

Forecast Horizons for a Class of Dynamic Games

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April 13, 2003 (revised October 10, 2003)

Abstract

In theory, a Markov perfect equilibrium of an infinite horizon, non-stationary dynamic game requires from players the ability to forecast an infinite amount of data. In this paper, we prove that early strategic decisions are effectively decoupled from the tail game, in non-stationary dynamic games with discounting and uniformly bounded rewards. This decoupling is formalized by the notion of a “forecast” horizon. In words, the first period equilibrium strategies associated with any two forecasts that differ only after the “forecast” horizon are arbitrarily close. We illustrate our results in the context of dynamic games of exploitation of a common pool resource and make use of rather natural monotonicity properties of finite horizon equilibria.

Keywords: Dynamic games, non-stationary, Markov equilibria, rolling horizon procedures