

An Experimental Study of Bidding Behavior in Subcontract Auction

by Jun Nakabayashi and Naoki Watanabe

Nakabayashi: Graduate School of Humanities and Social Sciences, University of Tsukuba, 1-1-1 Tennodai, Tsukuba, Ibaraki 305-8571, Japan.

E-mail: nakabayashi@dppe.tsukuba.ac.jp (replace tsukuba with tsukuba)

Watanabe: Graduate School of Systems and Information Engineering, University of Tsukuba, 1-1-1 Tennodai, Tsukuba, Ibaraki 305-8573, Japan.

E-mail: naoki50@sk.tsukuba.ac.jp (replace tsukuba with tsukuba)

Abstract: It is commonly observed in practices that, to be the lowest bidders in procurement auctions, prime contractors solicit subcontract bids and make subcontract agreements with the agents who submit the lowest bids, when the agents can do works with lower costs than their prime contractors themselves do. Accordingly, the auctioneers in the upstream subcontract auctions will become bidders in a downstream procurement auction. This point is remarkably different from the standard theory of procurement auction. In this paper, we cast light on the bidding behavior in such a subcontract auction.

We first present a simple model of subcontract bids, based on Nakabayashi (2009). It is, however, extremely difficult to collect a complete set of field data of subcontract bids in many countries. We thus rely on a laboratory experiment and examine some theoretical predictions statistically by using the data obtained by the laboratory experiment.

The main observation in our experiment is as follows. (1) In the subcontract auction with the first-price mechanism, subjects bid following the symmetric equilibrium bidding function derived from our theoretical model, and the second price mechanism successfully induced the bidders' truth-telling of their cost for the subcontractable work. (2) The revenue equivalence between first-price and second-price mechanisms breaks even under the independent private value (IPV) environment, because of the aggressive bidding in the case of a first-price mechanism. (3) The first-price mechanism more likely achieves ex post efficient allocations than the second-price mechanism.

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