Auction mechanisms and bidder collusion

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Abstract

Bidder collusion in auctions is a persistent phenomenon. We study a simple form of collusion, by which one bidder (the proposer) may offer to ‘bribe’ another bidder (the responder) to drop out of the auction. This form of collusion can result in loss of efficiency if the bribing party has a lower value for winning the auction. The theoretical analysis predicts the existence of inefficient bribes in second-price auctions. First-price auctions, on the other hand, provide a deterring mechanism against bribing due to the signaling properties of bribes. Given any bribing strategy, proposers have an incentive to strategically misrepresent their type, resulting in a pooling equilibrium in which no bribes are offered. We test the hypothesis that first-price auctions are more robust to bidder collusion in a controlled laboratory experiment. Contrary to the theoretical prediction, we find that the auction mechanism has a negligible effect on the bribing behavior. Auction efficiency, however, is reduced in the first-price auction as low-value proposers often winning the auction. The analysis of the bidding behavior and the empirical-optimal strategies establishes that the loss of efficiency can be attributed partly to optimal bidding behavior and partly to myopic behavior of the responders.