An Empirical Analysis on Scoring Auctions: Comparison between Quasi-linear and Price-quality Ratio Awarding Rules

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Abstract

This paper provides an empirical analysis on scoring auctions for government procurement contracts. Using the theoretical model established by Hanazono, Nakabayashi and Tsuruoka (2012), the bidder's cost function is structurally estimated from the bid data on the public work projects in Japan, where the awarder is the bidder with the lowest ratio of price- over quality-bid (PQR awarding rule) and the bidder's payment is equal to his price-bid (a first-score (FS) auction). A series of counterfactual analyses indicates that by replacing the current FS auction with a second-score (SS) auction, the expected utility of the procurement buyer will rise by approximately 10 percent. In addition, the buyer may earn higher gain by the use of scoring auctions with a well-designed quasi-linear awarding rule or the price-only auction with an appropriately specified level of quality. On the other hand, bidders's earing is greatest in the FS auction with PQR scoring rules. These results suggest that a major advantage of the currently adopted FS auction format to the procurement buyer lies in the promotion of bidder participation.

Key words: scoring auctions, procurement, structural estimation of auctions
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