Introduction

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Introduction

This special issue of International Game Theory Review (IGTR) is devoted to the 13th European (formerly Spain–Italy–Netherlands) Meeting on Game Theory (SING13), held in Paris (France) at the Paris-Dauphine University on 5–7 July 2017.[a] The SING conference series started as a reference meeting for game theorists mainly from Spain, Italy and the Netherlands, and now includes scholars from all over the world that each year congregate in a European city.

The SING13 edition has been chaired by Stefano Moretti of the *Laboratoire d'Analyse et Modélisation de Systèmes pour l'Aide à la Décision* (LAMSADE), and it has been characterized by the maximum number of submissions in the history of SING (203 abstracts). After a selection of the most pertinent abstracts made by the Program Committee, the scientific program included 178 scheduled talks and 5 plenary lectures. The conference was preceded by a pre-conference workshop and tutorial (also organized by the LAMSADE) on July 4th, on topics related to game theory and social choice.

For this special issue, we received 15 high quality papers and, after a revision process that involved at least two reviewers for each paper, 11 of them were accepted to appear in these two volumes of IGTR. We want to thank the reviewers for their valuable and careful work, that allowed us producing a collection of very interesting papers. We apologize for not mentioning the names of the referees, but we want to avoid any possible pairing among reviewers and papers.

Going through the accepted papers, in the first volume we collected those devoted to cooperative games and voting.

Giulia Bernardi and Josep Freixas give a characterization of the Shapley–Shubik power index for simple games with three alternative choices and two possible final decisions; they generalize the classical axioms for power indices on simple games, namely transfer, anonymity, null player property and efficiency and introduce a new axiom to prove the uniqueness of the extension of the Shapley–Shubik power index in this context; finally, they provide an analogous axiom to characterize also the Banzhaf index for these simple games.

László Csató faces a generalized tournament, where players may have an arbitrary number of matches against each other and the outcome of games is measured

[a]Web site of the Conference: http://www.lamsade.dauphine.fr/sing13/.

cardinally; he applies an axiomatic approach for ranking the competitors referring to self-consistency and order preservation; these two properties cannot be satisfied simultaneously, consequently, order preservation cannot be expected to hold on this universal domain.

Marco Dall'Aglio, Vito Fragnelli and Stefano Moretti generalize the notion of power index for simple games to different orders of criticality, i.e., the possibility for players to gain more power over the members of a coalition colluding with other players; these criticality indices are used to compare the power of different players within a single voting situation, and that of the same player with varying weight across different voting situations, establishing monotonicity results á la Turnovec.

Leon Petrosyan considers the problem of cooperation in repeated and multistage games; then he constructs the Strong Nash Equilibrium with payoffs which can be attained under cooperation for a wide class of such games; a new solution concept based on solutions of stage games is introduced and in some cases this solution results a subset of the classical core for repeated and multistage games; this new solution concept is proved to be strongly time consistent.

Joaquin Sánchez-Soriano and Natividad Llorca study two-echelon models for describing situations in which there are two differentiated groups of agents, e.g., supply chain problems, transportation problems or two-sided markets; the problem is approached with the instruments of cooperative games and some solutions concepts closely related to the core are studied, introducing a new concept of core catcher, motivated by a kind of bounded rationality.

Harborne W. Stuart, Jr. provides necessary and sufficient conditions for a non-empty core in many-to-one assignment games; he proves that when players on the "many" side (buyers) are substitutes with respect to any given player on the other side (firm) the non-emptiness requires an additional condition that limits the competition among the buyers, while when buyers are complements with respect to any given firm, a sufficient condition for non-emptiness is that buyers also be complements with respect to all of the firms, collectively.

In the second volume we collected the papers devoted to non-cooperative games and equilibria.

Jane M. Binner, Francesco Ciardiello, Leslie R. Fletcher and Vassili N. Kolokoltsov build an advertising model where generic and brand advertising marketing effects are combined in a duopolistic market with inelastic demand, linear advertising costs and strictly positive discount factors; they derive the nontrivial existence of investment Nash equilibrium in pure strategies and prove the absence of cheap or free riding equilibria. They also examine the relationship between predatory and generic marketing effects and the optimal timing of investments and other marketing scenarios.

Yigal Gerchak and Eugene Khmelnitsky start from the hypothesis that one party proposes to another a contract for sharing an uncertain profit; the optimal contract can be non-monotone, as well as nonlinear, in the realized profit; they formulate and solve a model having monotone increasing profits for both partners,

that are supposed to be always motivated to exert high effort due to other factors like reputation, excluding moral hazard or adverse selection.

Pierre von Mouche and Takashi Sato consider the equilibrium uniqueness problem for a certain class of Cournot oligopolies with convex cost functions and proper price function with decreasing price flexibility; this class allows for discontinuous industry revenue; the authors also illustrate the Selten-Szidarovszky technique based on virtual backward reply correspondences.

Gisèle Umbhauer studies second price all-pay auctions starting from classroom experiments and from the best reply matching equilibrium; the behavior probability distributions in the classroom experiments are strikingly different from the mixed Nash equilibrium, but they fit with best reply matching and generalized best reply matching; in the generalized best reply matching equilibria, players may lose money, but they can also get a lot of money; finally, she examines bifurcations in the bidding behavior.

Thomas A. Weber quantifies a player's commitment in a given Nash equilibrium of a finite dynamic game, mapping the corresponding normal-form game to a "canonical supergame" which allows each player to adjust his or her move with a certain probability; the commitment measure relates to the average over all adjustment probabilities for which the given Nash equilibrium can be implemented as a subgame-perfect equilibrium in the supergame.

We hope that this selection of papers may offer a good, even if partial, idea of the aims and scope of the SING meetings and of the trends of research topics in Game Theory.

We conclude this introduction expressing our warmest thank to all the authors for their important contributions and special thank goes to Hans Peters, David Yeung and Yingxuan Zhang for their constant presence "in the background" and for their useful suggestions.

Guest Editors
Vito Fragnelli, Stefano Moretti and Tamás Solymosi