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Nash Equilibrium in Games with Quasi-Monotonic Best-Responses*

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Abstract

This paper proposes a new general class of strategic games and develops an associated new existence result for pure-strategy Nash equilibrium. For a two-player game with scalar and compact action sets, existence entails that one reaction curve be increasing and continuous and the other quasi-increasing (i.e, not have any downward jumps). The latter property amounts to strategic quasi-complementarities. The paper provides a number of ancillary results of independent interest, including sufficient conditions for a quasi-increasing argmax (or non-monotone comparative statics), and new sufficient conditions for uniqueness of fixed points. For maximal accessibility of the results, the main results are presented in a Euclidean setting. We argue that all these results have broad and elementary applicability by providing simple illustrations with commonly used models in economic dynamics and industrial organization.

JEL codes: C72, D43, L13.

Key words and phrases: Existence of Nash equilibrium, uniqueness of of Nash equilibrium, quasi-monotone functions, non-monotone comparative statics, supermodularity, Tarski's Theorem.

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