

Using Experiments in Businesses

Steven D. Levitt and John A. List

Winter 2009

Taking a course in experimental economics is a little like going to dinner at a cannibal's house. Sometimes you will be the diner, sometimes you will be part of the dinner, sometimes both.

If you take a laboratory course in the physical sciences, you get to mix smelly chemicals, or monkey with pulleys, or dissect a frog, but you are always the experimenter and never the subject of the experiment. In the market experiments conducted in this class, you and your classmates will be the participants in the markets as well as the scientific observers who try to understand the results.

It is hard to imagine that a chemist can put herself in the place of a hydrogen molecule. A biologist who studies animal behavior is not likely to know what it feels like to be a duck. You are more fortunate. You are studying the behavior and interactions of people in economically interesting situations. And as one of these interacting economic agents, you will be able to experience the problems faced by such an agent first hand. We suspect that you will learn nearly as much about economic principles from your experience as a participant as you will from your analysis as an observer.

--Bergstrom and Miller

Course Description: This course is about generating feedback. Without feedback, it is almost impossible to learn. That is equally true of individuals and businesses. There are many different ways to use data to generate feedback in a business context – and we will explore a range of these – but the single most powerful approach is a field experiment. Consequently, in this class we will focus primarily on designing field experiments to answer questions businesses care about. This class will provide the student with the necessary tools to become a producer of good experiments: we will strive to provide a hands-on learning experience on how to gather and analyze data using experimental methods. There is no official text book, but students are encouraged to visit the Chalk Site to download readings.

Office Hours and Contact Information:

Steve Levitt: HPC 370, slevitt@uchicago.edu, 4-7361, office hours: Wednesday 10:30-noon, or by appointment.

John List: Rosenwald 205c, jlist@uchicago.edu, 2-9811, office hours: Thursday 10:30-noon, or by appointment.

TAs:

There are four TA's for the course, each located in HPC 370:

Trevor Gallen, , office hours: Tuesday 8-9:30, or by appt.

David Herberich, , office hours: Monday 10:30 - noon, or by appt.

Yana Peysakhovich, , office hr: Thursday, 1-2:30, or by appt.

Nick Simmons, , office hours: Tuesday, 4:30-6, or by appt.

Class Participation: The course will be conducted as both a teaching and research opportunity for all involved. The major emphasis will be an introduction to the tools of the trade as well as an emphasis on new questions and new experiments that could be conducted to maximize feedback within a business. In this way, your full participation is necessary.

Course Requirements: There will be a midterm (20 percent of grade), a final exam (30 percent), and a research project (40 percent). Class participation will account for the final 10 percent of the grade. We expect you to be prepared for and to participate in class.

The Research Project: Working in teams of four, we want you to assemble a research proposal by the end of the semester. The proposal begins by generating a real question from a real business, considering all avenues to obtain feedback on that question, and designing an experiment to help shed light on that question. The proposal should describe why the question is important, and should include relevant theory, experimental instructions, and an experimental design. To facilitate feedback, each group is required to present their research proposal near the end of the quarter in a 20-minute time slot. The written proposal is due the day of the final exam—you should take account of the comments given during your seminar before you submit the final product.

Some guideline questions that we will discuss:

1. What is the question you would like to have answered after the experiment? (Your answer should be a single sentence with a question mark at the end.)
2. What do you know already about the possible answers to the question you have stated above?
3. What are the various possible ways of finding an answer to the question you have stated above? Include both experimental as well as any other methods you know about.
4. What are the advantages and disadvantages of using an experiment to find an answer?
5. What are the chances that the answer you get from the experiment will surprise you or others? What are the chances that it will change someone's mind?
6. How would you conduct the experiment? (Write down a design and instructions.)
7. Is your experimental design the simplest possible design to help answer the question you have stated?
8. What are the possible outcomes of the experiment? Do the possible outcomes include at least one outcome that will answer the question you stated above? What is the chance that you will observe this outcome?

Schedule of Classes: The following schedule represents a rough outline of the timing and topics that we intend to cover. Those readings with an asterisk are required; those readings without an asterisk are recommended. We reserve the right to draw lecture materials from all of these studies.

January 6: Correlation vs. Causality, Feedback, and Learning from Experimental and Non-Experimental Data

January 13: The Nuts and Bolts of Experiments: Terminology, Basic Research Design, and Statistical Methods, etc.

*Harrison, G. W., and J.A. List., "Field Experiments," *Journal of Economic Literature*, 2004, 42, 1009-1055.

*List, J.A., S. Sadoff, M. Wagner. (2008) "So you want to run an Experiment, Now What? An Introduction to Optimal Sample Arrangement."

Levitt, S. D. and J. List (2007). "What do laboratory experiments measuring social preferences tell us about the real world?" *Journal of Economic Perspectives* 21(2): 153-174.

January 20: Screening and Evaluating Talent

*Ausubel, L. M., 1999. Adverse selection in the credit card market. Working paper, University of Maryland.

Karlan, D., Zinman, J., 2008. Observing unobservables: Identifying information asymmetries with a consumer credit field experiment. Working paper.

Karlan, Dean. "Using Experimental Economics to Measure Social Capital and Predict Financial Decisions," *AER*, 2005, 95(5): 1688-1699.

January 27: Choosing the Right Prices

*Anderson, E. T. and Simester, D., 2003. Effects of \$9 price endings on retail sales: Evidence from field experiments. *Quantitative Marketing and Economics* 1, 93–110.

Ashraf, N., Berry, J., and Shapiro, J., 2007 Can higher prices stimulate product use? NBER Working Paper No. 13247.

Hossain, T., and Morgan, J., 2006., "...Plus shipping and handling: revenue (non)equivalence in field experiments on eBay," *Advances in Economic Analysis & Policy* 6(2), article 3.

Levitt, S., List, J., 2008. Estimating the response of consumer demand to prices and giveaways: Evidence from naturally occurring data and a large-scale field experiment. Unpublished manuscript.

*Levitt, S., 2006, "An Economist Sells Bagels: A Case Study in Profit Maximization," NBER Working Paper 12152.

February 3: MIDTERM EXAM/Experiment II

February 10: Incentives and Workplace Design

*Al-Ubaydli, Omar, Andersen, Steffen, Uri Gneezy, and John List, 2008, "For Love or Money: Testing Pecuniary and Non-pecuniary Incentive Schemes in a Workplace," Working paper.

*Hossain, Tanjim and John List, 2009, "The Behavioralist Visits the Factory: Increasing Productivity Using Simple Framing Manipulations," working paper.

Azfar, O., Zinnes, C., 2006. Which incentives work? An experimental analysis of incentives for trainers. IRIS Center, University of Maryland, College Park.

Bandiera, O., Barankay, I., Rasul, I., 2005. Social preferences and the response to incentives: Evidence from personnel data. *Quarterly Journal of Economics* 120(3), 917-962.

Carpenter, Jeffrey and Erika Seki (2006) "Competitive Work Environments and Social Preferences: Field Experimental Evidence from a Japanese Fishing Community," *B.E. Journal of Economic Analysis & Policy*, 2006, 5(2): Contributions Article 2.<http://www.bepress.com/bejeap/contributions/vol5/iss2/art2>

Fehr, E., Goette, L., 2007. Do workers work more if wages are high? Evidence from a randomized field experiment. *American Economic Review* 97(1).

Gneezy, U., List, J., 2006. Putting behavioral economics to work: testing for gift exchange using field experiments, *Econometrica* 74, 1365-1384.

Hamilton, Barton, J. Nickerson, and H. Owan, 2003, "Team Incentives and Worker Heterogeneity: An Empirical Analysis of the Impact of Teams on Productivity and Participation," *Journal of Political Economy* 111, 465-497.

Schweiger, D., DeNisi, A., 1991. Communication with employees after a merger: A longitudinal field experiment. *The Academy of Management Journal* 34,110-135.

February 17: Measuring the value of marketing, promotions, and loyalty programs

*Ackoff, Russell, and James Emshoff, "Advertising Research at Anheuser-Busch, Inc. (1963-68)", *Sloan Management Review*, Winter 1975, pp. 1-15.

*Ackoff, Russell, and James Emshoff, "Advertising Research at Anheuser -Busch, Inc. (1968-74):", *Sloan Management Review*, Spring 1975, Vol. 16, no. 3, pp. 1-16.

Eastlack, J. and A.G. Rao, 1989, "Advertising Experiments at the Campbell Soup Company," *Marketing Science*. JSTOR

Lodish, L., M. Abraham, S.Kalmenson, and J. Livelsberger, 1995, How TV Advertising Works: A Meta-Analysis of 389 Real World Split Cable TV Advertising Experiments, *Journal of Marketing Research*.
Lewis, Randall and David Reiley, "Retail advertising works! on Yahoo!" working paper.

February 24: Making the World a Better Place: Not-for-Profits and NGO's

Andreoni, J. (2004). "Philanthropy." In "Handbook of Giving, Reciprocity, and Altruism, L.A. Gerard-Varet, S.C, Kolm, and J.M. Ythier, Editors.
Goeree, Jacob, Emiel Maasland, Sander Onderstal, and John Turner. "How (Not) to Raise Money". Working Paper University of Georgia Terry School of Business (2004); just printed in the *JPE*.
*Karlán, Dean and John A. List. "Does Price Matter in Charitable Giving? Evidence from a Large-Scale Natural Field Experiment," *American Economic Review*, (2008).
Landry, C., A. Lange, J.A. List, M.K. Price, and Nicholas Rupp (2006), "Toward an Understanding of the Economics of Charity: Evidence from a Field Experiment," *Quarterly Journal of Economics*, 121(2) forthcoming.
List John A. and David Lucking-Reiley "The Effects of Seed Money and Refunds on Charitable Giving: Experimental Evidence from a University Capital Campaign," *Journal of Political Economy* (2002), 110(1), pp. 215-233.
Potters, J., M. Sefton, and L. Vesterlund. 2004. "Why Announce Leadership Contributions? An Experimental Study of the Signaling and Reciprocity Hypotheses," *Journal of Public Economics*, forthcoming.

March 3: Prediction Markets and Optimal Selling Mechanisms

Cowgill, Bo, Justin Wolfers, and Erik Zitzewitz, 2008, "Using Prediction Markets to Track Information Flows: Evidence from Google," Wharton University Working Paper.
Levitt, Steven, 2004, "Why are Gambling Markets Organized So Differently from Financial Markets," *Economic Journal* 114:223-246.
Kagel, John, "Auctions." Ch. 7 in John Kagel and Alvin Roth, Handbook of Experimental Economics, 1995.

March 10: Final Exam/Experiment III

March 17, 3-6pm, Research Project Presentations

March 21, noon, Final Projects Due