

A secure bidding behavior for a keyword auction in a sealed bid environment

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Abstract

In this paper, we explore the bidding behavior for a keyword auction. In a keyword auction in practice, bidders do not know the current bids submitted by the others, and thus, they can not follow the greedy bidding strategy where they change their bids so as to do the best response to the other's bids in the previous period. We propose a secure greedy bidding behavior for the sealed bid environment. We show that (i) there exist a stable bid profile according to the secure greedy bidding, (ii) in this stable bid profile, the ad-slots are assigned to advertisers in an efficiency manner, (iii) the revenue of the auctioneer at the stable bid profile is the same as the revenue at the dominant strategy equilibrium for the Vickrey-Clarke-Groves mechanism, and (iv) in an asynchronous model of dynamic bidding behavior where in each period one bidder is randomly chosen and the selected bidder changes his bid according to the secure greedy bidding, the stable bid profile is achieved eventually in probability one. *JEL classification:* C72, C91, D44. *Keywords:* keyword auction, generalized second price auction, sealed bid, secure greedy bidding.

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