Monotonicity and Robust Implementation Under Forward-Induction Reasoning

Pierpalo BATTIGALLI

Abstract :
It is well known that, in sequential games, the set of paths consistent with rationality and forward-induction reasoning may change non-monotonically with respect to transparent restrictions on players' beliefs (see Battigalli & Siniscalchi J. Econ. Theory 2002, and Battigalli & Friedenberg, Theor. Econ. 2012). Yet, we prove that---in an incomplete-information environment---predictions become sharper when the restrictions only concern initial beliefs about types. This monotonicity theorem implies that strong rationalizability for games with payoff uncertainty characterizes the path-predictions of forward-induction reasoning across all possible restrictions to players' initial hierarchies of beliefs on the exogenous uncertainty. The latter result allows us to solve an open problem in implementation theory: The implementation of social choice functions through sequential mechanisms under forward-induction reasoning---which considerably expands the realm of implementable functions compared with simultaneous-move mechanisms (Mueller, J. Econ. Theory 2016)---is robust in the sense of Bergemann and Morris (Theor. Econ. 2009).