

## Analytical Methods for Decision-Making

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### Contents and methodology

This course will provide students with a basic understanding of some of the main ideas and tools used to study decision making and situations in which decisions have to be made. Decision making is an interdisciplinary field of study, which takes ideas and tools from disciplines such as economics, psychology, management, philosophy, or mathematics. The course will reflect this interdisciplinary background and it will focus on explaining the main intuitions behind the ideas discussed in decision science in an accessible way. Following the course will not require any particular technical knowledge or skill, and the mathematical elements introduced will be very simple.

Decision making can be analysed at three different levels: normative, descriptive, and prescriptive. The normative level is concerned with determining the “rational” decision to make in a particular situation. The descriptive level focuses on understanding the way that people actually behave when they make decisions. The prescriptive level is about what advice to give to people when they have to decide. The course will touch on all three levels, and it will have a strong focus on the descriptive aspect.

An understanding of the way human beings actually behave in different decision situations (i.e., the descriptive level) is crucial to know how one will react when a decision has to be made, how other people will react, what errors and biases are likely to appear, how we can design decision making environments to promote better decisions, etc. A typical method to study decision making behaviour is to conduct experiments to test decision-making principles. The course will also cover many popular experiments, and the students will actually participate in replications of many of them that will illustrate important decision-making principles.

Another significant element of the course will be the discussion of applications of the decision-making concepts studied. People make decisions in a wide variety of settings, which can go from everyday personal decisions (like how much to work, eat, exercise, or what to buy) to important decisions made in different types of organizations (like investment decisions or government policy decisions). This provides much scope for applications, which are also an important part of research on decision making. To elaborate on this aspect, at the beginning of some of the sessions, students will make presentations and lead brief discussions on possible applications of the ideas covered in previous classes.

Below is a table of contents with the titles given to the main topics covered in the course (the exact meaning of the different titles will become clear during the course):

1. Introduction
2. Decision making under risk and uncertainty
3. Prospect Theory: Reference points, loss aversion and framing
4. Forming judgments
5. Inter-temporal decisions
6. Multi-attribute choices
7. The role of affect
8. Dual-process explanations and the role of the unconscious mind
9. Interactive decision making

Specific slides and some other materials to be used in the classes will be uploaded to Aula Global before the corresponding sessions or given to the students in class.

## **Sessions plan**

Below is a tentative weekly plan for the course, which may be adapted during the course in response to class dynamics:

### **Week 1**

- Introduction
- Decision making under risk and uncertainty

### **Week 2**

- Prospect theory: Reference points, loss aversion and framing

### **Week 3**

- Forming judgments

### **Week 4**

- Inter-temporal decisions

### **Week 5**

- Multi-attribute choices

### **Week 6**

- The role of affect

### **Week 7**

- Dual-process explanations and the role of the unconscious

### **Week 8**

- Interactive decision making

### **Week 9**

- Interactive decision making

### **Week 10**

- Student presentations/discussion of projects

## **Evaluation and assignments**

The evaluation of the course will consist of three elements:

- a) **FINAL ESSAY:** The students will have to write an essay and present it in the last week of the course (individually or in small groups). Each essay will focus on just one of the main decision-making principles or ideas studied in the course, and it is expected to: 1) explain the main concepts related to it, 2) propose potential applications of the principle in business, management or policy making, and 3) sketch the design of an experiment to test a hypothesis related to the principle.

Percentage: 70%

- b) **CLASS ASSIGNMENTS:** The students will be given some assignments for some of the sessions, like preparing presentations and leading brief discussions on possible applications of ideas studied in previous classes, or reading papers and preparing presentations about

them (individually or in small groups).

Percentage: 10%

- c) **PARTICIPATION:** The students will be encouraged to participate in the discussion of the theoretical concepts explained and their applications and also of the behavioural experiments conducted in class.

Percentage: 20%

There will be no exam in this course.

## Bibliography

This section contains a number of bibliographical references that can be useful for students to follow the course and to expand on the different topics covered. The last subsection lists some popular books related to issues studied in the course.

### GENERAL

- Goodwin, P. and Wright, G. (2004). *Decision analysis for management judgment* (3rd edition). John Wiley & Sons, Ltd.
- Kahneman, D. (2011). *Thinking, fast and slow*. Penguin Books.
- Koehler, D.J. and Harvey, N., eds. (2004). *The Blackwell handbook of judgment and decision making*. Blackwell Publishing.

### DECISION MAKING UNDER RISK AND UNCERTAINTY

- Camerer C. (1995). Individual decision making. In J.H. Kagel, A.E. Roth (eds.), *The handbook of experimental economics*. Princeton University Press.
- Kahneman, D. (2011). *Thinking, Fast and Slow*. Penguin Books.
- 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.
- Wu, G., Zhang, J. and Gonzalez, R. (2004). Decision under risk. In D.J. Koehler, N. Harvey (eds.), *The Blackwell handbook of judgment and decision making*. Blackwell Publishing.

### PROSPECT THEORY: REFERENCE POINTS, LOSS AVERSION, FRAMING

- Camerer C. (1995). Individual decision making. In J.H. Kagel, A.E. Roth (eds.), *The handbook of experimental economics*. Princeton University Press.
- Kahneman, D. (2011). *Thinking, Fast and Slow*. Penguin Books.
- Kahneman, D., Knetsch, J. and Thaler, R.H. (1991). Anomalies: The endowment effect, loss aversion, and status quo bias. *Journal of Economic Perspectives*, 5, 193-206.
- Soman, D. (2004). Framing, loss aversion, and mental accounting. In D.J. Koehler, N. Harvey (eds.), *The Blackwell handbook of judgment and decision making*. Blackwell Publishing.
- Tversky, A. and Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211, 453-458

### FORMING JUDGMENTS

- Camerer C. (1995). Individual decision making. In J.H. Kagel, A.E. Roth (eds.), *The handbook of experimental economics*. Princeton University Press.
- Goodwin, P. and Wright, G. (2004). *Decision analysis for management judgment* (3rd edition). John Wiley & Sons, Ltd.
- Kahneman, D. (2011). *Thinking, Fast and Slow*. Penguin Books.
- Keren, G. and Teigen, K.H. (2004). Yet another look at the heuristics and biases approach. In D.J. Koehler, N. Harvey (eds.), *The Blackwell handbook of judgment and decision making*. Blackwell Publishing.
- Tversky, A. and Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185, 1124-1131.

## INTER-TEMPORAL DECISIONS

- Frederick, S., Loewenstein, G. and O'Donoghue, T. (2002). Time discounting and time preference: A critical review. *Journal of Economic Literature*, 40, 351-401.
- Loewenstein, G. and Thaler, R.H. (1989). Anomalies: Intertemporal choice. *Journal of Economic Perspectives*, 3, 181-193.
- Loewenstein, G., Read, D. and Baumeister, R.F., eds. (2003). *Time and decision: Economic and psychological perspectives on intertemporal choice*. New York: Russell Sage Foundation.

## MULTI-ATTRIBUTE CHOICES

- Dyer, J.S., Fishburn, P.C., Steuer, R.E., Wallenius, J. and Zionts, Z. (1992). Multiple criteria decision making, multiattribute utility-theory: The next 10 years. *Management Science*, 38, 645-654.
- Shafir, E. and LeBoeuf, R.A. (2004). Context and conflict in multiattribute choice. In D.J. Koehler, N. Harvey (eds.), *The Blackwell handbook of judgment and decision making*. Blackwell Publishing.
- Simonson, I. and Tversky, A. (1992). Choice in context: Tradeoff contrast and extremeness aversion. *Journal of Marketing Research*, 29, 281-295.

## THE ROLE OF AFFECT:

- Damasio, A.R. (1994). *Descartes' error: Emotion, reason, and the human brain*. Putnam.
- Finucane, M.L., Alhakami, A., Slovic, P. and Johnson, S.M. (2000). The affect heuristic in judgments of risks and benefits. *Journal of Behavioral Decision Making*, 13, 1-17.
- Han, S. Lerner, J.S. and Keltner D. (2007). Feelings and consumer decision making: The appraisal-tendency framework. *Journal of Consumer Psychology*, 17, 158-168.
- Loewenstein, G., Weber, E.U., Hsee, C.K. and Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, 127, 267-286.

## DUAL-PROCESS EXPLANATIONS AND THE ROLE OF THE UNCONSCIOUS MIND:

- Gladwell, M. (2005). *Blink: The Power of Thinking Without Thinking*. Penguin Books.
- Kahneman, D. (2011). *Thinking, Fast and Slow*. Penguin Books.

## INTERACTIVE DECISION MAKING:

- Binmore, K.G. (2007). *Playing for real: A text on game theory*. Oxford University Press.
- Camerer, C. (2003). *Behavioral game theory: Experiments in Strategic interaction*. Princeton University Press.
- Camerer, C. and Thaler, R.H. (1995). Ultimatums, dictators and manners. *Journal of Economic Perspectives*, 9, 209-219.
- Fehr, E. and Gächter, S. (2000). Fairness and retaliation: The economics of reciprocity. *Journal of Economic Perspectives*, 14, 159-181.
- Gächter, S. (2004). Behavioral game theory. In D.J. Koehler, N. Harvey (eds.), *The Blackwell handbook of judgment and decision making*. Blackwell Publishing.

## POPULAR BOOKS

- Ariely, D. (2008). *Predictably irrational: The hidden forces that shape our decisions*. Harper Perennial.
- Gladwell, M. (2005). *Blink: The Power of Thinking Without Thinking*. Penguin Books.
- Hammond, J.S., Keeney, R.L., Raiffa, H. (1999). *Smart decisions: A practical guide to making better decisions*. Crown Business.
- Kahneman, D. (2011). *Thinking, Fast and Slow*. Penguin Books.
- Thaler, R.H., Sunstein, C.R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. Penguin Books.