Asymmetric Information and Sovereign Debt: Theory Meets Mexican Data

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The paper in a nutshell

- Novel (awesome) dataset, Mexico short-term treasury auctions 2001-17
- "Surprising" empirical facts: largest buyer at auction has (vs. rest)
  - much higher fill ratios
  - no significant difference in cost (overpayment)
- Model
  - wealth or risk heterogeneity don't work
  - asymmetric information accounts for the facts
  - rare disasters distribution performs best quantitatively

Brilliant paper! Cool data, clear motivation, tight model and exposition

Empirical Motivation

Define

- "Winner" $\equiv$ bidder with highest *level* of filled orders
- "Overpayment" $\equiv \frac{AP_i}{MP_i}$

Facts on averages

- fill ratio(winner) $>$ fill ratio(rest)
- overpayment(winner)$\approx$ overpayment(rest)

Model in One Slide

Assumptions

- Discriminatory-price auction
- Expected payoff of bond is $(1-\kappa)-P$
- n informed agents know κ, $(1-n)$ uninformed think $\begin{cases} \kappa_g \text{ w.p. } f_g \\ \kappa_b \text{ w.p. } (1-f_g) \end{cases}$
- Market clearing

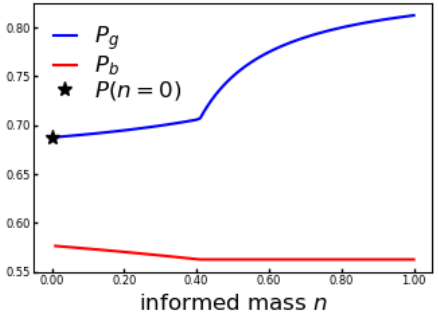
$$nP^iB^i + (1-n)\sum_j P_j^u B_j^u = D$$

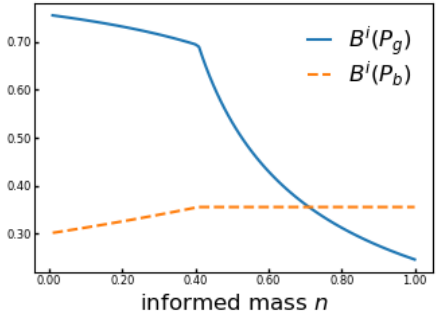
Consider risk neutrality:

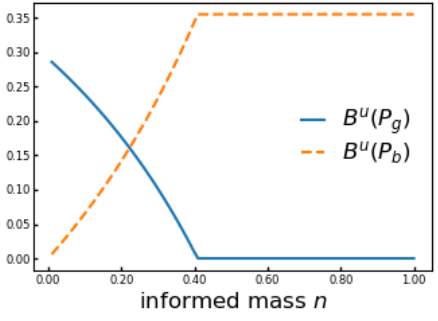
- Informed are indifferent at $P(\kappa) = 1-\kappa \rightarrow$ Informed always (pay MP, buy) in both states
- Uniformed only buy "high" if $P(\kappa_g) = 1-\bar{\kappa} \rightarrow$ Uninformed (pay MP, buy) only if $\kappa = \kappa_b$

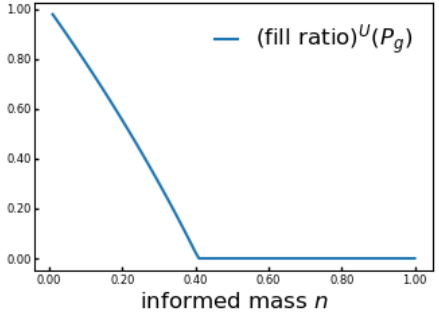
With risk aversion $\rightarrow P(\kappa_g) \uparrow n$

Illustration









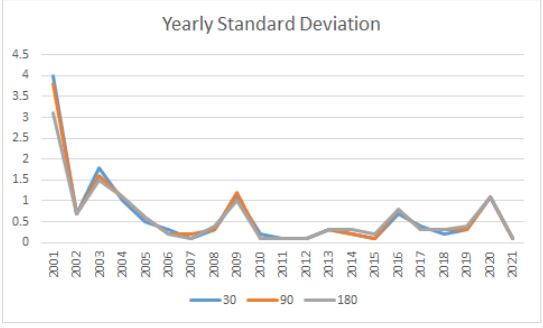
Data

Pro: much larger sample size than literature

	Country	No. Maturities	Size	Period
Hortaçsu Kastl Zhang (AER 2018)	US	8	$n_m < 222$	2009-13
Hortaçsu McAdams (JPE 2010)	Turkey	1	$n = 130$	1991-93
Hortaçsu Kastl (ECTA 2012)	Canada	2	$n_m = 116$	1998-03
this paper	Mexico	4	$n_m \approx 800$	2001-17

Contra:

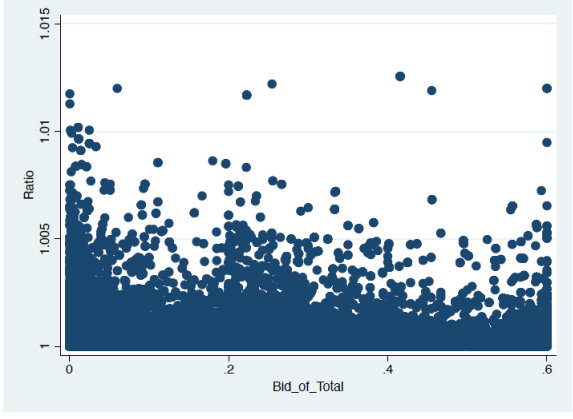
- no bidder information or tracking
- regime changes?

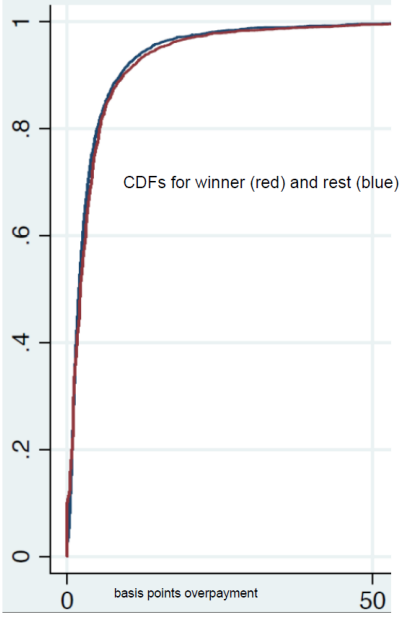


"Slicing" the data

Authors choose to focus on largest buyers, fill ratios, average overpayment

Data is very rich, can we learn more?





Bidders' identities (Hortaçsu Kastl Zhang (AER 2018))

TABLE 2—DESCRIPTION OF BIDS

	Bid			Within auction SD[Bid]			Percent of issue size			Percent of tender won		
Maturity	Primary	Direct	Indirect	Primary	Direct	Indirect	Primary	Direct	Indirect	Primary	Direct	Indirect
CMBs	0.1501	0.1389	0.1185	0.0244	0.0201	0.0223	19	5	3	21	36	64
4 week	0.0943	0.0699	0.0463	0.0254	0.0337	0.0266	18	3	2	19	52	84
13 week	0.1119	0.0866	0.0683	0.0248	0.0332	0.0249	19	3	2	19	54	84
26 week	0.165	0.1368	0.1254	0.0275	0.0391	0.0272	20	4	2	16	52	71
52 week	0.2617	0.2356	0.227	0.0299	0.0333	0.017	17	4	2	20	47	67
2 year	0.5604	0.5231	0.4927	0.0397	0.046	0.0939	13	4	1	22	42	70
5 year	1.5627	1.4902	1.4384	0.0682	0.0631	0.1244	10	3	1	24	55	82
10 year	2.7229	2.6482	2.5906	0.0732	0.0706	0.192	11	3	1	21	50	71

Notes

- Primary = primary dealers; Direct $\approx$ other banks; Indirect = funds via primary dealers
- stdev is across bidders; percent of issue size related to bids submitted
- Uniform price auction!

More Questions

1. Cetes data

- Is there a size-price-bidding behaviour relationship?

2. Are all bidders price-takers?

Paper discusses wealth/size heterogeneity

- but maintains price-taking assumption

HKZ18 find evidence of bid shading

- primary dealers bid lower because of market power, given valuation
- valuation includes information advantage due to bid intermediation

Conclusion

Super interesting paper

- Great data (thank you, Daniel!)
- Brings primary auctions (divisible good + discriminatory pricing) to sovereign default + time series dimension
- Tractable model, very clear explanation of results and mechanisms