Complexity and Repeated Implementation

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ABSTRACT

This paper examines the problem of repeatedly implementing an efficient social choice function when the agents' preferences evolve randomly. We show that the freedom to set different mechanisms at different histories can give the planner an additional leverage to deter undesirable behavior even if the mechanisms are restricted to be simple and finite. Specifically, we construct a (history-dependent) sequence of simple mechanisms such that, with minor qualifications, every pure subgame perfect equilibrium delivers the correct social choice at every history, while every mixed equilibrium is strictly Pareto-dominated. More importantly, when faced with agents with a preference for less complex strategies at the margin, the (efficient) social choice function can be repeatedly implemented in subgame perfect equilibrium in pure or mixed strategies. Our results demonstrate a positive role for complexity considerations in mechanism design.