

Economics 2035, HBS 4155
Fall 2017

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Harvard University

Psychology and Economic Theory

Tomorrow's Assumptions, Today

Mondays 1:00-4:00 (except 1st class, Wednesday August 30), 230 Cumnock Hall
Concrete actual times: 1:20 to 3:45

Your Host: Matthew Rabin

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WHAT IS THIS COURSE, AND CAN/SHOULD YOU TAKE IT?

This course explores ways that psychological research indicating systematic departures from classical economic assumptions can be translated into formal models that can be incorporated into economics. Topics include ways utility theory can be improved—such as incorporating reference dependence, news utility, social preferences, self image, and other belief-based tastes—and ways we can relax assumptions of perfect rationality—such as incorporating focusing effects, limited attention, biased prediction of future tastes, present-biased preferences, biases in probabilistic judgment, and errors in social inference. The course will emphasize (a) careful interpretation and production of new evidence on relevant departures, (b) formalizing this evidence into models that can, with discipline and rigor, generate sharp predictions using traditional economic approaches, and (c) exploring economic implications of those models presented. Although we will primarily emphasize (b), the course is meant to be useful to students whose interests lie anywhere in this spectrum, under the premise that all such research will be improved by a greater appreciation of the full spectrum. The course is intended for PhD students in the Business Economics and Economics programs and others who have a solid background in microeconomic theory at the level of introductory PhD courses in these programs. (Microeconomic courses in other programs on campus, and even many non-Harvard Economics PhD courses, are generally *not* likely to be adequate substitutes.) While obviously appropriate to those wishing to specialize in “behavioral economics”, the course is also designed for those interested in doing research in particular fields of economics. And while the course centers on theoretical models (learning and evaluation will center around solving formal problem sets), the theory is focused on empirical implementability and economic relevance, so that the course is also designed for those interested in theory-influenced empirical research.

This course contains material and approaches targeted at those with an interest in doing PhD-level research in economics. **Enrollment for credit in this course is simply not suitable for those unprepared in or uninterested in PhD-level economics no matter the intensity of interest in psychology or behavioral economics. Really.**

The course focuses on formal modeling. The course will involve more words and more intuition and more classical middlebrow economic theory than the typical advanced-theory field course. It will, of course, involve more reading and discussion of the behavioral evidence and psychological foundations of our assumptions than do other theory (or non-theory) economics courses. But, in the end, its emphasis is on formal modeling. Those seeking advice on this course vis a vis taking the behavioral field should consult with me or other faculty.

The topics covered in this course are listed later in the syllabus. Generally I will assign readings covering some of the evidence suggesting that new assumptions would improve economic analysis, discuss this evidence very briefly in class, and then use this evidence to develop new formal models. When available, I will assign papers that contain the formal models. To keep the workload manageable (sort of), the number of assigned readings will be minimal, and too little to give a full sense of the relevant evidence; students are encouraged to read further.

If—after you have read the syllabus, and preferably after attending the first lecture—you have any questions about whether this course is appropriate for you, please come talk to me.

Admission for credit will be automatic for regular (non-visiting) Harvard students in any department who have passed Economics 2010a and 2010b with a grade of B+ or better. (Those who have taken 2020a and 2020b may also qualify, but should perhaps talk to me.) Harvard undergraduates with *advanced* training in microeconomic theory and who have an interest in Economics graduate studies are also encouraged to consider taking the course. MIT Economics Department PhD students may take the course for credit. All other visiting students and students enrolled at other universities (besides MIT) cannot take the course for credit, for either grades or pass-fail, or as an official auditor whose attendance or participation I must certify to somebody. Anybody is permitted to attend the lectures and I am delighted if people can benefit.

DETAILED COURSE NON-DESCRIPTION

Because it is designed as an introduction to modeling psychological phenomena that are not yet totally integrated into mainstream economic analysis, the material in this course is not entirely like what you've seen in most of your other economics courses. But it is *not* an alternative to mainstream economics. It is only about improving the psychological realism of formal economics, so as to use classical economic approaches to improve our answers to classical economic questions. Like all other courses, this course does not cover all topics that might be of interest. So, this course is ...

not about the philosophy or methodology of economics

Maybe too little time is spent on methodology in graduate school. And some methodological quandaries inhere in the topics of this course. But beyond a brief discussion at the beginning, we will not spend time exploring methodological issues. Doing so takes time away from the substance. And usually when economists debate “Methodology” in the context of challenging existing assumptions, the debate ends up focusing on an abstract official line about appropriate methodology, rather than a realistic assessment of how workaday economic research is actually done. The maintained hypothesis of the course is that it is sensible for some economists to spend some of their time doing standard economic research that happens to incorporate some untraditional-within-economics elements of human nature that seem to be both true and economically relevant.

not about non-psychological models of bounded rationality

We won’t consider models of bounded rationality (based on computer science, artificial intelligence, etc.) that are meant to capture cognitive limits of economic actors, but not based on evidence that humans think this way. In some arenas I think it makes tremendous sense to focus on these alternative models of bounded rationality, and more generally this can be a very useful research agenda. But that’s not what this course is about. We will consider those models based on research inspired by the empirical evidence of what humans are like.

not about savanna economics

Many people are interested in how the human species evolved to be the way we are, and most economists are prone to think of evolutionary arguments when being exposed to unfamiliar assumptions. Whatever the merits or demerits of an evolutionary perspective on social science, it is not what this course is about. Under the maintained hypothesis that in the (very long) “short run” we can treat the biological aspects of human nature as fixed, we won’t consider the biological dynamics of evolutionary change. We will try to figure out some facts about what humans are like, and see how that matters for the economy. Any empirical insights into how people are—from whatever source, including by researchers who find a focus on evolutionary pressures to be enlightening—is of course welcome. And presumably some researchers believe that the focus on evolutionary pressures will eventually yield high payoff in understanding humans as they currently are, at which point evolution-inspired insights into human nature about economically relevant behavior can be incorporated into a course like this. But this course will not emphasize why being the way we are was adaptive for our ancestors on the savanna.

not about experimental economics as such

Readings will include experimental papers, and as such we will when appropriate examine the nature of the experimental evidence. But the course won’t be about experimental methods per se. I am not qualified to give detailed guidance on such methods, and in any event this course is meant to use the results from experiments to motivate new economic assumptions, and to emphasize the potential for non-experimental research in these topics. We also won’t study experiments testing economic institutions in the laboratory, except insofar as they are either motivated by or informative about the underlying psychology of economic actors.

totally not an alternative to mainstream economics.

In the most important senses, the course won't at all be a departure from mainstream economics. I am a devotee of mainstream economic methods: methodological individualism; formal, careful, mathematical articulation of assumptions; logical analysis of what conclusions follow from those assumptions; and thoughtful empirical testing of both the assumptions and the conclusions. This isn't the only way to approach social science, and it is true that obsessions with methodological individualism and mathematics can sometimes damage research. It is a good thing that these methods and standards are not imposed on all social-science research. Indeed, much of the evidence for the formal models we will be developing doesn't meet economists' narrow criteria for good research—and it should humble us that so much useful insight is derived from modes of research we do not employ. But it is my belief that the best way for economists to do economics in general, and the best way for us to use this material in particular, is with careful formal theory and statistical analysis. In these regards, the course will be purposely, pointedly, persistently, proudly, and ponderously mainstream.

COURSE REQUIREMENTS

There will be three problem sets. Problems will range in difficulty from moderately easy to quite hard. These problems aren't meant to be simple, and don't panic if you struggle with them. But the problem sets will be graded for correctness, so please do seek help answering any problems you are struggling with *before* handing them in.

You are encouraged to work together on the problem sets, but you are *not* allowed to read others' answers from past or present problem sets, and should hand in solutions separately that reflect your own understanding. You should acknowledge collaborators and describe the extent of collaboration at the top of the relevant assignments. While collaboration is allowed, directly copying someone else's work is not, and will be considered a violation of the university's code of ethics.

Please email Emma your problem set as a pdf by the due date. Late problem sets will not be accepted.

There are limits to the amount of time we can spend grading the problem sets. Answers requiring too much ocular, linguistic, or (avoidable) cognitive effort won't be read. Please make an effort to write/type legibly and present your results clearly and succinctly. Problems will frequently require substantial math; you are welcome to hand in all the work you did to reach an answer, but *please* make sure to provide guidance through your steps of reasoning, or to flag work that is superfluous to the reader. Cross out anything not meant to be part of your answer. Clearly indicate your answer by labeling (if typed) or circling (if handwritten).

Planned (but possibly altered) schedule of problem sets:

Problem Set Hickory: Distributed (Tuesdays) September 12, 19, and 26, due October 2 by 1.15 pm, returned October 16.

Problem Set Dickory: Distributed October 3, 17, and 24, due October 30 by 1.15 pm, returned November 6.

Problem Set Dock: Distributed November 7, 21, and 28, due December 6 by 5.00pm.

Exam: To be determined, to fit people's schedule as best as possible, during the week of November 13. **Few reasons will be accepted for rescheduling the exam after a good-faith effort to find a suitable time, and no non-emergency reasons will be accepted a week after the time is announced.**

The course grade will be determined by 20% of your worst performance on Hickory, Dickory, and Dock and the exam, and 30% by your best performance, and 25% by the two other, all scored possibly with some mean-and-standard-deviation adjustments.

HANDOUTS, LECTURE NOTES, OFFICE HOURS, AND WHAT NOT

I intend to post both lecture notes and handouts (including problem sets, but not answer keys) on <https://canvas.harvard.edu/courses/16763>

In class and elsewhere, please address me by my first name. Don't call me Professor Rabin. (If you insist on addressing me formally, please address me as "The Legendary Patsy Cline.")

Although Emma will obviously be a major resource, please use my office hours, including to get help on the problem sets. It would be remarkable if you didn't need some assistance with the material, and I am here to help. One of the benefits of open office hours is to accommodate many students at once; if fellow 2035 students are in my office, please join in (I'll say so if for some reason I need to talk privately to a current visitor), and feel very free to show up in groups.

In addition to drop-in office hours, I always have sign-up office hours for advising and other purposes. They are online, linked from my web page. Please **do not** sign up for these slots for course-related help as a general rule. If my scheduled office hours are always infeasible for you, let me know, and then I may encourage you to make appointments with me. But I ask that you schedule your studying so that you are prepared to ask questions during office hours, and do not attempt to schedule extra sessions merely because of poor timing in preparation.

Subject to announced changes, we plan to have open office hours this term at the following times (my office hours will also be posted on my web page and on my office door):

Matthew's and Emma's Drop-In Office Hours

September 5, Tuesday, 310 Littauer, 12.45 to 1.30, Matthew
September 5, Tuesday, 310 Littauer, 3.00 to 3.45, Matthew
September 7, Thursday, 2 Basement Littauer, 4.30 to 6.00, Emma
September 11, Monday, 435 Baker, 4.15 to 5.30, Matthew
September 14, Thursday, Basement Littauer, 10.30 to noon, Emma
September 15, Friday, 310 Littauer, 2.00 to 3.00, Matthew
September 15, Friday, Basement Littauer, 4.00 to 5.30, Emma
September 19, Tuesday, Basement Littauer, 4.30 to 6.00, Emma
September 25, Monday, 435 Baker, 4.15 to 5.30, Matthew
September 28, Thursday, 440 Baker, 4.30 to 6.00, Emma
October 4, Wednesday, 435 Baker, 2.00 to 3.00, Matthew
October 5, Thursday, Basement Littauer, 10.30 to noon, Emma
October 10, Tuesday, 310 Littauer, 12.45 to 1.45, Matthew
October 13, Friday, Basement Littauer, 4 to 5.30, Emma
October 16, Monday, 435 Baker, 4.15 to 5.30, Matthew
October 20, Friday, Basement Littauer, 4 to 5.30, Emma
October 24, Tuesday, 310 Littauer, 12.45 to 1.45, Matthew
October 25, Wednesday, Basement Littauer, 5.45 to 7.30, Emma
November 2, Thursday 435 Baker, 1.45 to 3.45, Matthew
November 2, Thursday, Basement Littauer, 4.00 to 5.30, Emma
November 6, Monday, Baker Lobby 1st Floor, 11.45 to 1.15, Emma
November 6, Monday, 435 Baker, 4.15 to 5.30, Matthew
November 9, Thursday, 440 Baker, 10.30 to noon, Emma
November 14, Tuesday, 310 Littauer, 12.45 to 2.00, Matthew
November 16, Thursday, 440 Baker, 5.00 to 6.30 Emma
November 20, Monday, 435 Baker, 4.15 to 5.30, Matthew
November 29, Wednesday, 310 Littauer, 1.45 to 3.15, Matthew
November 30, Thursday, 440 Baker, 12.30 to 2.00, Emma
December 4, Monday, 440 Baker, 2.00 to 4.00, Emma

Please pay attention to specific dates and times of our office hours. The rather irregular-seeming schedule is designed with an effort to minimize likely conflicts for students, to be compatible with my other obligations, and to be a good match with the schedule of the course. For your part, please pay advanced attention to this schedule, and plan work so that you can get any desired help from us on problem sets.

The course is also meant to generate research ideas. If you wish to talk about research, drop-in office hours are often fine for this, but please also feel free to sign up to do so. More generally, if for some reason you need to talk to me about something for which open office hours aren't appropriate, you should feel free to sign up. Also, for those in the Business Economics and Economics Ph.D. programs, I and other faculty are always available to discuss *any* issues regarding the program.

Some gentle requests regarding office hours and on contacting me. First, my office hours end sharply at the end. So don't arrive 10 minutes before the scheduled end and expect a full session. Please arrive early if you have lengthy questions, or if you don't want to risk not having time due to others' questions. You are free to ask Emma and me *some* stuff by e-mail, (e.g. a typo or something on a problem set or handout), but please know e-mail sucks for answering many types of questions. "How do I do Question 4?" or "What's up with bounded rationality?" are short questions with long answers.

Please do come to my office hours. I also like students to come by at least once early in the semester to introduce themselves—no need to have a particular agenda. I try to always have candy (and occasionally healthier snacks). I have toys as well, but you must earn my trust before I let you play with them.

RESEARCH

You should now be beginning the shift away from learning the results of other peoples' research into conducting your own research. A major reason for teaching this material is to positively influence your research. Yet: This course won't focus on research. So: I encourage you to think about research on your own, with each other, and with faculty, including me. It is easy to shortchange this goal under the pressure of taking courses and other duties you have, so it requires some focus on your part to attend to it. I encourage you to talk to me about ideas for research applying the material from this (or any) course. While I welcome discussions on any of your ideas, including experimental research and modeling-new-psychology theory, I most strongly encourage ideas for "field-empirical" research and implications-of-these-assumptions theory. I am especially keen on ideas that do not merely test the validity of some of the principles and models discussed in the course, but are of direct general interest to economics. I enjoy talking to students about their ideas for empirical research.

If you are in the second year of the Economics PhD program, you should be attending at least one or two seminars regularly. This is central for you to start your transformation into a research-focused life. I encourage you to attend the "Behavioral" seminar, Wednesdays 1.00 – 2.30 in Littauer M16 and the theory/behavioral lunch, Wednesdays 11.30 – 1.00 in Littauer M15. But you should also attend at least one other seminar in some specific area of economics.

Tentative Schedule of Lectures

We meet on Wednesday August 30 and Mondays between September 11 and November 27; with no lectures on October 9 (Columbus Day). The following schedule is tentative.

Lecture 1: August 30

- Perspectives and conceptual framework
- Introduction to belief-based preferences and consistent plans
- Anticipatory utility and ego utility

Lecture 2: September 11

- Introduction to Reference dependence and Prospect Theory

Lecture 3: September 18

- Reference-dependence: expectations as the reference point
- Reference-dependent risk attitudes
- Reference dependence and news utility

Lecture 4: September 25

- News Utility
- Introduction to social preferences

Lecture 5: October 2

- Social Preferences: distributional preferences
- Social Preferences: Reciprocal preferences, self-image, social image

Non-Lecture 1: October 9

NO LECTURE – COLUMBUS DAY

Lecture 6: October 16

- Introduction to limited rationality
- Focusing and bracketing effects
- Context effects and choice-set-dependent distortions

Lecture 7: October 23

Introduction to mispredicting preferences
Projection bias: evidence and model
Projection bias: applications

Lecture 8: October 30

Misprediction of future utility vs. present bias
Introduction to biases in judgment and quasi-Bayesian models

Lecture 9: November 6

Sampling biases

Lecture 10: November 13

More Cognitive Biases
Problems and challenges in non-Bayesian models

Non-Lecture 2: In-Class Exam**Lecture 11: November 20**

Introduction to Social Inference and Non-Inference

Lecture 12: November 27

Models of social learning
Ideas and Approaches to Research

Readings

The required text is Kahneman, Daniel and Tversky, Amos (editors), *Choices, Values, and Frames*, Cambridge University Press, New York, NY, US, 2000. (Referred to as CVF below.) It should be stocked at the Harvard Coop (and may be popular enough to be available elsewhere). The book is a collection of “recent classics” in psychological economics, and a few specially commissioned new writings. *Many* of the required readings in the course are from this book, serving by far as the main source for the psychological foundations (as opposed to formal modeling) topics in the course—both because I have made some effort to choose those chapters for your ease, and (more) because it happens to contain many of the awesomest writings in psychology & economics. I urge you to buy it and read it even if you are just auditing.

Lists of required and optional readings will be announced as we go along. Even auditors should do as many of the required readings from CVF as possible. (And I highly recommend virtually every chapter in the book, including chapters that I am not assigning.)

The required readings for the first two lectures are:

1. Rabin, M. Syllabus.
2. Thaler, Richard, “Towards A Positive Theory of Consumer Choice,” CVF Chapter 15.
3. Rabin, Matthew. (1998): “Psychology and Economics.” *Journal of Economic Literature* 36 (1): 11-46.
4. Rabin, Matthew. (2013): “An Approach to Incorporating Psychology into Economics.” *American Economic Review Papers and Proceedings*, 103(3): 617-622.
5. Rabin, Matthew. (2013): “Incorporating Limited Rationality into Economics,” *Journal of Economic Literature*, 51(2): 528-543
6. DellaVigna, Stefano. (2009): “Psychology and Economics: Evidence from the Field.” *Journal of Economic Literature*, 47 (2): 315-372.
7. Chetty, Raj (2015), “Behavioral Economics and Public Policy: A Pragmatic Perspective,” Richard T. Ely Lecture, *American Economic Review: Papers & Proceedings 2015*, 105(5): 1–33.
8. Koszegi, B. (2006): “Emotional Agency,” *Quarterly Journal of Economics*, 121(1): 121-155.
9. Tversky, A. and Kahneman, D. “Prospect Theory: An Analysis of Decision under Risk,” CVF Chapter 2.
10. Rabin, M. “Diminishing Marginal Utility of Wealth Cannot Explain Risk Aversion,” CVF Chapter 11.
11. Koszegi, B. and M. Rabin. (2006): “A Model of Reference-Dependent Preferences,” *Quarterly Journal of Economics*, 121(4), 1133-1166.