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Premium auctions and risk preferences ☆

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Abstract

In a premium auction, the seller offers some "payback", called premium, to a set of high bidders at the end of the auction. This paper investigates how the performance of such premium tactics is related to the bidders' risk preferences. We analyze a two-stage English premium auction model with symmetric interdependent values, in which the bidders may be risk averse or risk preferring. Upon establishing the existence and uniqueness of a symmetric equilibrium, we show that the premium causes the expected revenue to increase in the bidders' risk tolerance. A "net-premium effect" is key to this result.

JEL classification: D44

Keywords: Premium auction; English auction; Risk preference; Net-premium effect

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1. Introduction

Premium auctions are featured by the seller committing to some pre-specified rule that rewards certain high bidders at the end of the auction. In Europe, such practice dates back to the Middle Ages, and it continues to be employed nowadays in the sales of houses, land, boats, machinery, airplanes or inventory of insolvent businesses from time to time (e.g., [8]).

The use of this type of auctions may be puzzling because in the canonical symmetric independent private values model with risk neutral buyers the premium is irrelevant: it would yield the same expected revenue as any other efficient auction (e.g., [28,32]). The "Santa Claus Auction" in [29] is a fine example of premium auctions that illustrates this revenue equivalence principle. In order to understand the purpose of a premium, existing studies have identified situations where such tactics may enhance expected revenue, that is, where the bidders exhibit strong asymmetries prior to the auction. Notably, these studies have limited attention to the special case where one strong bidder (or cartel) competes with several weak bidders (e.g., [8,13,25]). In such a situation, the premium serves to lure the weak bidders – who otherwise would have no real interest in participating in the auction – to show up and bid up the price that may result in a higher net profit to the seller. Other tactics of a similar sort, such as using "bidding credits", "set-asides", or "subsidies" have also been shown to enhance competition when bidders are asymmetric (e.g., [2,3,30]).[1] Beyond the specific assumption made in these models, "the case for premium auctions remain uncertain [25, p. 241]".

In this paper, we develop a model of English premium auctions (henceforth, EPA) in the classic setting of symmetric and interdependent values (e.g., [26]), allowing the bidders to be either risk averse or risk preferring.[2,3] The EPA we consider proceeds in two stages. In the first stage, the seller raises the price until all but two bidders (finalists) have withdrawn. In the second stage, the price is raised further until one finalist withdraws. The remaining finalist wins the object and pays the price at which the auction concludes. In addition, both finalists receive a premium determined by a pre-specified function of the difference between the ending prices of the two stages.[4]

Like English auctions (henceforth, EA), an appealing feature of the EPA is that it is detail-free to the seller as long as the premium rule is exogenously given. Apart from that, when a reserve price is desirable but the seller lacks sufficient knowledge about the buyers' value distribution, or the ability to commit to a reserve price, the first-stage ending price in an EPA can serve as a *de facto* reserve price for the seller. The role of the first stage of an EPA is therefore to efficiently elicit a reserve price through competition of the bidders – similar to that of the two-stage Anglo-Dutch auction proposed in [15].[5]

[1] These results are consistent with Myerson [28], whose classic work shows that expected revenue maximization leads to policies that favor disadvantaged bidders.

[2] In what follows, "risk preferring" refers to the case where the utility function is convex. For instance, a bidder can be an agent of a buyer, whose marginal commission by contract increases in the buyer's payoff.

[3] Our model is thus related to models of standard auctions with risk averse bidders, e.g., [4–7,10,11,18,19,21,22,26,29,31]. See also [12] for an analysis of standard auctions with independent private values where both the seller and the buyers are risk averse.

[4] Our model is a generalization of the "Amsterdam Second-Price Auction" developed in [8] for the case with independent private values, linear premium rules, and risk neutral bidders.

[5] Because of the premium, however, the reserve price elicited from the first stage of an EPA will be higher than that from an EA.