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# Verifying Payoff Security in the Mixed Extension of Discontinuous Games

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## Abstract

We introduce the concept of disjoint payoff matching which can be used to show that the mixed extension of a compact game is payoff secure. By putting minor structure on the discontinuities, we need only check payoffs at each strategy rather than in neighborhoods of each strategy profile, placing minimal restriction on the payoffs at points of discontinuity. The results are used to verify existence of equilibrium in a general model of Bertrand-Edgeworth oligopoly.

*Keywords:* Discontinuous games, Nash equilibrium, Disjoint payoff matching, Existence.

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