

BEHAVIORAL DECISION THEORY

Teacher: Mohammed Abdellaoui

Duration: 24 hours

Number of ECTS credits: 4

Education Level	Period	Language of instruction	Max. class size	Teaching Mode
Master	S2	English	25	In-Person

Prerequisites: Basic principles of probability calculus, statistics (random variables, probability distributions) and standard microeconomics.

OVERVIEW

Empirical investigations dating back to the early 1950s have revealed multiple violations of standard rationality models, such as expected utility and discounted utility. These discoveries have led to the development of behavioral decision theories that can capture a broad spectrum of behaviors and have proven useful in modern economic theory.

This course offers a didactic examination of the consequences of deviations from rationality on preference measurement under risk (when probabilities are known), ambiguity (when probabilities are unknown), and over time. Additionally, it introduces recent empirical quantification methods for attitude towards risk, subjective probabilities, and attitude towards ambiguity, using behavioral generalizations of the standard models to gain a better understanding of their preference foundations.

LEARNING OUTCOMES

1. Model behavior under risk and ambiguity without committing to the standard models.
2. Empirically quantify attitudes and beliefs in the presence of risk, ambiguity and time.
3. Account for the attitudinal consequences of different sources of uncertainty.

DETAILED DESCRIPTION

Key Topics:

Decision making under uncertainty, beliefs, risk and ambiguity aversion, intertemporal choice, discounting, Allais-type behavior, Ellsberg-type behavior, Overconfidence, temporal risk.

Course organization - detailed outline:

The course consists of five modules.

1. *Rational decision maker:* Birth of ordinal homo-economicus; ordinal utility; cardinal utility from ordinal choice; Utilitarianism.

2. *Empirical problems for rational decision maker*: Problems for risk and their implications for empirical quantification of attitude towards; Problems for ambiguity and their implications for subjective probability empirical quantification, e.g., overconfidence.
3. *Behavioral decision theories for risk*: Chew's weighted utility; Gul's disappointment aversion; Quiggin's rank-dependent utility; Tversky & Kahneman's cumulative prospect theory; How to elicit risk attitudes without assuming expected utility.
4. *Behavioral decision theories for ambiguity*: Rank-dependent utility and Prospect Theory; How to empirically quantify subjective probabilities from choice without expected utility; How to empirically quantify ambiguity aversion and perception; How to capture overconfidence; How to capture different attitudes in the presence of difference sources of uncertainty.
5. *Behavioral theories for time and risk*: Discounted utility (Decreasing impatience; Hyperbolic discounting), Discounted expected utility, Recursive expected utility and extensions; how to elicit preferences when both risk and time are involved.

ESG-related Content:

Environmental-related content	Social-related content	Governance-related content
Moderate content	Significant content	Significant content

Competency Goals:

Transformative Management	Innovative Thinking & Problem Solving	Positive Leadership	Sustainable Business Practices
Moderate contribution	Extensive contribution	Significant contribution	Moderate contribution

TEACHING MATERIALS

Books:

- Wakker, Peter (2010): *Prospect Theory for Risk and Ambiguity*, Cambridge.

Digital Resources:

- Slides (a comprehensive collection of slides covering all the topics addressed throughout the course).

TEACHING METHODS

The teaching method combines slide presentations, interactive discussions, and the resolution of decision problems.

COURSEWORK & EVALUATIONS

Tool/method of evaluation	Duration	Weight in the final grading
Final exam	1h30 individual	80%
Report on a research paper	Individual	20%

BIOGRAPHY

Mohammed Abdellaoui is a Research Director at the *Centre National de la Recherche Scientifique* (CNRS) in France and Professor of Decision Sciences at HEC Paris. His research focuses on individual and organizational decision-making under uncertainty and over time, drawing on a multidisciplinary approach that bridges Economics, Management Sciences, and Psychology.

His work addresses decision-making at descriptive, normative, and prescriptive levels, covering observed behaviors - both in experimental and real-world settings - decision models that extend beyond standard rationality assumptions.

Professor Abdellaoui's research has been published in top-tier journals spanning economics, management, and psychology. He has served as President of the *Association Française d'Économie Expérimentale* (ASFEE) and co-founded RISLab (Risk, Insurance, and Savings Laboratory) at Ghent University (Belgium), an international research network in behavioral economics. He is currently Editor-in-Chief of *Theory and Decision*, a leading interdisciplinary journal in the Decision Sciences.

ESTIMATED WORKLOAD

Approximately 50-65 hours of study/work.