Malachy James Gavan

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Education

Ph.D. in Economics — 2019 - Present
Universitat Pompeu Fabra, Barcelona, Spain
Advisor: Professor Antonio Penta

M.Res. Economics — 2018 - 2019
Universitat Pompeu Fabra, Barcelona, Spain

M.Sc. Economics — 2017 - 2018
Barcelona School of Economics, Barcelona, Spain

B.Sc. Economics — 2014 - 2017
University of Surrey, Guildford, United Kingdom

Research Interests

Game Theory and Mechanism Design

References

Professor Antonio Penta	**Professor Alexander Frug**	**Professor Larbi Alaoui**
Advisor	Committee Member	Committee Member
ICREA-UPF, BSE, and TSE	UPF and BSE	UPF and BSE
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Job Market Paper

Negotiated Binding Agreements

I study binding agreements that can result from negotiation, where the agreement is over agents' behaviour in an underlying strategic environment, represented by a game. To do so, I propose a negotiation protocol where, in each round of negotiation, agents make public proposals of the action they will take. The protocol terminates when these proposals are confirmed. Confirmation results in a binding agreement and payoffs are given by the agreed action profile. I provide easy-to-check necessary and sufficient conditions for the outcomes of this game using the solution concept Negotiated Binding Agreements, a refinement of subgame perfect equilibrium where agents only propose actions they could agree to. A full characterisation of these outcomes is provided for two-player games. I show these general conditions are robust to perturbations in the negotiation procedure including timing of proposals, proposing actions for all agents, and variation in the payoff of perpetual disagreement. Finally, I extend the model to accommodate the possibility that agents make binding agreements over the very negotiation process, and I provide necessary sufficient conditions on the outcomes in the underlying game that may result from such a negotiation. These conditions are shown to be linked to the cooperative game theoretic notion the β-core (Aumann, 1959, 1961).

Other Working Papers

Safe Implementation (with A. Penta, submitted)

We introduce *Safe Implementation*, a notion of implementation that adds to the standard requirements the restriction that deviations from the baseline solution concept induce outcomes that are *acceptable*. The primitives of Safe Implementation therefore include both a Social Choice Correspondence, as standard, and an Acceptability Correspondence, each mapping every state of the world to a subset of allocations. This framework generalizes standard notions of implementation, and can accommodate a variety of considerations, including robustness concerns with respect to mistakes in play, model misspecification, behavioral considerations, state-dependent feasibility restrictions, limited commitment, etc. We provide results both for general solution concepts and for the case in which agents' interaction is modelled by Nash Equilibrium. In the latter case, we identify necessary and sufficient conditions (namely, *Comonotonicity* and *safety-no veto*) that restrict the joint behavior of the Social Choice and Acceptability Correspondences. These conditions are more stringent than Maskin's (1978), but coincide with them when the safety requirements are vacuous. We also show that these conditions are quite permissive in important economic applications, such as environments with single-crossing preferences and in problems of efficient allocation of indivisible goods, but also that Safe Implementation can be very demanding in environments with 'rich' preferences, regardless of the underlying solution concept.

Weak Coalitional Equilibrium: Existence and Overlapping Coalitions (submitted)

I consider Ray and Vohra (1997)'s Coalitional Equilibrium and show the methodological advantage of taking the notion of "an improvement for a group" to mean that there is a joint action of the group that induces a strict improvement in utility for all its members. This is opposed to assuming no agent in the group is worse off while one is strictly better off. I show that, when this interpretation is taken, the sufficient conditions for existence of Ray and Vohra (1997)'s Coalitional Equilibrium can be weakened. I do so by showing that the existence of Coalitional Equilibrium is implied by the existence of a Nash Equilibrium of an auxiliary game. Further to this, I show that the proof of existence can be extended to a generalisation of the concept, where groups may overlap but do not necessarily include the grand coalition.

Work in Progress

Grand Coalition Rationalizability and Undominated Correlated Equilibria (with P. Ennuschat)

Efficient Tariffs under Strategic Side Payments (with M. Ptashkina)

Seminars, Conferences, and Summer Schools

Presentations

European Winter Meeting of the Econometric Society$^{\triangle}$	Berlin School of Economics, 2022
Asian School in Economic Theory	NUS, 2022
33rd Stony Brook International Conference on Game Theory	Stony Brook University, 2022
2022 Conference on Mechanism and Institution Design*	NUS, 2022
International Conference Game Theory and Applications*	St. Petersburg State University, 2022
The 12th Conference on Economic Design	University of Padova, 2022
Internal Microeconomics Seminar	UPF, 2022
Student Seminar	UPF, 2021, 2022
BSE Ph.D. Jamboree	BSE, 2020*, 2021*,†, 2022

Attendance

31st Jerusalem Advanced School in Economic Theory*	HUJI, 2021

($^{\triangle}$scheduled, *online, †discussant)

Research Experience

Research Assistant for Professor Antonio Penta — 2020 - Present
Univeristat Pompeu Fabra, Barcelona, Spain

Referee Services

Games and Economic Behavior

Teaching Experience

Barcelona School of Economics

Microeconomics I — 2018, 2019
Masters Level, Instructor: Joan de Martí, Practical Sessions

Microeconomics II — 2019, 2020, 2021
Masters Level, Instructor: Joan de Martí, Practical Sessions

Advanced Microeconomics II — 2019, 2020
Ph.D. Level, Instructor: Antonio Penta, Practical Sessions

Advanced Mathematics Brush-Up — 2019, 2020, 2021
Ph.D. Level, Instructors: Piotr Zwiernik (2019, 2020) and Alexander Frug (2021), Practical Sessions and Lectures on Set Theory

Probability and Statistics Brush-Up — 2020, 2021, 2022
Masters Level, Instructor: Christian Brownlees, Practical Sessions

Universitat Pompeu Fabra

Topics in Microeconomic Theory — 2019
Undergraduate Level, Main Instructor: Francesco Cerigioni, Other Instructors: Jose Apestaguia, Alexander Frug, Andreu Mas-Colell, Massimo Motta, Rosemarie Nagel, Experimental Sessions and Lectures on Risk

Mathematics for Economics and Finance — 2019, 2020
Ph.D. Level, Instructor: Piotr Zwiernik, Practical Sessions

Game Theory and Design of Institutions — 2020, 2022
Undergraduate Level, with Antonio Penta, Practical Sessions and Lectures on Bayesian Games (2022)

Honours, Awards, and Scholarships

Best Teaching by a Graduate Student at UPF — 2021 - 2022
equally split with Zoel Martín Vilató

UPF M.Res. Tuition Fee Waiver — 2018

BSE Merit Based Scholarship — 2017

Academic and Departmental Services

UPF Student Seminar Co-Organiser — 2020 - 2021
with Andrea Sy

UPF Microeconomics Reading Group Co-Organiser — 2020 - 2021
with Evangelia Spantidaki Kyriazi

Skills

IT: LaTeX, TikZ, LyX, MATLAB, Mathematica
Languages: English (Native), Spanish (Basic), British Sign Language (Basic)