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Repeated Games in Continuous Time as Extensive Form Games[☆]

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Abstract

Extensive form games modeling continuous-time decisions are plagued with problems of nonexistence and nonuniqueness of outcomes. As a “second-best,” the literature has imposed extraneous restrictions on the strategy sets, raising questions on the nature and interpretation of the resulting formal object, and on which restrictions are appropriate. We provide a “first-best” framework, formalizing continuous-time repeated games as extensive form games incorporating natural conditions from the onset. Every strategy profile induces a unique outcome, without any restrictions on the strategy sets. Further, the unrestricted strategy sets are equivalent to a specific class of strategies in a more naively specified continuous-time game.

Keywords: Extensive Forms, Continuous Time, Repeated Games

JEL: C72

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