OPTIMAL DYNAMIC MECHANISM DESIGN WITH DEADLINES

KONRAD MIERENDORFF
University of Zurich
November 2011

ABSTRACT

We study the revenue-maximizing sale of an object in a dynamic environment, with buyers that differ in their degree of patience: Besides his privately known valuation, each buyer has a privately known deadline for buying. First, we derive the optimal mechanism, neglecting the incentive constraint for the deadline. Here the seller's desire to extract rents interacts with the dynamic arrival of new information. This can lead to a violation of the neglected incentive constraint. We give sufficient conditions on the type distribution under which the neglected constraint is fulfilled or violated. Next, we consider a model with two periods and two buyers, for the case that the constraint cannot be neglected. Here, the optimal mechanism is implemented by a fixed price in period one and an asymmetric auction in period two. The asymmetry, which is introduced to prevent the first buyer from buying in period one when his deadline is two, leads to pooling of deadlines at the top of the type space.

Keywords: Dynamic Mechanism Design, Multidimensional Signals, Revenue Maximization, Deadlines

JEL-Codes: D44, D82