Behavioral Economics G6493-001
Fall 2022
Columbia University
Instructor: Mark Dean

Background

The standard model of economic behavior describes a perfectly rational, self-interested utility maximizer with unlimited cognitive resources. In many cases, this provides a good approximation of the types of behavior that economists are interested in. However, over the past 40 years, experimental and behavioral economists have documented ways in which the standard model is not just wrong, but is wrong in ways that are important for economic outcomes. Understanding these behaviors, and their implications, is one of the most exciting areas of current economic inquiry.

Course Overview

The aim of this course is to introduce you to three key areas of Behavioral Economics:

- Bounded Rationality, which studies the way in in which cognitive constraints and limitations can affect economic choice
- Temptation, which studies the behavior of economic agents who suffer from self-control problems due, for example, to addiction or impatience. This will lead us naturally to the study of time preferences.
- Context dependence, which studies the way in which decision makers assess the outcome of a choice by its contrast with a reference point or other context provided by the choice problem rather than intrinsic taste for the outcome itself.

This is not an exhaustive list of behavioral economic topics – for example due to time limits we will not cover models of fairness, reciprocity etc – collectively described as models of social preferences. Nor will we, in any great depth, be able to cover behavioral models of risk or uncertainty.

This course forms part of the Behavioral Economics field. This year in order to complete the field you need to take this course plus either Experimental Economics which will be taught at NYU in the Fall of 2022, or Development Economics 1, which will be taught by Jack Willis at Columbia in the Spring of 2023

For each of the topic areas covered by the course, we will begin by discussing the evidence that the standard economic model is missing something important. We will then study the various models that have been used to fit this evidence, and how they can be tested. Finally, we will look at the application of behavioral models to economic situations in order to understand their implications beyond the narrow world of behavioral economics (typically you will read the papers for this last section on your own to present to the class – see below).

The course will draw on materiel from many areas related to behavioral economics. Experimental economics will provide us with much of the evidence that we discuss. Decision theory will allow us to understand the observable implications of behavioral models, and so how to test them. Psychology will provide a lot of insight and enormous amounts of data regarding human behavior. Neuroscience will provide an understanding of some of the biological processes which underlie economic choice. Applied micro will allow us to understand how these effects play out outside of the lab.

The course has four main aims.

1. Teach you the technical skills necessary to understand and begin research in behavioral economics
2. Provide an overview of the experimental evidence related to bounded rationality, temptation, and context dependence, and give you the tools necessary to conduct experimental research into the validity of behavioral economic models
3. Describe the models that have been developed in these areas, and show how they can be applied to address broader economic problems
4. Give a guide to some of the open questions in the literature, where research may fruitfully undertaken

As much as possible I will aim the course to serve two groups – first and most obviously those who want behavioral economics to be their primary area of research. Second, those whose primary interest are in another area (development, public, IO etc), but would like to have behavioral economics as part of their toolkit.

Assessment

Assessment for the course will be based on two elements

1. **Presentations:** Most weeks, every member of the class will be required to prepare a 15 minute presentation on an assigned paper. One person will be selected at random to give the presentation in class. These presentations can be prepared in groups, but each person has to be able to give the presentation.

2. **Problem Sets:** There will be three problem sets during the class, one in the for each of the topics

Each of the problem sets and the classroom presentations will carry roughly equal weight.

Prerequisites

The course is primarily designed for graduate students who have taken the 1ˢᵗ year PhD microeconomics sequence. It is also possible for others to take the course if they are keen, and have a decent technical background. However, such students take the course do so at their own risk.

Course Materials

By and large, the course will be based on academic papers (which are available online) and lecture notes (which I will make available). Those looking for an overview of a particular topic (either covered in this course or otherwise) may be pleased to know that there is a newly released Handbook of Behavioral Economics (2019, Bernheim, DellaVigna, Laibson eds), with a number of interesting chapters written by experts in the relevant area. You can see the contents online here, though most chapters are available for free on the author's website. There is also an *enoromous* behavioral economics tome out there – "Foundations of Behavioral Economic Analysis" by Sanjit Dhami, which is now being republished in 7 volumes (!). It is definitely thorough, but I don't know too much more about it.

 If you are particularly interested in certain aspects of the course, then there are books you might like. The first is "Notes on the Theory of Choice" by David Kreps, which is a deceptively simple book that provides a fantastic introduction to classical decision theory. The second is "Elements of Information Theory" by Thomas Cover and Joy Thomas, which will be useful for those of you interested in the literature on rational Inattention. A third is "Neuroeconomics, Decision Making and the Brain" by Paul Glimcher and Ernst Fehr (eds) (2nd edition, 2013) which, as its name suggests, will be interesting to those of you who are more interested in the neuroeconomics side of things.

Administrative Details

The class will meet on Fridays between 2.10 and 4.00 in room 1101. Classes may sometimes run a little late

As with most classes, this one works better with lots of student interaction, so I would encourage you to ask questions, make observations etc.

Based on previous experience it the course gets too crowded if the student presentations take place during class time. I will therefore try and find an additional 30 min slot for us all to meet

Office hours will be Tuesdays 11.30am- 1.00pm, though I will be available outside these times if you contact me in advance.

My contact details are as follow:
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Lecture notes will be available on Courseworks shortly after the lectures

Timetable

Below is a rough guide to what we will cover when, and some key readings. Both the timing and the content will likely change somewhat over the course of the semester.

9th September: Lecture 1: Introduction.

Aims

- Say hello to each other!
- Crash course in representation theorems and utility maximization
- Introduce some well-known violations of utility maximization
- Introduction to bounded rationality

Key readings

- ‘"Notes on the Theory of Choice", David Kreps, Chapter 1-3
- Varian, Hal R. "Revealed preference." Samuelsonian economics and the twenty-first century (2006): 99-115.
- For those particularly interested in stochastic choice, Tomasz Strzaleki has an excellent textbook which can be perused for free on his website [here](#).

16th September: Lecture 2: Bounded Rationality 1: Introduction to Bounded Rationality and Cognitive Noise.

Aims

- Introduction to bounded rationality, and what it can and cannot do
- Introduce our first topic: cognitive noise

Key readings

- Conlisk, John. "Why bounded rationality?." Journal of economic literature 34.2 (1996): 669-700.
- Gabaix, X, "Behavioral Inattention" (2019), a chapter prepared for the Handbook of Behavioral Economics (edited by Douglas Bernheim, Stefano DellaVigna and David Laibson).
- Woodford, Michael. "Modeling imprecision in perception, valuation, and choice." Annual Review of Economics 12 (2020): 579-601.
- Enke, Benjamin, and Thomas Graeber. *Cognitive uncertainty*. No. w26518. National Bureau of Economic Research, 2019.

23rd September Lecture 3: Bounded Rationality 2: Inattention, Consideration Sets and Satisficing

Aims

- Study two models of limited attention: consideration sets and satisficing
- Describe the issues associated with testing these models, and the various solutions that have been proposed
- Describe the evidence and applications for these models

Key readings

- Manzini, Paola, and Marco Mariotti. "Stochastic choice and consideration sets." Econometrica 82.3 (2014): 1153-1176.
- Masatlioglu, Yusufcan, Daisuke Nakajima, and Erkut. Ozbay. "Revealed attention." The American Economic Review (2012): 2183-2205.
- Caplin, Andrew, Mark Dean, and Daniel Martin. "Search and satisficing." The American Economic Review (2011): 2899-2922
- Abaluck, Jason, and Abi Adams-Prassl. "What do consumers consider before they choose? Identification from asymmetric demand responses." The Quarterly Journal of Economics 136.3 (2021): 1611-1663.Paper for presentation:
- Honka, Elisabeth, Ali Hortaçsu, and Matthijs Wildenbeest. "Empirical search and consideration sets." Handbook of the Economics of Marketing. Vol. 1. North-Holland, 2019. 193-257.

30ᵗʰSeptember: Lecture 4: Bounded Rationality 3: Rational Inattention 1
Aims
- Introduce the model of rational inattention as an important workhorse model for characterizing behavior when attention is limited
- Describe how to test a model of rational inattention when information costs are unknown

Key readings
- Caplin, Andrew, and Mark Dean. "Revealed preference, rational inattention, and costly information acquisition." The American Economic Review 105.7 (2015): 2183-2203.
- Oliveira, Henrique, et al. "Rationally inattentive preferences and hidden information costs." Theoretical Economics 12.2 (2017): 621-654.
- Chambers, Christopher P., Ce Liu, and John Rehbeck. "Costly information acquisition." Journal of Economic Theory 186 (2020): 104979.

7ᵗʰ October: Lecture 5: Bounded Rationality 4: Rational Inattention 2
Aims
- Introduce the concept of Shannon mutual information as a cost of information, which is extremely popular in the applied literature
- Also the related concept of posterior separable cost fuctions
- Discuss how to solve the rational inattention model with Shannon costs

Key readings
- Mackowiak, Bartosz, Filip Matejka, and Mirko Wiederholt. "Rational Inattention: A Review." Journal of Economic Literature.
- Matejka, Filip, and Alisdair McKay. "Rational inattention to discrete choices: A new foundation for the multinomial logit model." American Economic Review 105.1 (2015): 272-98.
- Caplin, Andrew, Dean Mark and Leahy, John "Rationally Inattentive Behavior: Characterizing and Generalizing Shannon Entropy", Journal of Political Economy 130 (2022)
- Caplin, Andrew, Mark Dean, and John Leahy. "Rational inattention, optimal consideration sets, and stochastic choice." The Review of Economic Studies 86.3 (2018): 1061-1094.

- o Kőszegi, Botond, and Filip Matějka. "Choice simplification: A theory of mental budgeting and naive diversification." The Quarterly Journal of Economics 135.2 (2020): 1153-1207.

14th October: Lecture 6: Bounded Rationality 5: Tests and Applications

Aims

- Describe experimental tests of rational inattention and the Shannon model
- Describe applications of models of attention

Key readings

- o Martin, Daniel. "Strategic pricing with rational inattention to quality." Games and Economic Behavior 104 (2017): 131-145.
- o Dean, Mark, and Nathaniel Neligh. Experimental tests of rational inattention. Working Paper, Columbia University, 2022.
- o Bartoš, Vojtěch, et al. "Attention Discrimination: Theory and Field Experiments with Monitoring Information Acquisition." American Economic Review 106.6 (2016): 1437-1475.
- o Steiner, Jakub, Colin Stewart, and Filip Matějka. "Rational Inattention Dynamics: Inertia and Delay in Decision-Making." Econometrica 85.2 (2017): 521-553.
- o Matějka, Filip, and Guido Tabellini. "Electoral competition with rationally inattentive voters." Journal of the European Economic Association 19.3 (2021): 1899-1935.

21st October: Lecture 7: Temptation and Self Control 1: Introduction to Temptation and Self Control

Aims

- Describe why problems of temptation and self control are important for economics
- Describe two key modeling approaches – preference for commitment and time inconsistency

Key readings

- o Moffitt, Terrie E., et al. "A gradient of childhood self-control predicts health, wealth, and public safety." Proceedings of the National Academy of Sciences 108.7 (2011): 2693-2698.
- o Falk, Armin, Fabian Kosse, and Pia Pinger. "Re-revisiting the marshmallow test: A direct comparison of studies by Shoda, Mischel, and Peake (1990) and Watts, Duncan, and Quan (2018)." Psychological Science (2019).
- o Mani, Anandi, et al. "Poverty impedes cognitive function." science 341.6149 (2013): 976-980.

28th October: Lecture 8: Temptation and Self Control 2: Models of Commitment

Aims

- Describe the Gul-Pesendorfer model of temptation and self control as a model of commitment
- Describe alternatives and extensions
- Discuss relationship between commitment and flexibility

Key readings

- Lipman, Barton L., and Wolfgang Pesendorfer. "Temptation." Advances in economics and econometrics: Tenth World Congress. Vol. 1. Cambridge: Cambridge University Press, 2013.
- Amador, Manuel, Iván Werning, and George-Marios Angeletos. "Commitment vs. flexibility." Econometrica 74.2 (2006): 365-396.

- Ahn, David S., et al. "Behavioural characterizations of naivete for time-inconsistent preferences." The Review of Economic Studies 86.6 (2019): 2319-2355.

4th November : Lecture 9: Temptation and Self Control 3: Models of Time Inconsistency

Aims

- Describe models of quasi-hyperbolic discounting
- Discuss the relationship with non exponential discounting and preferences for commitment
- Describe other possible models of discounting

Key readings

o Laibson, David. "Golden eggs and hyperbolic discounting." The Quarterly Journal of Economics (1997): 443-477.

o Olea, José Luis Montiel, and Tomasz Strzalecki. "Axiomatization and measurement of quasi-hyperbolic discounting." The Quarterly Journal of Economics 129.3 (2014): 1449-1499.

o Harris, Christopher, and David Laibson. "Dynamic choices of hyperbolic consumers." Econometrica 69.4 (2001): 935-957.

o Blow, Laura, Martin Browning, and Ian Crawford. "Non-parametric Analysis of Time-Inconsistent Preferences." The Review of Economic Studies 88.6 (2021): 2687-2734.

o Chakraborty, Anujit, Yoram Halevy, and Kota Saito. "The relation between behavior under risk and over time." American Economic Review: Insights 2.1 (2020): 1-16.

o Enke, Benjamin, and Thomas Graeber. Cognitive uncertainty in intertemporal choice. No. w29577. National Bureau of Economic Research, 2021.

11rd November: Lecture 10: Temptation and Self Control 4: Evidence and Applications

Aims

- Describe the evidence for present bias, preference for commitment and the link between the two
- Provide applications of the two model

Key readings

o Augenblick, Ned, Muriel Niederle, and Charles Sprenger. "Working Over Time: Dynamic Inconsistency in Real Effort Tasks*." The Quarterly Journal of Economics (2015): qjv020.

o Kaur, Supreet, Michael Kremer, and Sendhil Mullainathan. "Self-control at work." Journal of Political Economy 123.6 (2015): 1227-1277

o Toussaert, Séverine. "Eliciting Temptation and Self-Control Through Menu Choices: A Lab Experiment." *Econometrica*86.3 (2018): 859-889.

o Carrera, Mariana, et al. "Who chooses commitment? Evidence and welfare implications." The Review of Economic Studies 89.3 (2022): 1205-1244.

o Ericson, Keith Marzilli, and David Laibson. "Intertemporal choice." Handbook of Behavioral Economics: Applications and Foundations 1. Vol. 2. North-Holland, 2019. 1-67.

o Bernheim, B. Douglas, Debraj Ray, and Şevin Yeltekin. "Poverty and self-control." *Econometrica* 83.5 (2015): 1877-1911..

o Bénabou, Roland, and Jean Tirole. "Willpower and personal rules." Journal of Political Economy 112.4 (2004): 848-886.

18ᵗʰ *November: Lecture 11: Context Dependence 1: Evidence for Reference Dependence*
Aims
- Describe what it means for choice to be 'reference dependent', and why it violates the standard model
- Introduce evidence for the fact that behavior depends on a reference point

Key readings
o Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler. "Anomalies: The endowment effect, loss aversion, and status quo bias." The journal of economic perspectives (1991): 193-206.
o Isoni, Andrea, Graham Loomes, and Robert Sugden. "The Willingness to Pay—Willingness to Accept Gap, the" Endowment Effect," Subject Misconceptions, and Experimental Procedures for Eliciting Valuations: Comment." *American Economic Review* 101.2 (2011): 991-1011.
o Madrian, Brigitte C., and Dennis F. Shea. The power of suggestion: Inertia in 401 (k) participation and savings behavior. No. w7682. National bureau of economic research, 2000.
o Chapman, Jonathan, et al. Willingness-To-Pay and Willingness-To-Accept are Probably Less Correlated than You Think. No. 6492. CESifo Group Munich, 2017.
o Marzilli Ericson, Keith M., and Andreas Fuster. "The endowment effect." Annu. Rev. Econ. 6.1 (2014): 555-579.
o O'Donoghue, Ted, and Charles Sprenger. "Reference-dependent preferences." Handbook of Behavioral Economics: Applications and Foundations 1. Vol. 1. North-Holland, 2018. 1-77.
o Chapman, Jonathan, et al. Loss attitudes in the US population: Evidence from dynamically optimized sequential experimentation (DOSE). No. w25072. National Bureau of Economic Research, 2018.

2ᴺᵈ *December: Lecture 12: Context Dependence 2: Models of Reference Dependence*
Aims
- Describe two of the most influential models of reference dependent behavior
    o Prospect Theory
    o The Koszegi Rabin Model
- As well as some models of status quo bias

Key readings
o Kőszegi, Botond, and Matthew Rabin. "Reference-dependent risk attitudes." *American Economic Review* 97.4 (2007): 1047-1073.
o Kőszegi, Botond, and Matthew Rabin. "A model of reference-dependent preferences." The Quarterly Journal of Economics (2006): 1133-1165.
o Tversky, Amos, and Daniel Kahneman. "Loss aversion in riskless choice: A reference-dependent model." The quarterly journal of economics 106.4 (1991): 1039-1061.
o Schmidt, Ulrich, Chris Starmer, and Robert Sugden. "Third-generation prospect theory." Journal of Risk and Uncertainty 36.3 (2008): 203-223.

    o   Masatlioglu, Yusufcan, and Efe A. Ok. "Rational choice with status quo bias." Journal of economic theory 121.1 (2005): 1-29.

9th December: Lecture 13: Context Dependence 3: Evidence and Applications

Aims

- Look at some applications of reference
- And some experimental evidence
- Also study the question of where reference points come from

Key readings

- Kőszegi, Botond, and Matthew Rabin. "A model of reference-dependent preferences." The Quarterly Journal of Economics (2006): 1133-1165.
- Ok, Efe A., Pietro Ortoleva, and Gil Riella. "Revealed (p) reference theory." *American Economic Review* 105.1 (2015): 299-321.
- Carroll, Gabriel D., et al. "Optimal defaults and active decisions." The quarterly journal of economics 124.4 (2009): 1639-1674.
- Barberis, Nicholas, Lawrence J. Jin, and Baolian Wang. "Prospect theory and stock market anomalies." The Journal of Finance 76.5 (2021): 2639-2687.
- Andries, Marianne, and Valentin Haddad. "Information aversion." Journal of Political Economy 128.5 (2020): 1901-1939.
- Crawford, Vincent P., and Juanjuan Meng. "New York City cab drivers' labor supply revisited: Reference-dependent preferences with rational-expectations targets for hours and income." American Economic Review 101.5 (2011): 1912-32.
- Abeler, Johannes, et al. "Reference points and effort provision." American Economic Review 101.2 (2011): 470-92..
- Marzilli Ericson, Keith M., and Andreas Fuster. "Expectations as endowments: Evidence on reference-dependent preferences from exchange and valuation experiments." The Quarterly Journal of Economics 126.4 (2011): 1879-1907.
- Rees-Jones, Alex. "Quantifying loss-averse tax manipulation." *The Review of Economic Studies* 85.2 (2018): 1251-1278.

16th December: Lecture 14: Context Dependence 10: Models of Choice Set Dependent Choice

Aims

- Introduce four key models of the way in which the set of available options can affect the choices that people make
  - Salience
  - Range Normalization
  - Focusing
  - Divisive normalization

Key readings

    o   Bordalo, Pedro, Nicola Gennaioli, and Andrei Shleifer. "Salience Theory of Choice Under Risk." The Quarterly journal of economics 127.3 (2012): 1243-1285.

- ○ Kőszegi, Botond, and Adam Szeidl. "A model of focusing in economic choice." The Quarterly Journal of Economics 128.1 (2013): 53-104.
- ○ Louie, Kenway, Mel W. Khaw, and Paul W. Glimcher. "Normalization is a general neural mechanism for context-dependent decision making." Proceedings of the National Academy of Sciences 110.15 (2013): 6139-6144.
- ○ Bordalo, Pedro, Nicola Gennaioli, and Andrei Shleifer. "Salience and Consumer Choice." Journal of Political Economy 121.5 (2013): 803-843.
- ○ Somerville, Jason. "Range-Dependent Attribute Weighting in Consumer Choice: An Experimental Test." Available at SSRN 3590240 (2021).