Malachy James Gavan

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Citizenship: British ∘ **Date of Birth:** 25/03/1996
Last Updated: October 2022

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Graduate Coordinator: Marta Araque — marta.araque@upf.edu ∘ (+34) 93 542 2226

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
Advisor
ICREA-UPF, BSE, and TSE
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Professor Alexander Frug
Committee Member
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Professor Larbi Alaoui
Committee Member
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 that of 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 equilibria 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 explore the implications of agents make binding agreements over how they will negotiate and show the baseline necessary and sufficient conditions generalise naturally.

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

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
BSE Ph.D. Jamboree	BSE, 2020*, 2021*,†, 2022
Internal Microeconomics Seminar	UPF, 2022
Student Seminar	UPF, 2021, 2022

Attendance

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

(*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	
	Game Theory and Design of Institutions	2020, 2022
	Undergraduate Level, with Antonio Penta, Practical Sessions and Lectures on Bayesian Games (2022)	
	Mathematics for Economics and Finance	2019, 2020
	Ph.D. Level, Instructor: Piotr Zwiernik, Practical Sessions	
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)	