

Chapter 12

Consumer-to-Consumer Internet Auction Models

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ABSTRACT

Internet auctions have become an increasingly common method for exchanging goods and services across the world both among consumers themselves, as well as between businesses and consumers. These Internet auction mechanisms have the scope of incorporating procedures of much greater complexity and variety, and they exhibit characteristics and properties that are quite distinct from conventional auctions. In this paper, the authors provide an experimental study of the performance characteristics and operational behaviour of a number of online auction models, including the fixed time forward auctions, the Vickrey auctions, and models with soft close variable auction times. These online auction models are studied through systematic simulation experiments, based on a series of operational assumptions, which characterize the arrival rate of bids, as well as the distribution from which the private values of buyers are sampled. Suggestions for efficient online auction design and procedures for improving auction performance are given, and the behaviour of the average auction income and average auction duration are quantified and compared.

MOTIVATION AND RELATED WORK

The current trend is increasingly embracing the C2C (Consumer to Consumer) model, while in the not-too-distant-past, the B2C (Business to Consumer) model was the dominant model for electronic commerce. Instead of companies sell-

ing items to the consumers, consumers are selling items to fellow consumers on a global-scale, and a common mechanism of achieving this is to use online auctions. Unlike conventional auctions, Internet auction mechanisms have the scope of incorporating procedures of greater complexity and can take on a wide variety of forms.

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Four types of auctions are commonly addressed in literature:

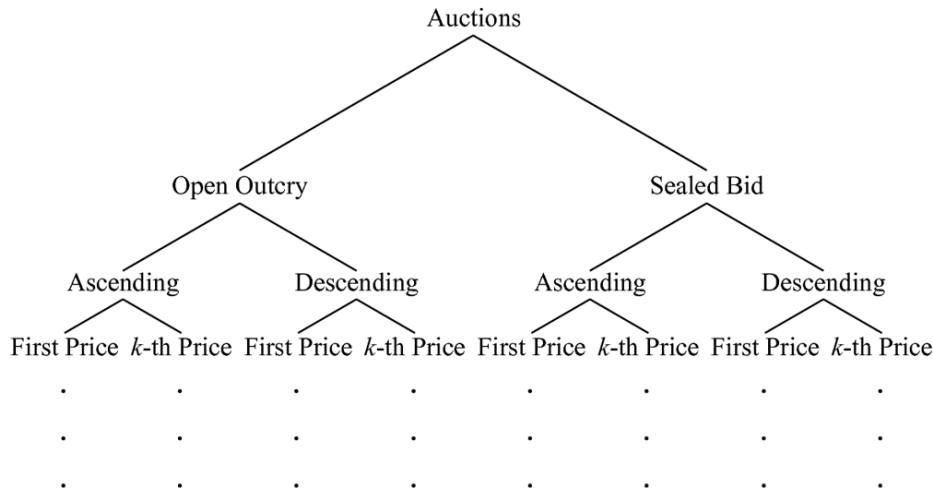
- The *English auction* involves public announcements of gradually increasing bids until a single bidder remains, who pays for the lot at the price of the last bid. This is also known as an open ascending price auction.
- The *Dutch auction* is the reverse of this and a high asking price is gradually decreased until a single bidder agrees to pay for the lot at that price. This is also known as an open descending price auction.
- In the *reverse auction*, public announcements of gradually decreasing bids are made until a single bidder remains, who agrees to the exchange of services or goods at the price of the last bid. This is also known as an open descending price auction.
- In the *sealed-bid first-price auction*, all bids are submitted in private and the winner will pay the price that he had bid.
- In the *Vickrey auction*, the winner will pay the price that the “runner-up” had bid, i.e. the next highest price.

Furthermore, there are other independent properties that can be incorporated when designing an auction as described by Parsons (2009). These other properties are listed below and a taxonomy of auctions is shown in Figure 1.

- **Combinatorial:** Auctions that are combinatorial see multiple heterogeneous goods auctioned together.
- **Dimensionality:** In a singularly-dimensional auction, the bid is completely defined by the price of the lot, whereas in a many-dimensional auction, the bid may be a function of other attributes such as the timely delivery of the lot or the length and amount of the insurance contract taken out on that lot.
- **Sidedness:** In a one-sided auction, bidders are either all sellers or all buyers. In a two-sided auction, both buyers and sellers submit bids and these are matched by the auctioneer.

For auctions without time restrictions, it turns out that the English and the sealed-bid second-price auctions are shown to be equivalent, while the Dutch and the sealed-bid first-price auctions are

Figure 1. A taxonomy of auctions



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