Discussion of "Inelastic Demand Meets Optimal Supply of Risky Sovereign Bonds" by Moretti, Pandolfi, Schmukler, and Bauer

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Lenders in sovereign default literature

- Risk neutral lenders: international interest rate given by r^* (most literature)
- Risk averse lenders: time-varying risk premium $r^*(y_t, y_{t+1})$
  - Stochastic discount factor correlates with EM output y_t

    (Arellano-Ramanarayanan 2012, Aguiar-Chatterjee-Cole-Stangebye 2016, Morelli-Ottonello-Perez 2022...)
- Inelastic lender demand curve: $r^*(B_{t+1})$
  - Borrowing rates depend on sovereign borrowings B_{t+1}, *even fixed default risk*
  - Arellano, Bai, Lizarazo 2017: two sovereigns borrow from one lender with endogenous wealth $\Rightarrow$ endogenous risk premium + inelastic demand
  - Chaumont (2021): secondary market trade frictions affect demand of sovereign bonds

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Challenge: how to discipline lender demand curve?

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Challenge: how to discipline lender demand curve?

Need direct measurement!

This paper

- Empirically estimate demand elasticities, leveraging on exogenous demand change
    - Monthly rebalancing of EMBI Global Diversified (EMBIGD)
    - Passive investors adopt weights on EMBIGD

  $\Rightarrow$ Estimated demand elasticity about 0.3%

- Theoretically build a sovereign default model with micro-founded inelastic lending demand
    - Model closely linked to the empirical analysis: passive + active lenders
- Quantitatively explore the impact of inelastic demand on sovereign debt and spreads
    - Inelastic demand disciplines sovereign govt borrowings and leads to lower default risk

The idea is simple, the task is challenging, and the execution is smart and beautiful!

Key elements of the model

- Bond price schedule

$$q\left(y,\tau,B'\right)=\beta^{\star}\underbrace{\mathbb{E}_{s'|s}\left[\mathcal{R}\left(y',\tau',B'\right)\right]}_{\text{expected repayment}}\underbrace{\Psi\left(y,\tau,B'\right)}_{\text{lender demand curve}}$$

$$\mathcal{R}\left(y',\tau',B'\right)=\left[1-d\left(y',\tau',B'\right)\right]\left[\lambda+(1-\lambda)\left(\nu+q\left(y',\tau',B''\right)\right)\right]$$

$$\Psi(y,\tau,B')=\exp\left[-\kappa\frac{\mathbb{V}ar\left(\mathcal{R}\left(y',\tau',B'\right)\right)}{\mathbb{E}\left(\mathcal{R}\left(y',\tau',B'\right)\right)}\left(B'-\mathcal{T}(\tau,B')-\overline{\mathcal{A}}\right)\right]$$

- Downward sloping lender-demand curve: higher B' lowers bond price (even fixed default risk)
- Passive lender demand $\mathcal{T}(\tau,B')$
  - Higher B', higher passive lender demand
  - Rebalancing shock τ following AR(1) process
- Elasticity depends on κ and variance of default risk: high default risk $\to$ larger elasticity (consistent with empirics)

Comment 1: empirically estimated elasticity

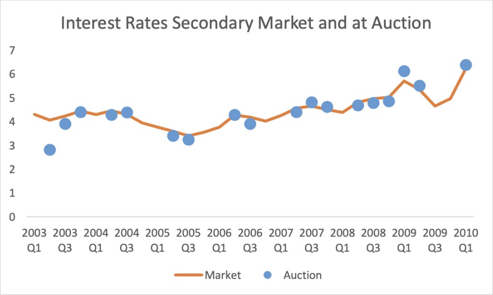
- Very challenging to estimate the demand elasticity: endogeneity issue
- The paper addresses this problem with high-frequency data and the rebalancing events, very cool!

However, does the estimated elasticity matter for government issuing bonds? Potential issues

- Short-run (monthly) versus long-run elasticity
  - Long run: lenders have better information, less liquidity constrained, or new lenders come in
- Primary market and secondary market prices/elasticities might be different

Comment 1: empirically estimated elasticity

Figure: 10-year Greek Bonds



- Primary market prices mostly follow secondary market price
- About 1% gap in early 2003

- Gap can be driven by market conditions/sentiment, economic data release, shifts in expectations about ECB policy, liquidity in the secondary market...
- Similar prices $\neq$ similar elasticities

Comment 2: quantitative model of lenders

- Here emphasize the demand of lenders
- Abstract from risk premium — extensively studied in the literature
- Potentially enrich the active lender's demand $\bar{A}$,
  - Depends on sovereign country's output $\Rightarrow$ risk premium
  - Depends on sovereign country's borrowing B' $\Rightarrow$ long-run versus short-run elasticity
- Help match data better & interesting to decompose the source of sovereign spreads from default risk, downward-sloping demand, risk premium

Comment 2: quantitative model of lenders

(b) Relation with output

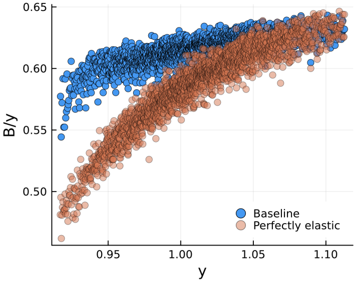


Table 10
Comparison with perfectly elastic case: Unconditional moments

Moment	Description	Baseline	Perfectly elastic
$\mathbb{E}(SP)$	Bond spreads	462bp	817bp
$\sigma(SP)$	Volatility of spreads	145bp	456bp
$\mathbb{E}(B/y)$	Debt to output	62%	59%
$\mathbb{E}(d)$	Default frequency	3.73%	4.39%
$\sigma(B)/\sigma(y)$	Standard deviation of debt, relative to output	1.41	1.99
$\rho(SP, y)$	Correlation between spreads and output	-0.78	-0.57

With inelastic lenders (baseline),

- B/y is less correlated with $y \Rightarrow$
- Corr(spread, output) is more negative than perfectly elastic case & data
  - Data: -0.42 in Morelli-Moretti 2023, -0.28 average of 12 EM in Bai-Kehoe-Lopez-Perri 2024

Adding risk-averse lenders and thus risk premium may help

Other comments

- Is rebalancing a major shock that drives the fluctuation of sovereign spreads?
- How important is τ in driving sovereign spreads in the model?
- Computing statistics under mean $\tau = \tau^*$
  - In particular for the comparison between inelastic and perfectly elastic lenders
  - Inelastic lender case has 2 shocks, but perfect-elastic-lender case has one shock only

Conclusion

- Very cool paper, well executed!