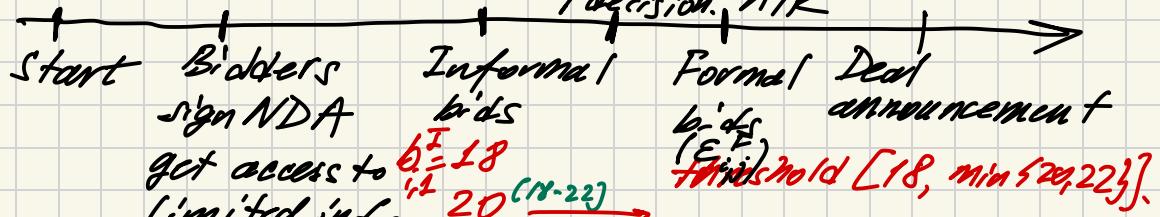


Informal Bids

i: auction; j: bidder
T: decision: AIR



① (simplest): $(E_{i,j}^I)_{i,j}$ $j=3$. $b_{i,j}^{I*} = 18$ $b_{i,j}^{F*} = 20$ $b_{i,j}^{D*} = 22$

$A_i \in \{0, 1\}$. $A_i = \beta^I X_i + \gamma_i^I$ \rightarrow moments of bids: mean, var, max

"Prob." i . (auction level)

Alternative:

$$b_{i,j}^{I*} = \beta^I X_i + \gamma_i^I \Rightarrow \gamma_i^I \in [18 - \beta^I X_i, 20 - \beta^I X_i]$$

ML or MCMC.

- MCMC: (1) start w/ β_0^I .
- (2) Simulate $\gamma_{i,0}^I$ s.t. $\gamma_{i,0}^I$ satisfied; calculate $b_{i,0}^{I*}$
- (3) Estimate β^I given calculated $b_{i,0}^{I*}$.
- (4) simulate β_1^I
- (5) Repeat n times.

② (highest informal bids do not always make it to formal stage).

$$b_{i,j}^{I*} = 18 \rightarrow$$

$$L = 20$$

$$z = 22 \rightarrow$$

$$b_{i,j}^{I*} = b_i^{I*} + \gamma_{i,j}^I \quad \gamma_{i,j}^I \leftarrow \begin{array}{l} \text{bidder type: S or F.} \\ \text{"Service fees": # bids} \\ \text{variance of bids...} \end{array}$$

$$b_{i,j}^{I*} = \beta^I X_i + \gamma_{i,j}^I + \gamma_{i,j}^I \quad \gamma_{i,j}^I \leftarrow \begin{array}{l} \text{("individual level")} \\ \text{variance of bids...} \end{array}$$

- ③. (target's AIR decisions depend on its inference about bidders' valuations).
- $$\delta_i^{I*} = \rho^I X_i + \gamma_i^I$$
- ↑
target chars.
moments of bidder valuations
- $$v_{i,j} = \delta X_i + \gamma_{i,j}$$
- ~~$\sim b_{i,j}^I \rightarrow v_{i,j} \in [\bar{v}(b_{i,j}^I), \bar{v}(b_{i,j}^I)]$~~
given X_i , I can calculate moments of bidder val. cond'ly on bids.

- MCMC:
- (1) Assume δ_0, β^I_0 .
 - (2) Simulate $\gamma_{i,0}^I, \gamma_{i,j,0}$.
 - (3) Given δ_0 , calculate moments of $v_{i,j}^I$.
 - (4) Estimate β^I and δ
using moments of $v_{i,j}$ as controls.
 - (5) Draw β^I, δ
 - (6) Repeat.

Simulate N auctions.

a. Each auction: 3 bidders.

b. Bidders have valuations at 1st stage

$$v_{i,j} = 1.3 + N(0, 0.2^2). \quad \text{Case 1.}$$

c. Bidders submit their valuations.

d. Target sets threshold $b_i^{T*} = \text{const} = 1.4$

[This will mean that some auctions are never completed as drop incomplete auctions for now].

e. Goal: to estimate b_i^{T*} when we only observe ATR decisions.

f. (More realistic). Case 2.

g! Bidders are of 2 types (S & F).

$v_{i,j} = 1.3 + N(0, 0.2^2)$ (of course these could be bidder-specific).

h! T sets threshold of 1.45 for S

1.35 for F.

e! estimate b_i^{T*} that are type-specific.

I have ~20 auctions with hand-collected data.

Matevos and Seru (2014, RFS).

Conglomerates.