Abstract

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1 Multi-unit Auction in Discrete Type Space

Bidder's behaviour will differ a lot in multi-unit auctions than in single-unit auctions. We study a multi-unit auction where there are two discrete types of bidders and each type of bidder demands two units. We find closed-form solutions for symmetric Bayesnian Nash Equilibria for different proportions of types in the population and one main feature is identical bidding behaviour. We also find that distributions for mixed strategy equilibrium from different types will have overlapping support in bidding spaces. These two features will lead to inefficient allocations. The identical bidding behaviour is also reported in empirical literature studying treasury bill auctions.

We compare expected revenue between formats of multi-unit auctions and confirm that revenue equivalence does not hold in multi-unit settings with ambiguous ranking between revenue from pay-as-bid and Vickrey auctions, while both dominated uniform-price auction in expected revenue. The identical bidding behaviour can also be extended to higher-unit settings.

2 Smooth Ambiguity Averse Level k

We restudy the process of iterated elimination of dominated strategies in a first-price sealed bid single-unit auction by invoking smooth ambiguity averse model from Klibanoff, Marinacci and Mukerji (2005). Our model allows bidders to eliminate prices implausible for opponents to use, given subjective beliefs about distribution over current range of strategies plausible to opponents and public knowledge on type of opponents.

In particular, we study the first price auction in discretized bidding and value spaces and construct the upper and lower bounds of feasible bids in the process of iterated elimination of implausible bids. We use computational software to compute upper and lower bounds of plausible bids recursively for each round of elimination as well as the convergent stable bids for each type in the discretized value space. We compare our result of stable bids with experimental data since Bayesian Nash Equilibrium can not rationalize such results.

3 Combinatorial Auction for Non-identical Items (In-Progress)

We look at a combinatorial auction with non-identical items. When items are non-identical, bidders need to specify their bids for each particular item, which indicates different behaviours from multi-unit auction

with identical units. [1]

[1] This paper is still in progress and I do not have results to report.