

Vertically Differentiated Simultaneous Vickrey Auctions: Theory and Experimental Evidence

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We study settings where a number of sellers simultaneously offer vertically differentiated Vickrey auctions for imperfect substitute goods to unit-demand buyers. Vertical differentiation can arise from differences in item quality, item value certainty, seller reliability, or a combination of these factors. We characterize the form of the bidding equilibria and derive expressions for the corresponding allocative efficiency and expected seller revenue. When bidders are restricted to submit at most one bid, our theory predicts the existence of a unique Bayes-Nash equilibrium that resembles a form of probabilistic "mating-of-likes." Allowing unit-demand bidders to place an arbitrary number of bids induces complex strategy profiles where bidders place positive bids in all available auctions. Higher bidder types tend to follow more targeted strategies, focusing their "serious" bids on fewer and, generally, higher quality auctions. The nature of the bidding equilibria introduces allocative inefficiencies that arise from the lack of coordination in auction selection among bidders. We test our theoretical propositions in a controlled laboratory experiment while also utilizing a domain specific risk score to help assess how the bidders' risk type affects their bidding behavior. In support of our theory we find evidence of a probabilistic assortative matching between bidder and auction types. We also find that low risk type bidders tend to crowd on the highest auction and will pay a premium for the certainty it offers, whereas high risk type bidders fail to appropriately adjust for risk associated with the lowest auction, leading to overbidding. These lead to an interesting focal anomaly whereby bids are concentrated on the highest and lowest auctions, bypassing intermediate auctions

*To read the Full paper, please contact Arun_Kumar@isb.edu