Discussion: An Estimable Demand System for a Large Auction Platform Market by Matthew Backus and Greg Lewis

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Note: This presentation does not necessarily represent the views of the Commission or any individual Commissioner.

Summary

- Propose competitive Markov equilibrium in which bidders bid against the long-run distribution of types.
- A long-run distribution of types exists.
- b(v, s) = v – O(v,s)
- F is identified, where $\boldsymbol{v} = \{v_1, v_2, \ldots v_J\} \sim F$

Summary

- We can estimate F by observing

1. $b_i = \{b_{i1},\ldots,b_{iS}\}$
2. b_{is} where F has parametric assumptions.
3. b_{is} where $v_i = Z g_i + e_i$

Main Suggestion

- Put the “Large” in the model instead of the equilibrium concept.
  - Let there be a set of M potential bidders
  - At each t some subset N_t is drawn randomly and with replacement from M.
  - Entry and exit occurs but among the potential bidders.

Main Suggestion

- As M gets large, histories are less informative.
- Not sure appropriate equilibrium concept.
- For some M it is a dynamic game of imperfect information and persistent types – Markov perfect Bayesian equilibrium or applied Markov equilibrium or something else?
- Entry and exit still affects distribution of types.

Other Issue

- We don’t observe all bids in eBay auctions.
- Bidders only bid in 1 or 2 auctions.
- Hedonics don’t help.
- Adams (2009)
  - Observe auction prices
  - Infer choice from simultaneous auctions.

Identifying Demand from Online Auction Data

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Abstract

The paper presents a framework for estimating a demand system from price data generated by a large scale auction platform such as eBay. Auction prices are used to identify characteristics of the joint distribution using an order statistics like approach where the bidder's "revealed preference" in equilibrium enables inference of valuations. Two approaches are presented for identifying the full joint distribution. Sklar's Theorem is used to show the complete joint distribution can be inferred from combining information from the first step with information on the marginal distributions inferred from prices of auctions with no competition. A dynamic model is used to show variation in the number of auctions for the same product can be used to provide bounds on the joint distribution. The paper presents additional results for when the number of participants is unobserved, when the number of competing auctions is unobserved and when there is observed bidder heterogeneity.

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