"Simultaneous First-Price Auctions with Preferences over Combinations: Identification and Application"

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Abstract

Motivated by the empirical prevalence of simultaneous bidding across a wide range of auction markets, we develop and estimate a structural model of strategic interaction in simultaneous first-price auctions when objects are heterogeneous and bidders have preferences over combinations. We begin by proposing a general theoretical model of bidding in simultaneous first price auctions, exploring properties of best responses and existence of equilibrium within this environment. We then specialize this model to an empirical frame- work in which bidders have stochastic private valuations for each object and stable incremental preferences over combinations; this immediately reduces to the standard separable model when incremental preferences over combinations are zero. We establish nonparametric identification of the resulting model under standard exclusion restrictions, thereby providing a basis for both testing on and estimation of preferences over combinations. We then apply our model to data on Michigan Department of Transportation highway procurement auctions, with structural estimates suggesting that winning multiple projects substantially increases bidder costs.