

Malachy James Gavan

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25-27 C. Ramon Trias Fargas, Barcelona, Spain

Citizenship: British ♦ **Date of Birth:** 25/03/1996

Last Updated: September 2022

Education	Ph.D. in Economics Universitat Pompeu Fabra, Barcelona, Spain Advisor: Professor Antonio Penta	2019 - Present
	M.Res. Economics Universitat Pompeu Fabra, Barcelona, Spain	2018 - 2019
	M.Sc. Economics Barcelona School of Economics, Barcelona, Spain	2017 - 2018
	B.Sc. Economics University of Surrey, Guildford, United Kingdom	2014 - 2017

Fields	Primary: Game Theory and Mechanism Design Secondary: Negotiation, Agreements, Robust Implementation	
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Working Papers	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 <i>Negotiated Binding Agreements</i> , 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. The necessary and sufficient conditions generalise when coalitions may jointly deviate in a cooperative way and are consistent with perturbed versions of the β -core.	(Job Market Paper)
	Safe Implementation We introduce <i>Safe Implementation</i> , a notion of implementation that adds to the standard requirements the restriction that deviations from the baseline solution concept induce outcomes that are <i>acceptable</i> . 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, <i>Comonotonicity</i> and <i>safety-no veto</i>) 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	(with A. Penta)

that Safe Implementation can be very demanding in environments with ‘rich’ preferences, regardless of the underlying solution concept.

Existence of Weak Coalitional Equilibrium: Allowing for Overlapping Coalitions

In this paper, I 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 that no agent in the group is worse off while one is strictly better off. To do so, I show that the sufficient conditions of Ray and Vohra (1997)’s Coalitional Equilibrium can be weakened when this interpretation is taken. I do so by showing that, taking the interpretation that no joint deviation induces a strict improvement for all agents, 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. This allows for coalition configurations to be taken from a specific set of covers, while still ensuring existence. This provides the first step in answering the question of the existence of solution concepts with overlapping coalitions, while a deviation of the grand coalition is not permitted.

Work Progress	in	Efficient Tariffs under Strategic Side Payments	(with M. Ptashkina)
		Weak Coalitional Rationalizability and Undominated Correlated Equilibria	(with P. Ennuschat)
Seminars, Conferences, and Summer Schools		Presentations	
		Asian School in Economic Theory	(NUS, 2022)
		33 rd 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, 2022)
		The 12 th Conference on Economic Design	(University of Padova, 2022)
		BSE Ph.D. Jamboree	(2020 [°] , 2021 ^{°,†} , 2022)
		UPF Internal Microeconomics Seminar	(2022)
		UPF Student Seminar	(2021 and 2022)
		Attendance	
	31 st Jerusalem Advanced School in Economic Theory [°]	(HUJI, 2021)	
	(°online, †discussant)		
Teaching Experience		Barcelona School of Economics	
		Microeconomics I	2018, 2019
		<i>Masters Level, Instructor: Joan de Martí, Practical Sessions</i>	
		Microeconomics II	2019, 2020, 2021
		<i>Masters Level, Instructor: Joan de Martí, Practical Sessions</i>	
		Advanced Microeconomics II	2019, 2020
		<i>Ph.D. Level, Instructor: Antonio Penta, Practical Sessions</i>	
		Advanced Mathematics Brush-Up	2019, 2020, 2021
		<i>Ph.D. Level, Instructors: Piotr Zwiernik (2019, 2020) and Alexander Frug (2021), Practical Sessions and Lectures on Set Theory</i>	
		Probability and Statistics Brush-Up	2020, 2021, 2022
	<i>Masters Level, Instructor: Christian Brownlees, Practical Sessions</i>		

Universitat Pompeu Fabra

Topics in Microeconomic Theory

2019

Undergraduate Level, Main Instructor: Francesco Cerigioni, Other Instructors: Jose Apestagua, 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

Research Experience	Research Assistant for Professor Antonio Penta Univeristat Pompeu Fabra, Barcelona, Spain	2020 - present
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Referee Services	Games and Economic Behavior	
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Academic and Departmental Services	UPF Student Seminar Co-Organiser <i>with Andrea Sy</i> UPF Microeconomics Reading Group Co-Organiser <i>with Evangelia Spantidaki Kyriazi</i>	2020 - 2021 2020 - 2021
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Skills	IT \LaTeX , TikZ, LyX, MATLAB, Mathematica Languages English (Native), Spanish (Basic), British Sign Language (Basic)	
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