

The Perils of Bilateral Sovereign Debt

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What is the Paper About?

- How does access to **bilateral short-term debt** affect market borrowing and welfare?
- Quantitative sovereign-default model with **private** and **official** debt
 1. Terms bargained with a senior lender
 2. $\uparrow$ Market debt $\Rightarrow$ $\uparrow$ government's strength in negotiations

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 2. $\uparrow$ Market debt $\Rightarrow$ $\uparrow$ government's strength in negotiations
- **Key result:** Government **overborrows** to improve bargaining position with lender
- Complements nicely recent literature on official debt
 - ▶ **Competitive, LT**, concessional debt $\uparrow$ **welfare** Arellano and Barreto 25
 - ▶ **ST** lending negotiated through **bargaining** can $\downarrow$ **welfare**
- How to design official lending programs?

Cross-Elasticity and Borrowing Incentives

- Suppose loan amount is fixed, $m' = \bar{m}$, (e.g. due to borrowing limit)
- Euler equation for market debt

$$u'(c) \left(q + \frac{\partial q}{\partial b'} i + \underbrace{\frac{\partial \left(\frac{1}{1+r} \right)}{\partial b'}}_{\substack{\text{Cross-elasticity} \\ > 0}} \bar{m} \right) = \beta \mathbb{E}_{z'|z} [\nu_b(b', \bar{m}, z')] .$$

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- $\uparrow b' \Rightarrow \uparrow$ cash-on-hands $\Rightarrow$ stronger bargaining position $\Rightarrow \downarrow r$.
- Cross-elasticity raises the marginal benefit of issuing market debt
 - ▶ Government **borrow**s more than without bilateral lending
 - ▶ $\uparrow$ default frequency $\Rightarrow$ **welfare losses**

Cross-Elasticity and Borrowing Incentives

- When loan amount is not fixed, Euler equation is more complicated

$$u'(c) \left(q + \frac{\partial q}{\partial b'} i + \underbrace{\frac{\partial \left(\frac{1}{1+r} \right)}{\partial b'} m'}_{\text{Cross-elasticity}} \right) = \beta \mathbb{E}_{z'|z} [v_b(b', m', z')] \\ - \left\{ u'(c) \frac{1}{1+r} - \beta \mathbb{E}_{z'|z} [v_m(b', m', z')] \right\} \frac{\partial m'}{\partial b'}$$

- b' affects both **interest rate**, r , and **negotiated quantity**, m'
- Does this additional wedge amplify or dampen the effect of cross-elasticity?
 - ▶ Could be useful to assess numerically sign and magnitude

Debt Swaps

- **Relational overborrowing** $\Rightarrow$ excessive reliance on private debt
 - ▶ **Composition** of public debt inefficient, not just its level
- Are Pareto-improving debt swaps possible in the model? Arellano and Barreto 25
 - ▶ Can exchanging one type of debt for another make **borrower and both lenders** better off?
- Increase official debt ($\uparrow m'$) and reduce private borrowing ($\downarrow b'$)

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 - ▶ Private lenders may be better off despite a smaller quantity of debt
- $\uparrow m'$ benefits the senior lender, but $\downarrow b'$ weakens their future bargaining position
 - ▶ It is unclear whether senior lender is better off

Spreads on Negotiated Loans

	Only market	Unrestricted, $\theta = 0.25$	Unrestricted, $\theta = 0.5$
Avg spread (bps)	714	1,613	2,105
Std spread (bps)	399	927	1,331
$\sigma(c)/\sigma(y)$ (%)	113	109	109
Debt to GDP (%)	22.5	21.7	21.2
Loan to GDP (%)	0	3.4	3.02
Loan spread (bps)	–	-52.5	-429
Corr. loan & spreads (%)	–	61.7	67.5
Default frequency (%)	5.72	11	13
Welfare gains (rep)	–	-0.15%	-0.43%

- Bilateral loans carry **negative average spreads**, consistent with evidence Horn, et al. 25
- However, **spreads rise sharply near default**
 - ▶ Empirically spreads on official loans **decline with credit risk** Horn et al. 25
 - ▶ ... although they do not distinguish between types of official debt
 - ▶ Evidence on spreads for short-term official loans could be informative

Subsidized Pricing Rule

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- Is it welfare-improving to subsidize official loans in some states?
- Why not consider pricing rules that can charge below the risk-free rate?

$$r(b', m') = \max \{ \underline{r}, \alpha_0 + \alpha_b b' + \alpha_m m' \}, \quad \underline{r} < r^*.$$

Definition of Cross-Elasticity

Environment

- Two periods, $t = 0, 1$, with endowments $y_0 < y_1$.
- Government issues one-period risk-free debt b_1 at price $q = R^{-1}$.

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Bargaining problem

$$\max_{x,r} \mathcal{L}(x,r)^\theta \mathcal{B}(x,r; y_0, y_1, b_1)^{1-\theta}.$$

$$\mathcal{L}(x,r) = -x + \beta_L x(1+r)$$

Lender surplus

$$\begin{aligned} \mathcal{B}(x,r; y_0, y_1, b_1) = & u(y_0 + R^{-1}b_1 + x) \\ & + \beta u(y_1 - b_1 - x(1+r)) \\ & - [u(y_0 + R^{-1}b_1) + \beta u(y_1 - b_1)] \end{aligned}$$

Borrower surplus

- Cross-elasticity depends on $\frac{\partial \mathcal{B}}{\partial b_1} \neq R^{-1} \frac{\partial \mathcal{B}}{\partial y_0}$

Final Remarks

- How important is the timing assumption in the quantitative model?
 - ▶ **Market debt issued before bargaining**
 - ▶ **Bargaining before market issuance** could weaken the mechanism?
- Very nice paper highlighting **risks of short-term official lending**
- Quantitative model useful to assess importance of cross-elasticity effect
- Raises important question on the design of official lending