Subgame Perfect Implementation Under Value Perturbations and the Hold-Up Problem

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Abstract

We consider the robustness of extensive form mechanisms to common p-belief value perturbations from common knowledge, which are situations where each player believes with probability p slightly less than 1 that other players believe with probability slightly less than one... and so, that the state of nature is equal to a particular θ. We show that with even an arbitrarily small amount of such uncertainty, the Moore-Repullo mechanism does not yield (even approximately) truthful revelation and in addition there are sequential equilibria with undesirable outcomes. More generally, we show that any extensive form mechanism is fragile in the sense that if a non-monotonic social objective can be implemented with this mechanism, then there always exist arbitrarily small common p-belief value perturbations from common knowledge under which an undesirable sequential equilibrium exists. Finally, we analyze the implications of these non-robustness results for the hold-up problem and argue that our results restore Grossman and Hart's basic insights on the hold-up problem.