core Models of Choice

Feb 14: Decisions about Risk: Neoclassical Theory and Prospect Theory

Reading:

- Class Notes are important here
- Kahneman, Daniel and Amos Tversky, "Prospect Theory: An Analysis of Decision under Risk," *Econometrica*, 1979, 47 (2), 263–291. [link]
    - This is too long, but I put it here because of its historical importance
    - Skim the problems 1-8 in the Critique section, instead read the next paper:
- Matthew Rabin and Richard H. Thaler, Anomalies: Risk Aversion: *The Journal of Economic Perspectives,* Vol. 15, No. 1 (Winter, 2001), pp. 219-232 [link]
    - Read it all
- Andreoni and Harbaugh: Unexpected Utility: Experimental Tests of Five Key Questions about Preferences over Risk. Draft
    - Rely on Class notes, skim this if you need to.

Things to Know:

- The neoclassical model of Risk Aversion: Class notes
- The difference between Risk Aversion, Risk Loving, and Risk Neutrality
- What Constant Relative Risk Aversion means, and the CRRA utility Function
- Kahneman and Tversky's famous violations of Revealed Preference in risk taking
- What Loss Aversion means and why it is important
- From Rabin and Thaler:
- Rabin's Calibration problem with Revealed Pref
- The importance of a Reference point in risk taking
- Money Pumps: What do they mean?
- Holt and Laury's way of measuring risk aversion
- Andreoni and Harbaugh's way of measuring risk aversion
- How a choice on a budget can distinguish between RA and RL
- Checking Revealed Preference Violations on gains
- Why this doesn't test loss aversion, only the Rev Pref violations in Gains.

Feb 16: Risk in the Real World: Prospect Theory and the Endowment Effect

Reading:

- Daniel Kahneman, Jack L. Knetsch and Richard H. Thaler "Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias" *The Journal of Economic Perspectives* Vol. 5, No. 1 (Winter, 1991), pp. 193-206 [link]
    - Read it all
- Imas, Alex. "The Realization Effect: Risk-Taking After Realized Versus Paper Losses." *American Economic Review*. August 2016. Available on his webpage Or here
    - Easy paper, important problem

- Post, Thierry, Martijn J. Van den Assem, Guido Baltussen, and Richard H. Thaler. "Deal or no deal? Decision making under risk in a large-payoff game show." *The American economic review* (2008): 38-71. [link]

Things to Know:

- The endowment effect, and its relation to prospect theory and loss aversion (i.e., it's basically the same idea of referent dependent utility)
- What is the "Disposition Effect"? How does the Realization Effect mitigate it?
- What about Playing for big stakes?
- Do we worry about subject populations in the "Deal or No Deal" paper?

Feb 21: Economic Logic and Measurement of Time Discounting

Reading:

- Andreoni, James, and Charles Sprenger. "Estimating Time Preferences from Convex Budgets." *THE AMERICAN ECONOMIC REVIEW* 102, no. 7 (2012): 3333-3356. [link]
    - Read Introduction
    - Read Experimental Design
    - Understand why this design can help us find alpha, beta and delta
    - Look at Equation (3), but otherwise skip the Parameter Estimation section
    - Read the Results section, Subsections A and B, and focus on Table 2, column 1. Skip subsection C.
    - Read Conclusion
    - Enjoy a cold beverage-you earned it.

Things to Remember:

- Why do we discount the future?
- What are the three "natural assumptions" that allow us to write Utility as a discounted sum of per-period utility, that is, apply "exponential discounting"?
- On the quiz questions shown on the lecture notes, how did they show violations of these "natural assumptions"?
- What are beta-delta preferences? How do they compare to regular exponential discounting mathematically? What do they predict differently behaviorally?
- What are some of the problems with measuring discounting and present bias in a laboratory setting?
- How did Andreoni-Sprenger mitigate many of these?
- What were the consequences of doing so? Did Present Bias (i.e. a beta<1) become smaller?

Part 4: Applications

Feb 23: Thinking about how we think about time: Do we have Self Control Problems?

Reading:

- Carvalho, Leandro, Stephan Meier, and Stephanie W. Wang. "Poverty and Economic Decision-Making." *Evidence from Changes in Financial Resources at Payday. American Economic Review* (2014). [link]
    - Read the introduction, glance at tables, read conclusion
- Bushong, Benjamin, Lindsay M. King, Colin F. Camerer, and Antonio Rangel. "Pavlovian processes in consumer choice: The physical presence of a good increases willingness-to-pay." *The American economic review* 100, no. 4 (2010): 1556-1571. [link]
    - Read the introduction, skim the text, but understand the tables and figures, read the conclusions.
- Ariely, Dan, and Klaus Wertenbroch. "Procrastination, deadlines, and performance: Self-control by precommitment." *Psychological science* 13, no. 3 (2002): 219-224. [link]
    - Read the introduction, and design. Understand the result.
- Kaur, Supreet, Michael Kremer, and Sendhil Mullainathan. "Self-control at work." *Journal of Political Economy* 123, no. 6 (2015): 1227-1277. [link]
    - Be able to describe the dominated contract as a self-control mechanism
    - How and why they split the sample into low and high demand for self-control groups.

Things to Know:

- What it means to be time-consistent vs present biased?
- How to express this in a beta-delta model.
- How does present bias (beta-delta preferences) capture ideas of temptation and procrastination?
- What does it mean to be a ``sophisticated" present biased person?
- How can being sophisticated about your present bias lead to choices that are even worse for you than being naïve about your present bias?
- Be able to write a two-sentence description of the results of all of today's papers?
- Why is showing a demand for a "dominated contract" the ultimate test of someone who is present biased but sophisticated?
- Describe the Kaur and Mullainathan budget constraints experiments

Feb 28: Altruism Over Time

- Rand, David G., Joshua D. Greene, and Martin A. Nowak. "Spontaneous giving and calculated greed." *Nature* 489, no. 7416 (2012): 427-430. [link]
- Andreoni and Serra-Garcia: Time Inconsistent Charitable Giving. Working paper. 2016 [link]

Things to know:

- If the joy of giving is partly in the act of giving, that can be broken down into the decision to give, and the actual transfer of the gift.
- The pain of giving is actually parting with the money
- If we separate the time between deciding to give and actually giving, we can use discounting, especially if there is present bias, to increase donations by toying with the timing of the arrival of pleasure and pain.
- If the joy of giving comes from being seen giving, or from the social benefits of others (e.g. the recipients) knowing your gift has arrived, then when you tell others about your decision or

commitment to give will affect how much you give.

- If you tell them now that a gift will be made later, then the joy comes now and the pain later, so the gift is higher than if it is done in the opposite order.
- Be able to show this in a simple mathematical statement about discounting and flow of utility from deciding and giving, and also by describing the experiments that demonstrate these effects.

Mar 2: Loss Aversion in Real Effort: Tiger Woods, the NBA, Concentration

- Pope, D. and Schweitzer, M. (2011). Is Tiger Woods loss averse? Persistent bias in the face of experience, competition, and high stakes. The American Economic Review, 101(1):129–157. [link]
- Matthew Goldman and Justin M. Rao, ``Loss Aversion around a Fixed Reference Point in Highly Experienced Agents." [Link] [ESPN whiteboard animation]

Things to Know

- Loss aversion is considered an "error" that people make. Why would some call it an error?
- What is a reference point, and why is it central to the idea of loss aversion
- We don't have a real consistent model of how people form reference points. Why is this problematic for testing loss aversion?
- Why might physiological data, such as squeezing of a grip-meter, be more telling evidence of loss aversion than other choice data?
- Why might highly trained professionals be the best test subjects and provide the most convincing evidence that loss aversion is not an "error," but is something that might be in the wiring of our brains?

Mar 7: Biased Beliefs: Optimism & Pessimism

- Rabin, Matthew, and Joel L. Schrag. "First impressions matter: A model of confirmatory bias." *Quarterly journal of Economics* (1999): 37-82. [link]
    - Read the introduction
- Eil, David, and Justin M. Rao. " The good news-bad news effect: asymmetric processing of objective information about yourself." *American Economic Journal: Microeconomics* 3, no. 2 (2011): 114-138. [cite]
    - Read the introduction, experimental design and know the basic result
- Andreoni, James, and Tymofiy Mylovanov. "Diverging opinions." *American Economic Journal: Microeconomics* 4, no. 1 (2012): 209-232. [link]
    - Read the introduction, design, discussion and conclusion

Things to Know:

- An information cascade happens when people let the publicly seen actions override their private information. They ignore whatever information they have and do what others are doing. The bad thing is that people may stop learning or collecting information from each other. Also, cascades can form around beliefs that are incorrect – crowds can be wise, or stupid.
- Beliefs can create self-generating cycles. I people believe, incorrectly, that A is better than B, then in time A will become better than B. Give examples of how that can happen.

- What is “statistical discrimination”?
- Why can statistical discrimination be bad, even if it is based in fact?
- Define Confirmatory Bias and provide intuition for the Rabin and Schrag model of confirmatory bias.
- Eil and Rao show that not all confirming news is good news, and not all disconfirming news is bad news. Describe the Eil and Row study that explores the possibility of disconfirming-good news or confirming-bad news. What does this teach us about why we may get a ``confirmatory bias” when asking people about their values and beliefs?

Mar 9: Discrimination, Self-Selection, Self-fulfilling Expectations, & Gender Differences

- Niederle, Muriel, and Lise Vesterlund. "Do Women Shy Away from Competition? Do Men Compete Too Much?." *The Quarterly Journal of Economics* (2007): 1067-1101. [link]
    - Read the introduction, experimental design, look at the tables and figures, read conclusion
- Eckel, Catherine C., and Ragan Petrie. "Face value." *The American Economic Review* (2011): 1497-1513. [lonkhttp://create.usc.edu/sites/default/files/publications/facevalue.pdf]
    - Read the introduction, experimental design, look at the tables and figures, read conclusion
- Babcock, Linda, Maria Racalde, Lise Vesterlund,and Laurie Weingart, “Gender Differences in Accepting and Receiving Requests for Tasks with Low Promotability.” *American Economic Review, forthcoming,* 2017. [link]
    - Read the whole thing. It’s a bit long, but straightforward, and very interesting.

Things to Know

- Be able to name some common explanations for the wage gap.
- How does the hypothesis that there may be different preferences for competition provide at least a partial explanation for the wage gap?
- Outline the 4 main parts of the Neiderle and Vesterlund experiment, and understand how each part helps identify part of the question “Do women shy away from competition?” and “do men compete too much?”
- What is the answer to the above two questions?
- Eckel and Petrie ask why people prefer face-to-face interactions. Describe their experiment.
- What do they say about each of these hypotheses:
    - People simply enjoy seeing faces
    - People think there is some strategic advantage to seeing a photo
    - Seeing photos may make it harder for partners to treat you poorly
    - Seeing faces creates more empathy or likelihood of guilt.
    - People feel they need to see a photo because they think the other will gain an advantage if they are the only one with a photo.
- Do photos increase efficiency? That is, is there more total money earned? What about after the payments for the photos?
- Should women learn to say No more to tasks that are unlikely to lead to promotions?

Mar 14: Review Results of Class Project

Mar 16: Last lecture: review in class, Review of Sample Exams

Second Midterm Exam: At the posted time and place