

Decision Theory, applications, and various microeconomic theory topics

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Decision theory works with preferences (or, more generally, decision-making procedures) with the goal of developing models that describe better how real people or collective decision makers act, as well as accommodating various psychological phenomena, and understanding better their differences, relationships, and relevance for economics. Allais and Ellsberg paradoxes have been the subject of an intense study in decision theory for many years; recent literature tackles, for instance, such concepts as the framing effect and confirmatory bias. Despite many advances in purely theoretic literature, applications of the theory are not as widespread and developed as one would wish. Hence, it may be very fruitful to think about areas in which modern decision-theoretic model become very relevant for economic outcomes or policies.

Below I list a few broad topics in which I am particularly interested and that provide opportunities for writing an exciting thesis.

Dynamic Consistency

Roughly speaking, dynamic consistency means that, as time goes on, the decision maker finds it optimal to follow contingent plans that were formed at earlier stages. (The issue of dynamic consistency also arises in other contexts besides Decision Theory — for instance, in the well-known commitment problems of the central bank or the government in the context of optimal monetary or fiscal policy.) As it turns out, there might be tensions between the dynamic consistency requirement and other desirable features of

models, such as their ability to capture ambiguity. With this regard, there is room for studying how easy it is to achieve dynamic consistency under various known models in decision theory.

Literature:

- Gilboa, Schmeidler “Updating Ambiguous Beliefs,” JET (1993)
- Eichberger, Kelsey “Uncertainty Aversion and Dynamic Consistency,” Intl. Econ. Rev. (1996)
- Epstein, Schneider “Recursive Multiple-Priors,” JET (2003)
- Economics and Philosophy, Issue 24 (2009)
- Hanany, Klibanoff “Updating preferences with multiple priors,” TE (2007)
- Gumen, Savochkin “Dynamically Stable Preferences,” JET (2013)

Indecisiveness

There are situations in which economic agents can exhibit indecisiveness — i.e., inability to reach a decision in some problem. In some contexts indecisiveness may have only minor effect the behavior (and our models): For instance, in the basic micro theory, indecisiveness may just increase the reservation price for sellers and decrease the willingness to pay for buyers. One context in which indecisiveness may be a serious issue is mechanism design: When, we design a mechanism, we want to be sure that agents will indeed do what they are supposed to do under the mechanism, not pass on it. Recently, there has emerged some interest in quantified or graded indecisiveness (indecisiveness to a greater or lesser degree). One can think about applications of graded indecisiveness to mechanism design or other economic problems.

Literature:

- Bewley “Knightian decision theory: Part I,” Decis. Econ. Finance (2002) (first version: 1986)
- Lopomo, Rigotti, Shannon “Knightian Uncertainty and Moral Hazard,” JET (2011)
- Minardi, Savochkin “Preferences with grades of indecisiveness,” JET (2015)

Applications to finance

In the quest of improving upon the standard Micro-1 approach by accommodating biases and cognitive limitations of real economic agents, I am particularly interested in bringing those features to finance. One promising direction can be building upon the theory of coarse understanding of uncertainty (see my working paper with Stefania Minardi “Subjective Contingencies and Limited Bayesian Updating”). I am also open to other proposals that connect decision theory and finance.

Other topics in microeconomic theory

Besides decision theory, I can take motivated and hard-working students who wish to work on other topics in microeconomic theory. With a few exceptions, working on topics outside the field of decision theory will require more reading and effort on the students’ behalf since my ability to provide guidance will be limited.

As one of the exceptions, in 2017–2018 AY I am going to read more on evolutionary theory, and welcome students who are interested in it.

Just to give some taste:

- Binmore, Samuelson “Muddling Through: Noisy Equilibrium Selection,” JET (1997)
- Sandholm “Stochastic Imitative Game Dynamics with Committed Agents”
- Guerdjikova, Quiggin “Market Selection with Differential Awareness: The Case of Coarsening”