

Strategic uncertainty: a new refinement of the Nash equilibrium concept in discontinuous games

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we introduce a normal-form game model with ambiguity (or strategic uncertainty) in discontinuous games as follows: each player fears some possible modification of the expected strategies of the other players (for example because she/he has some doubts about the rationality of the other players), and has a pessimistic behaviour. But each player can get some insurance against such modifications, the level of the insurance being related to ambiguity aversion. The main results of the paper are 1) The insurance and the pessimistic behaviour of each player has a smoothing effect, and entails the existence of a Nash equilibrium for most discontinuous games 2) When the level of insurance goes to 0, we get maxmin equilibria at the limit. 3) When the level of insurance goes to infinity, we get Nash equilibria of standard strategic games (without pessimistic behaviour), even in large classes of discontinuous games as better-reply secure games. Moreover, for large classes of discontinuous games, this provides a new notion of Nash equilibrium refinement, that can be applied, for example, to auctions. A natural domain of application is finance, where strategic uncertainty plays a crucial role.