

A Stochastic Stability Analysis with Observation Errors in Normal Form Games

Ryoji Sawa*

Faculty of Engineering, Information and Systems, University of Tsukuba

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Abstract We perform a stochastic stability analysis with observation errors. Players recurrently play a symmetric normal form game with one another and respond to the strategy distribution of other players. In each period, a revising player observes the strategy distribution and choose a best response to it. Her observation is perturbed with positive probability and she may respond to the misperceived strategy distribution. We examine the robustness of Nash equilibria to such observation errors. We find that the set of stochastically stable states under observation errors is robust to addition of strictly dominated strategies for a certain class of games given that observation errors are uniform, i.e., each misrepresented state is observed with uniform probability. We also examine the set of stochastically stable states under an alternate observation error model where the observation probability depends on the L1-norm between the true state and the observed state.

Keywords: Stochastic stability; Observation errors; Action errors; Local interactions.

JEL Classification Numbers: C72, C73.

*Address: Tennoudai 1-1-1, Tsukuba, Ibaraki, 305-8573 Japan, telephone: 81-29-853-5380, e-mail: rsawa@sk.tsukuba.ac.jp.