Evolution of Repeat Bidders' Behaviour in Recurring Auctions

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Objectives of the Analysis

- Observe individual bidding behaviour in each auction
- Characterize bidding behaviour into behavioural profiles
- Track the evolution of bidding behaviour across recurring auctions for each individual bidder
- Use behavioural profiles to measure change in bidding behaviour across recurring auctions
- Explain changes in behaviour by previous bid outcomes

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Testable Hypotheses

H1: The choice of bidding behaviour is not affected by previous bid outcomes

H2: Changes in an individual's bidding behaviour are constant as the magnitude of the loss in the previous auction increases

H3: Changes in an individual's bidding behaviour are constant as the number of consecutive losses in previous auctions increases

What Quantitative Measures of Bidding Behaviour Exist? Old vs. New

One Dimensional Characterization of Bidding Behaviour

Examples of measurable statistics used in previous literature to characterize bidding behaviour include:

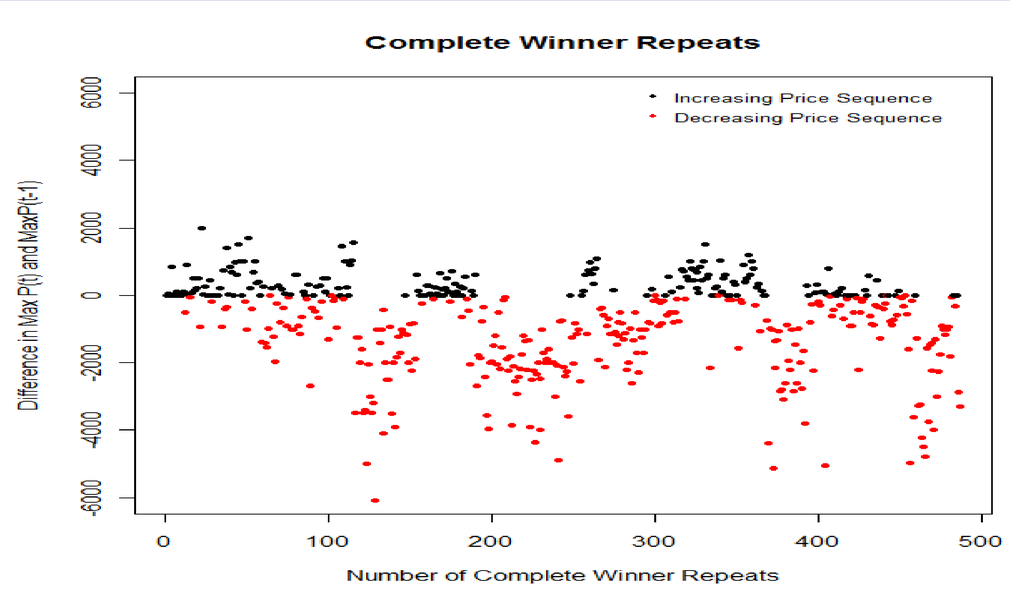
- Auction participation (entry and exit time) (Wilcox 2002)
- Magnitude of bid price (Goes et al. 2010)
- Difference between true valuation and bid price (Kagel and Levin 2001)

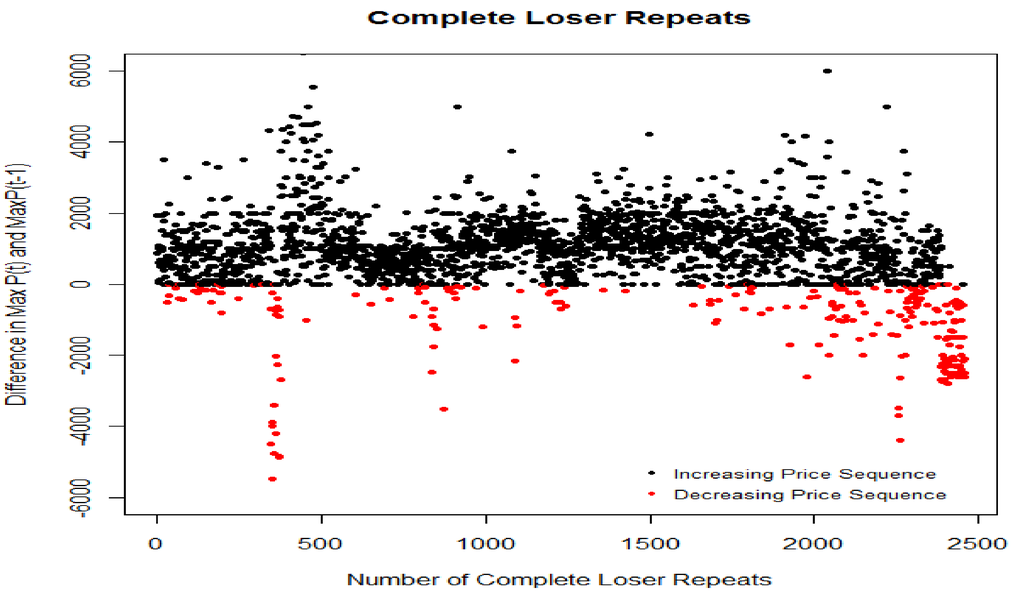
Multi Dimensional Characterization of Bidding Behaviour

Measurable statistics contained in a bid schedule submitted by a bidder in a given Ontario quota auction include:

- Total number of bids per auction
- Total quantity bid per auction
- Relative weight placed on each bid in bid schedule
- Magnitude of bid price

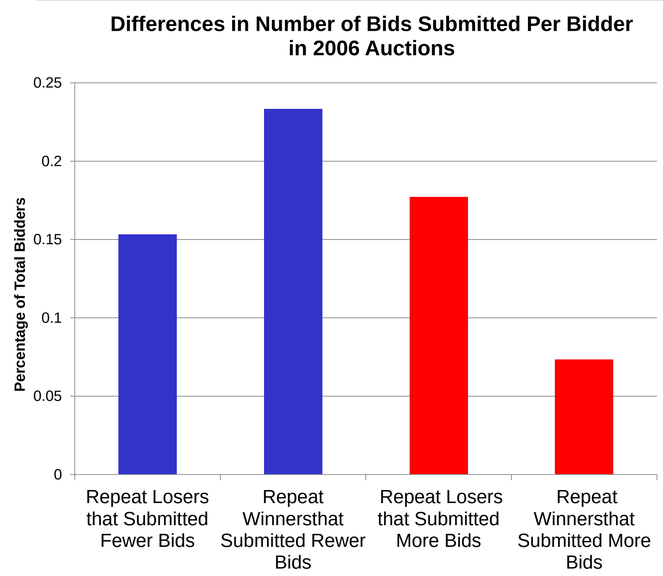
Comparison of Maximum Bid Price Submitted by Repeat Bidders per Auction

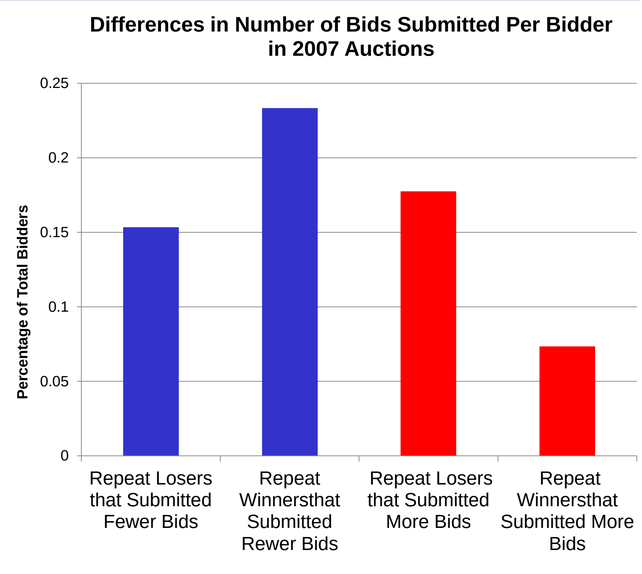


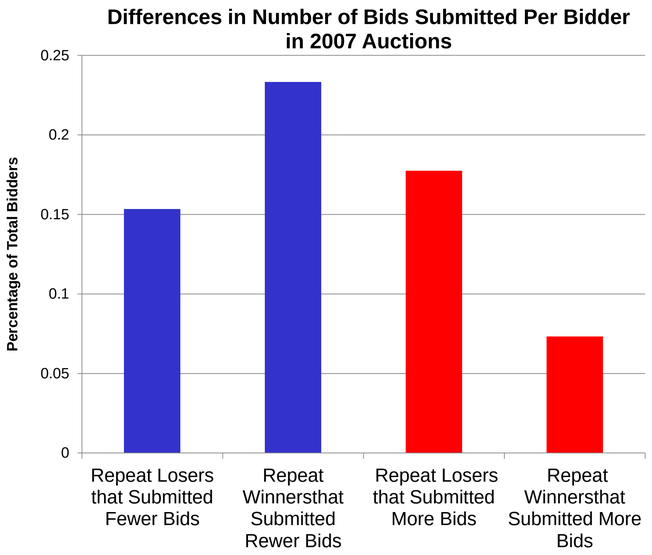


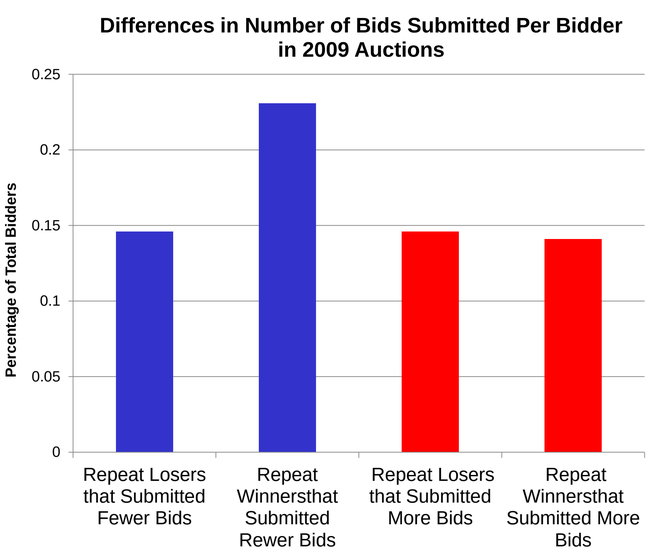
These two graphs illustrate the difference in maximum bid price submitted in two consecutive auctions. What we notice is that bidders who won all of their bids in the previous auction *("complete winners")* tend to submit lower bids in the next auction. In contrast, bidders who lost all of their bids in the previous auction *("complete losers")* tend to submit higher bids in the next auction. This is consistent with theoretical models that predict bidders will be more likely to behave aggressively in future auctions after experiencing a lost in the previous auction. Furthermore these graphs provide evidence to reject H1.

Comparison of the Number of Bids Submitted by Repeat Bidders per Auction









These four graphs illustrate a difference in bidding behaviour between repeat losers and repeat winners and provides evidence to reject H1. The difference in bidding behaviour is identified by the number of bids submitted per bidder per auction. We see that a greater proportion of repeat losers submit more bids in the auction after a complete loss relative to the proportion of repeat winners that that submit more bids after a complete win. In contrast, we see a larger proportion of repeat winners submitted fewer bids in the auction after a complete win relative to the proportion of repeat losers that submitted fewer bids after a complete loss. This additional metric complements previously used metrics (i.e., bid price) to provide a more comprehensive characterization of bidding behaviour to observe changes in bidding behaviour among bidders.