

Topics in decision theory

Mini course 1011-4673

Spring, 2024

Instructor: David Dillenberger, ddill@sas.upenn.edu

Office hours: By appointment

Requirements: Take home final exam (to be returned within 24 hours)

Prerequisites: Microeconomic theory 1011-4111

Course description: Most economic theories start from a model of individual decision making and then use it as a building block to model interaction between agents, groups of agents and firms, the economy as a whole, etc. In this course, we study a suite of standard models, discuss critiques of these models, and introduce alternative models (sometimes known as ‘‘exotic preferences’’) that deal with these critiques. For example, we will discuss topics such as present bias, temptation and self-control, non-expected utility, and ambiguity.

Lectures: see schedule here [Prof. Dillenberger David, Topics in decision theory | The Eitan Berglas School of Economics | Tel Aviv University \(tau.ac.il\)](#)

COURSE OUTLINE

1. **Standard Models** - Textbook: Notes on the Theory of Choice by David Kreps¹

1.1 Expected Utility Theory

Readings: Kreps, Chapters 5 and 6

1.2 Subjective and Objective Uncertainty: The Anscombe-Aumann Model

Readings: Kreps, Chapter 7

2. Addressing Allais and Ellsberg

¹ ‘‘Notes on the Theory of Choice’’ by David M. Kreps. Published by Westview Press, 1988, ISBN 0813375533, 9780813375533

2.1 Ambiguity aversion

- Schmeidler, D., (1989) “Subjective Probability and Expected Utility without Additivity,” *Econometrica*, 571-587
- Gilboa, I., and D. Schmeidler (1989) “Maxmin Expected Utility with a Non-Unique Prior,” *Journal of Mathematical Economics*, 18, 141–153.
- Klibanoff, P., M. Marinacci, and S. Mukerji (2005) “A smooth model of decision making under ambiguity,” *Econometrica*, 73, 1849–1892.
- Seo, K., (2009) “Ambiguity and Second-Order Belief”, *Econometrica*, pp. 1575–1605.
- Machina, M. and D. Schmeidler, (1992), “A more robust definition of subjective of Subjective Probability,” *Econometrica*, volume 60, issue 4.

2.2 Non-expected utility under risk

- Dekel, E., (1986) “An axiomatic Characterization of Preferences under Uncertainty: Weakening the Independence Axiom,” *Journal of Economic Theory*, 304-318.
- Gul, F., (1991) “A Theory of Disappointment Aversion,” *Econometrica*, 59, No 3, 667-686.
- Machina, M. (1982) “‘Expected Utility’ Analysis without the Independence Axiom,” *Econometrica*, 277–323
- Segal, U., and A. Spivak, (1997) “First Order of Risk Aversion and Non-Differentiability”, *Journal of Economic Theory*, Vol. 9, pp. 179–183.
- Cerreia-Vioglio, S., D. Dillenberger, and P. Ortoleva (2015): “Cautious Expected Utility and the Certainty Effect,” *Econometrica*, 83, 693–728.

2.3 Further Readings

- (Survey) Machina, M. J., and M. Siniscalchi (2013): “Ambiguity and ambiguity aversion,” in *Handbook of the Economics of Risk and Uncertainty*.

- (Survey) Starmer, C. (2000). "Developments in non-expected utility theory: The hunt for a descriptive theory of choice under risk." *Journal of Economic Literature*. 38, 332-382.

3 Dynamic Choice/ Choice over Opportunity Sets

3.1 Standard Model of Dynamic Choice

Kreps, Chapter 13

3.2 Preference for Flexibility

- Kreps, D., (1979) "A representation Theorem for Preference for Flexibility," *Econometrica* 47, No 3, 565-578.
- Dillenberger, D., Lleras, J. S., Sadowski, P., and Takeoka, N. (2014). "A theory of subjective learning." *Journal of Economic Theory*, 153, 287-312.

3.3 Preference for Commitment

- Gul, F., and W. Pesendorfer (2001) "Temptation and Self-Control," *Econometrica* 69, No 6, 1403-1435.
- Gul, F., and W. Pesendorfer (2005) "The Revealed Preference Theory of Changing Tastes," *Review of Economic Studies*.

3.4 Further readings on Preference for Commitment

- Sarver, T., (2008), "Anticipating Regret: Why Fewer Options May Be Better," *Econometrica*, 76: 263–305
- Lipman, B., and W. Pesendorfer (2013) "Temptation," in Acemoglu, Arellano, and Dekel, eds., *Advances in Economics and Econometrics: Tenth World Congress, Volume 1*, Cambridge University Press.

3.5 Further Readings on Preference for Flexibility

- Dekel, E., B. Lipman and A. Rustichini (2001) "Representing Preferences with a unique Subjective State Space," *Econometrica* 69, No 4, 891-934.
- Krishna, V. R., and P. Sadowski (2014) "Dynamic Preference for Flexibility," *Econometrica*, Volume 82, Issue 2, 655–703

- Ergin, H., and T. Sarver (2010) “A Unique Costly Contemplation Representation,” *Econometrica*, Vol.78, No.4

4 Time preferences with risk

- Epstein L., and S., Zin (1989) “Substitution, Risk Aversion, and the Temporal Behavior of Consumption and Asset Returns: A Theoretical Framework,” *Econometrica*, 57, 937-69.
- Segal, U., (1990) “Two stage lotteries without the reduction axiom”, *Econometrica*, 58, 349-377.
- Dillenberger, D., (2010) “Preferences for one-shot resolution of uncertainty and Allais-type behavior,” *Econometrica*, 78, 1973-2004.
- Kreps D., and E. Porteus, (1978) “Temporal resolution of uncertainty and dynamic choice theory,” *Econometrica*, 46: 185-200.
- DeJarnette, P., D. Dillenberger, D. Gottlieb, and P. Ortoleva (2020) “Time Lotteries and Stochastic Impatience,” *Econometrica*, Vol. 88, No. 2, 619–656.

4.1 Further readings

1. Sarver, T. (2018) “Dynamic Mixture-Averse Preferences,” *Econometrica*, Vol. 86, No. 4 (July, 2018), 1347–1382
2. Kochov, A. (2015) “Time and No Lotteries: An Axiomatization of Maxmin Expected Utility,” *Econometrica*, 83 (1), 239–262.

5 Stochastic choice

- Gul, F., and W. Pesendorfer (2006) “Random Expected Utility,” *Econometrica*, 74, 121-146
- Lu. J. (2016) “Random choice and private information,” *Econometrica* , Vol. 84, No. 6 (November, 2016), 1983–2027
- Fudenberg, D. and Strzalecki, T. (2015) “Dynamic logit with choice aversion,” *Econometrica*, Volume 83, Issue 2., 651-691

- Cerreia-Vioglio, S., D. Dillenberger, P. Ortoleva, and G. Riella (2019) ``Deliberately Stochastic,`` *American Economic Review*, Volume 109, Issue 7, 2425-2445.

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