Discriminatory Versus Uniform Auctions: Evidence From JGB Market

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Abstract
1. This is the first study that investigates the effect of auction switch considering asymmetric valuation among bidders.
2. We use data of the Japanese government bonds (JGBs) market.
3. We find that discriminatory auctions lowered auction yield compared to uniform auctions.
4. Our result also shows that this effect was diminished when bidders are asymmetric in terms of valuation on the auctioned bond.

Empirical Approach
1. We analyze the effect of the auction switch of 30-year JGBs in April 2007 by the difference-in-difference approach.
   - Treatment: 30-year JGBs
   - Control: 2-, 5-, 10- and 20-year JGBs
2. For the proxy of asymmetric valuation among bidders, we use either of:
   - Difference between the highest price and the lowest price (“WI price gap”) in the forward JGB market (WI market)
   - Tail (average price minus the lowest winning price) at the auction
3. As a dependent variable, we follow previous studies and use the markup defined as auction winning yield minus either of the following reference yields to remove unobserved heterogeneity.
   - WI yield of the auctioned bond in the prior day (Simon, 1994)
   - The prior day’s corresponding market yield based on maturity (Barbosa et al, forthcoming)

Two Auction Formats
1. In a discriminatory auction, winners pay their bid prices.
2. In a uniform auction, all winners pay the same price (the lowest winning price) regardless of their bid prices.
3. 30-year JGBs switched from uniform to discriminatory in April 2007.

Discriminatory Auction Outperforms Uniform Auction?
1. Ausubel et al. (2014) find that the general revenue ranking between the two formats is ambiguous.
2. This justifies conducting more empirical research on this topic.
3. However, they also argue that in settings with symmetric bidders the discriminatory auction outperforms the uniform auction in revenues.

Research Questions
Based on the argument by Ausubel et al. (2014), this paper studies the following hypotheses using the auction format switch of 30-year JGBs in April 2007.

Hypotheses:
1. Does a discriminatory auction lower an auction yield?
2. Is the effect weaker when bidders’ valuations for the auctioned bond are different (asymmetric)?

Additional Result
1. We also use a Triple-Difference approach seeing WI yield of auctioned JGBs as an additional control group.
2. The result is similar to the result in the DID approach.