BOUNDED RATIONALITY
&
BEHAVIORAL ECONOMICS

Advances in behavioral game theory
and decision theory

From June 24 to June 28, 2019

PSE SUMMER SCHOOL
www.parisschoolofeconomics.eu
OVERVIEW

Standard economics has been the subject of many critiques. Mainstream economic models and analysis rely on a level of sophistication that is hard to justify from an introspective viewpoint but also considering the large body of experimental evidence. Recent years have witnessed a flurry of alternative approaches. The programme proposes reviewing a large body of these approaches, with the goal of stimulating new research both theoretical and applied.

WORKSHOP

Participants will have an opportunity to submit work to be presented and discussed by fellow participants and faculty in daily workshops.

PREREQUISITES

Graduate in economics with solid background in economic theory, decision theory and game theory. The programme is intended primarily for PhD students but exceptions can be considered for well motivated candidates.

PROFESSORS

Olivier Compte is professor of economics at the Paris School of Economics. He is also Ingénieur des Ponts et Chaussées. He graduated from Ecole Polytechnique and Ecole des Ponts et Chaussées, and received his PhD in economics from Stanford University. His fields of interest are repeated games, bargaining, auction theory, mechanism design, bounded rationality and Economics and psychology. He is a fellow of the Econometric Society, and council member of the Game Theory Society. http://www.parisschoolofeconomics.eu/en/compte-olivier/

Philippe Jehiel is professor of economics at the Paris School of Economics and at University College London. He is also Ingénieur des Ponts et Chaussées. He graduated from Ecole Polytechnique and Ecole des Ponts et Chaussées, and received his PhD in economics from EHESS and the European Doctoral Programme. His fields of interest are bargaining, auction theory, mechanism design, and bounded rationality. He is a fellow of the Econometric Society, of the European Economic Association and of the Society for the Advancement of Economic Theory. He is a former co-editor of Econometrica and council member of the Econometric Society and of the Game Theory Society. http://www.parisschoolofeconomics.eu/en/jehiel-philippe/

Jean-Marc Tallon is professor at the Paris School of Economics and a senior fellow of CNRS. He holds a Ph.D. from the University of Pennsylvania. He is Director of Research of the Paris School of Economics. His research interests are in decision theory under uncertainty, risk sharing and financial economics and more generally in the questions of the foundations and consequences of alternative representations of uncertainty and beliefs. http://www.parisschoolofeconomics.eu/en/tallon-jean-marc/

Programme Supervisor: Philippe Jehiel
SCHEDULE

Monday June, 24
8.30 am - 8.45 am Welcome coffee
8.45 am – 10.45 am Philippe Jehiel, Bounded Rationality in Games
10.45 am - 11 am Break
11 am - 1 pm Jean-Marc Tallon, Individual Decision Making
1 pm - 2.30 pm Lunch
2.30 pm - 4.30 pm Olivier Compte, Ignorance, Information and Sophistication
6 pm – 7 pm Gilles Saint Paul, Plenary Lecture
From 7 pm Welcome cocktail

Tuesday June, 25
9 am - 10.30 am Jean-Marc Tallon, Individual Decision Making
10.30 am - 11 am Break
11 am - 12.30 pm Olivier Compte, Ignorance, Information and Sophistication
12.30 pm - 3 pm Lunch - Workshop presentations
3 pm - 3.30 pm Break
3.30 pm - 5 pm Philippe Jehiel, Bounded Rationality in Games
From 6 pm Social Event

Wednesday June, 26
9 am - 10.30 am Olivier Compte, Ignorance, Information and Sophistication
10.30 am - 11 am Break
11 am - 12.30 pm Philippe Jehiel, Bounded Rationality in Games
12.30 pm - 3 pm Lunch - Workshop presentations
3 pm - 3.30 pm Break
3.30 pm - 5 pm Jean-Marc Tallon, Individual Decision Making

Thursday June, 27
8.45 am - 10.45 am Philippe Jehiel, Bounded Rationality in Games
10.45 am - 11 am Break
11 am - 1 pm Jean-Marc Tallon, Individual Decision Making
1 pm - 2.30 pm Lunch
2.30 pm - 4.30 pm Olivier Compte, Ignorance, Information and Sophistication
From 6 pm Social Event

Friday June, 28
8.45 am - 10.45 am Jean-Marc Tallon, Individual Decision Making
10.45 am - 11 am Break
11 am - 1 pm Olivier Compte, Ignorance, Information and Sophistication
1 pm - 2.30 pm Lunch
2.30 pm - 4.30 pm Philippe Jehiel, Bounded Rationality in Games
From 6.15 pm Social Farewell cocktail/certificates
OBJECTIVES

The modern approach to solution concepts in games is by a learning story. Players may have wrong expectations (either about the opponent’s play or about the assessment of their own strategy) to start with, but as experience accumulates expectations should get closer to the truth: if behaviors stabilize they should correspond to an equilibrium play. However, this view (at least applied in a strict sense) seems less plausible in complex games. Think of chess. Predicting what the opponent will do in more than a few steps ahead is impractical. Knowing or learning the value of a board position is impossible (for most positions), even for the best chess players. Such simple considerations suggest the need to develop models of bounded rationality, which may next be used to approach a number of economic interactions in a new way.

The objective of the course is to stimulate new research in game theory and applications that maintains the game theoretic tradition of high logical standards while incorporating elements of bounded rationality/behavioral economics in the analysis. Various approaches to behavioral economics and bounded rationality are discussed in the course.

COURSE STRUCTURE and REQUIRED READINGS

1. General overview of standard approach and its introspective vs learning justification

2. Analogy-based expectation equilibrium

3. Equilibrium with subjective prior and self-confirming equilibrium

4. Valuation equilibrium and equilibrium with imperfect recall

5. A tour of alternative approaches in behavioral game theory
OTHER REFERENCES

General References

Analogy-based expectation equilibrium

Valuation equilibrium

Self-confirming equilibrium

Nash equilibrium with Subjective Prior
- Harsanyi, J.C.(1967), “Games with incomplete information played by Bayesian players”, Management Science

Level k approach

Other approaches
OBJECTIVES

This course will cover some major approaches to the study of individual behavior and decision making. It will explore a selection of the most important ideas in behavioral economics, restricting ourselves to models of individual decision making. We will cover three domains: choice behavior, representation of and behavior under uncertainty, time preferences. The goal is to introduce models of behavior alternative to the standard homo oeconomicus approach, building on some insights from experimental economics and psychology.

COURSE STRUCTURE and REQUIRED READINGS

1. Introductio


2. Making choices

   a. Rational choice
   b. Psychological Motives not Included within the Standard Framework
   c. Modeling Choice Procedures
   d. Individual preferences and social values
   e. Welfare


3. Judgement, beliefs, heuristics and biases

   a. The formation of beliefs
   b. The revision of beliefs


4. Decision-making under risk and uncertainty

   a. Expected utility
   b. The use of beliefs: distortion of probabilities and rank dependent utility
   c. Prospect Theory and loss aversion
   d. Models of ambiguity

5. The treatment of time
   a. Discounted utility
   b. Issues with discounted utility
   c. Quasi-hyperbolic discounting
   d. Time inconsistency and self-control
   e. Loss aversion

OTHER REFERENCES

Textbooks
- A. Rubinstein, “Lecture notes in microeconomic theory”.

Articles
- Loewenstein, O’Donoghue and S. Frederick (2002 “A review of intertemporal choice”. Journal of Economic Literature, 90; 351-401,.
OBJECTIVES

The objective of the class is to take a critical journey across economic theory (decision theory under uncertainty, auctions, repeated games, reputation, information transmission...). Our models generally assume that agents know with precision the environment they face, or the exact distributions over the parameters that the analyst assumes. This places strong cognitive demands on agents, or it gives agents extraordinary powers of discernment. Our aim will be to identify these cognitive demands, highlight how our intuitions are shaped by (and sometimes hinge on) these demands, and suggest alternative models that assume lesser sophistication on agents. Along the way, we shall also review how the path proposed, based on direct strategy restrictions, compete with other methods for limiting the rationality of economic agents.

COURSE STRUCTURE

1. **Modeling ignorance and the role of strategy restrictions**

2. **A tour of bounded rationality models**
   References: Geneakoplos, Gilboa Schmeidler (cased based), Thurstone (psychometrics), Brock and Marschak, Rosenthal, McKelvey Palfrey (quantal response), Osborne Rubinstein (procedural rationality), Jehiel (analog-based); Laibson, Mariotti Carrillo, Benabou Tirole (present biases) Koszegi (ego utility), Compte Postlewaite (confidence enhanced performance)

3. **Shortcomings /criticisms of standard models**
   References: Compte and Postlewaite 2018, Ignorance and Uncertainty, Cambridge U. Press, Part II All pay auctions and revenue equivalence (Myerson), Information aggregation (Pesendorfer Swinkels, Fedderson Pesendorfer), Surplus extraction (Cremer McLean) Folk theorems, Comparative statics with respect to information (ex: Cremer Khalil, Ganuzza, Dessein)

4. **Strategy restrictions at work**

REFERENCES PER COURSE

1. **Modeling ignorance and the role of strategy restrictions**

2. **A tour of bounded rationality models**
   References: Geneakoplos, Gilboa Schmeidler (cased based), Thurstone (psychometrics), Brock and Marschak, Rosenthal, McKelvey Palfrey (quantal response), Osborne Rubinstein (procedural rationality), Jehiel (analog-based); Laibson, Mariotti Carrillo, Benabou Tirole (present biases) Koszegi (ego utility), Compte Postlewaite (confidence enhanced performance)

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4. **Strategy restrictions at work**

SOME OTHER REFERENCES

1. **Modeling ignorance and the role of strategy restrictions**
2. A tour of bounded rationality models
- Geanakoplos, J., “Game theory without partitions, an application to speculation”, Cowles Foundation Paper 901

3. Shortcomings /criticisms of standard models

4. Strategy restrictions at work
HOW TO APPLY TO THE PSE SUMMER SCHOOL 2019

Presentation

Our one-week programmes are entirely conducted in English. You are expected to participate in all of the courses; you can follow only one programme per week, but can apply to two consecutive ones. At the end of the programme, you will receive a certificate. Each programme is equivalent to 3 ECTS (European Credit Transfer System). Students interested in this transfer should contact their universities.

Participant profiles and selection

The PSE Summer School is aimed at professionals, researchers, and graduate students in Economics and Finance (Masters and PhD). Undergraduate students in Economics will be considered if their profile is exceptionally strong.

Candidates are invited to submit their applications on a rolling basis at www.pse-application.eu, including:

- A current Curriculum Vitae in pdf format
- A copy of your most advanced degree
- A short motivation text
- A photo of yourself [not used per se in the application process]
- For Students: proof of status
- Optional - Letter(s) of recommendation

Fees

Fees cover lunches and social events, as well as the welcome and farewell cocktails. They do not cover accommodation, transport or any other services.

- Early bird discount: A 10% discount applied for participants who paid before March 31, 2019
- Group discount: A 10% discount applies when a single employer or institution enrolls at least five (5) members in the Summer School. The discount is offered to participants regardless of the course she or he selects and is applied upon the signing of a training agreement between the employer and PSE.

Cancellation policy - Confirmed participants who wish to cancel must do so in writing by email; your tuition fees will be partially refunded as described online.

Any questions? summer-school@psemail.eu
A SUMMER ON THE JOURDAN CAMPUS...

The 2019 Edition will take place at PSE in the 14th arrondissement of Paris. A new 12500 m² building houses around 1500 researchers, students, and administrative teams of the PSE and the Ecole normale supérieure. The 1-hectare Jourdan campus offers ideal conditions: numerous classrooms and working spaces, a 300 places amphitheater, a library with more than 50000 books, a student home...

More (online) about the Jourdan Campus – google maps, gallery, video