THREE ESSAYS ON GAME THEORY

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“Conditions for Equivalence Between Sequentiality and Subgame Perfection”, with Cristian Litan. One of the goals of the equilibrium refinement literature is to examine what is the “distance” between equilibrium concepts. Normally, this has been done on the grounds of the payoff space, e.g. Sequential and Perfect equilibrium coincide for almost all games, Kreps and Wilson [2] and Blume and Zame [1]. We take a different approach and identify the maximal set of finite extensive forms (games without payoff assignment) for which the sets of Subgame Perfect and Sequential equilibrium strategies coincide for any possible assignment of the payoff function. We also identify the maximal set of finite extensive forms for which the outcomes induced by the two solution concepts coincide. This characterizations leads us to study the implications of these results for Perfect Bayesian equilibrium.

“Poisson Games and Equilibrium Refinements”, with Francesco De Sinopoli, work in progress. Myerson [3] defines a Poisson game as the strategic situation where the number of opponents that a player faces is unknown and follows a Poisson distribution with known parameter. We construct some examples that evidence that the Nash equilibrium concept does not preclude irrational behavior. We directly extend the definitions of Perfect, Proper and Strictly Perfect equilibrium to Poisson games and show that, as opposed to standard games, these concepts do not assure undominance. We purify these definitions adding to them “perturbations” in the expected number of players, and prove that undominance can only be recovered at the expense of existence. These results motivate us to propose a new solution concept that guarantees both existence and admissibility (in its stronger form, which is slightly more demanding than undominance).

“Endogenous Direction of Information Flows”, work in progress. Standard economic models usually rely on a preestablished role assignment. In a Principal–Agent model, one agent is presented as the principal and other as the agent, something analogous occurs in Signaling games, Adverse Selection models, Mechanism Design literature, etc. While in many economic situations this is not a relevant limitation but a natural assumption to embrace, we can regard collaboration as an informal assignment of roles (perhaps a first step before the formal one), whose formation is worth investigating. I construct a two person model where one player takes an action that affects the welfare of both, and the other player provides information to affect the choice. I compare the two possibilities by switching roles and using criteria like unanimity or efficiency, and investigate how the best assignment depends on the (asymmetric) information held by each player.
References