

The Perils of Bilateral Sovereign Debt

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Official Sovereign Debt

- A large share of sovereign borrowing takes the form of **official** debt
... Multilaterals, development banks, other governments
- Emergence of new bilateral creditors **outside** the Paris Club
... with claims to **seniority** and sometimes **opaque** terms

► IDS data

Questions

- How does the presence of a large senior lender affect sovereign debt markets?
- What are its welfare implications for borrowing governments?

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Evaluating Senior Official Creditors

Quantitative sovereign debt model with

- Competitive creditors in private **markets** (bondholders)
- Large **bilateral** lender
 1. Superior enforcement technology
 2. Bargained borrowing terms (price and quantity)
 3. Short-maturity loans
- Prime example: Central Bank swap lines (Horn et al., 2021)
 - ... also perhaps CB deposits, loans with non-monetary payment, IMF programs...
- Focus on the **interaction** between both funding sources
 - ... presence of bilateral lender affects government behavior in debt markets
 - ... outcomes in debt markets affect threat points in bargaining

Relational Overborrowing

Main findings

- Bilateral loans have significant effects on equilibrium outcomes
 - ... provide funding when other sources dry up (e.g. because of default risk)
 - ... can also incentivize more **risk-taking**
- If the rate on bilateral loans is decreasing in *market* debt [cross-elasticity]
 - ... government issues debt more quickly, delevers more slowly
 - ... spends longer in the risky region
 - ... defaults more frequently
- Cross-elasticity emerges endogenously from bargaining
 - ... at plausible values for bargaining weights
 - ... increased frequency of defaults dominates extra liquidity
 - ... **welfare losses** for the government

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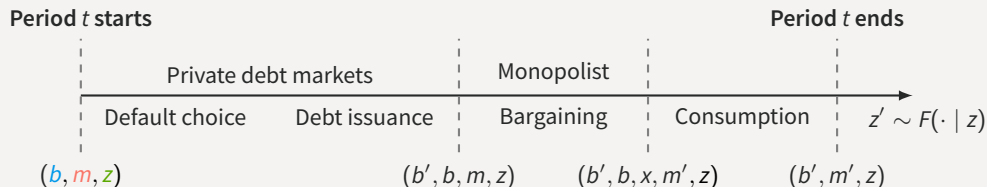
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Model

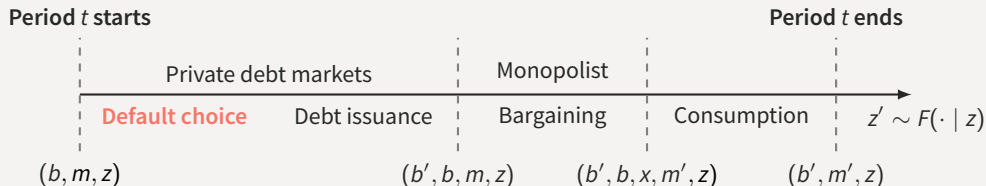
Timeline of Events

- Enter period t owing b to bondholders, m to monopolist, income $y(z)$



Timeline of Events

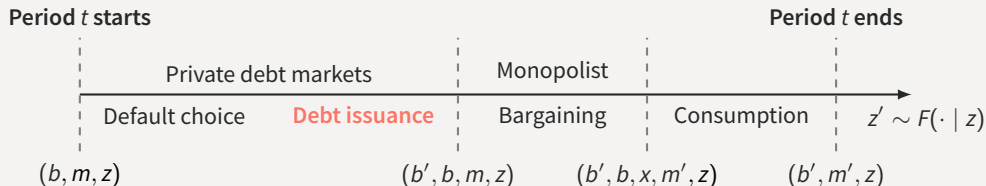
- Choose to **repay** or **default** the *market* debt subject to convex output costs



$$v(b, m, z) = \max \{ v_R(b, m, z) + \epsilon_R, v_D(m, z) + \epsilon_D \}$$

Timeline of Events

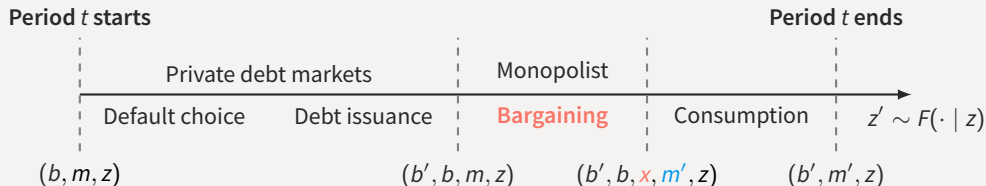
- If repaid, issue new debt b' in markets at price q



$$q(b', b, m, z) = \beta_L \mathbb{E} [(1 - 1_{\mathcal{D}}(b', m', z')) (\kappa + (1 - \delta)q(b'', b', m', z')) | z]$$

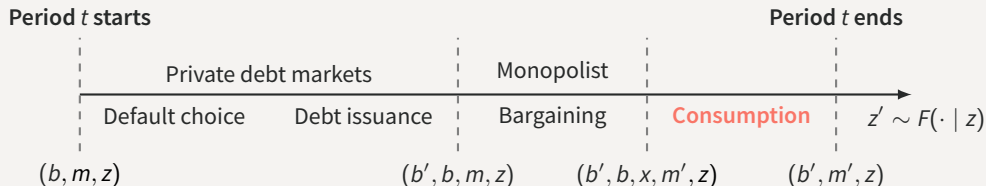
Timeline of Events

- Meet with senior lender, decide any transfers x and new/remaining balance m'



Timeline of Events

- Consume **output** plus **revenues from debt issuance** plus **transfers** minus **debt service**



$$c_R = y(z) + q(b', b, m, z)(b' - (1 - \delta)b) + x_R(b', b, m, z) - \kappa b$$

Exogenous Bilateral Terms

Programming the Large Lender: Possible Rules

- Explore interest rate rules of the form

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

- Two versions

Size-dependent

$$\alpha_0 > 0, \alpha_b = 0, \alpha_m > 0$$

Risk-inducing

$$\alpha_0 > 0, \alpha_b < 0, \alpha_m = 0$$

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Equilibrium with Exogenous Rules

	Only market	Size dependent r	Risk inducing r
Avg spread (bps)	714	623	921
Std spread (bps)	399	315	552
$\sigma(c)/\sigma(y)$ (%)	113	115	115
Debt to GDP (%)	22.5	23.5	22.8
Loan to GDP (%)	0	0.71	0.972
Loan spread (bps)	–	682	1,264
Corr. loan & spreads (%)	–	62.5	48.1
Default frequency (%)	5.72	5.13	6.92
Welfare gains (rep)	–	0.21%	-0.079%

Endogenous Bargaining

Bargaining Stage with Monopolist

- At state z , owing debt b bonds and m on the loan and having issued b'

$$\max_{x,m} \mathcal{L}_R(b', x, m, m', z)^\theta \times \mathcal{B}_R(b', b, x, m, m', z)^{1-\theta}$$

Government surplus
Lender surplus

- Lender's surplus

$$\mathcal{L}_R(b', x, m, m', z) = \underbrace{(a - x + \beta_L \mathbb{E}[h(b', m', z') | z])}_{\text{agreement}} - \underbrace{(a + m + \beta_L \mathbb{E}[h(b', 0, z') | z])}_{\text{threat point}}$$

- Government's surplus

$$\begin{aligned} \mathcal{B}_R(b', b, x, m, m', z) = & \underbrace{u(y(z) + B(b', b, m, z) + x) + \beta \mathbb{E}[v(b', m', z') | z]}_{\text{agreement}} \\ & - \underbrace{(u(y(z) + B(b', b, m, z) - m) + \beta \mathbb{E}[v(b', 0, z') | z])}_{\text{threat point}} \end{aligned}$$

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- Revenues from debt issuance $B(b', b, m, z)$ modulate the value of the threat point
 - After large revenues (high q , high b'), gov't flush with cash, **strong** in bargaining
 - After bad issuance (low q or low b'), gov't **weak** in bargaining
- Strongly negative cross-elasticity of bilateral terms to market debt
→ goes against market discipline of spreads

$$u'(c) \left(q + \frac{\partial q}{\partial b'} i + \frac{1}{1 + r_b} \frac{\partial m'}{\partial b'} + \frac{\partial \frac{1}{1 + r_b}}{\partial b'} m' \right) = \beta \mathbb{E} [u'(c)(1 - \mathbb{1}_{\mathcal{D}})(\kappa + (1 - \delta)q' + \dots)]$$

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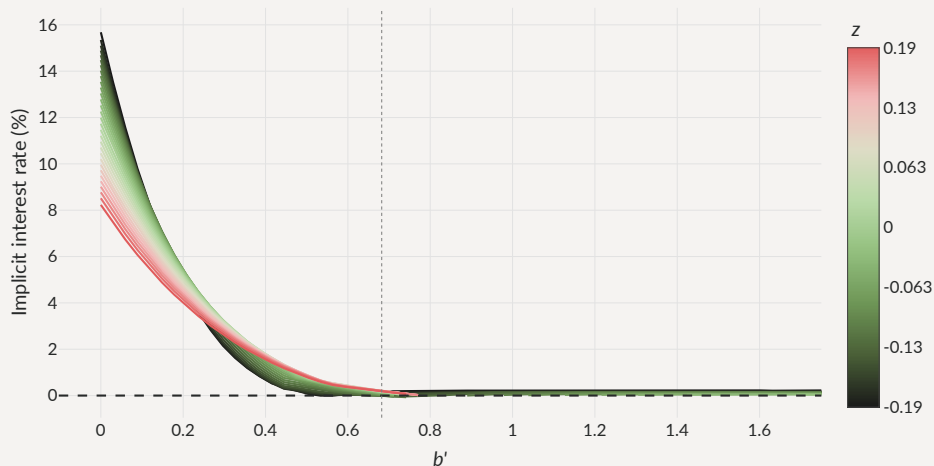
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Surplus on loan requires spreads > 0 : monopolist provides **incentives** for risk taking

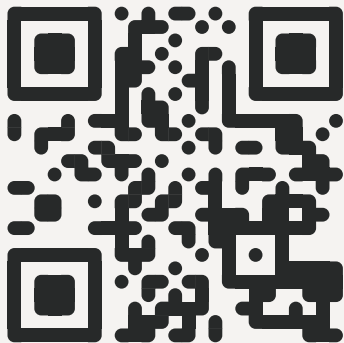
Loan interest rate (Limited)



Concluding remarks

The Perils of Bilateral Sovereign Debt

- Simple model of borrowing from **markets** and a **senior bilateral lender**
 - ... **Dangerous** when bilateral interest rate responds negatively to *market* debt
 - ... Bargaining as an example of situation where cross-elasticity emerges
- Strong interaction between two markets for sovereign debt
 - ... cross-elasticity induces risk-taking, more defaults, welfare losses
 - ... even if bilateral loans are **not** used intensely on the equilibrium path
- Cross-elasticity constitutes a simple test to assess welfare gains of **new** instruments
 - ... or a boost to the gains of fiscal rules, state-contingent debt...

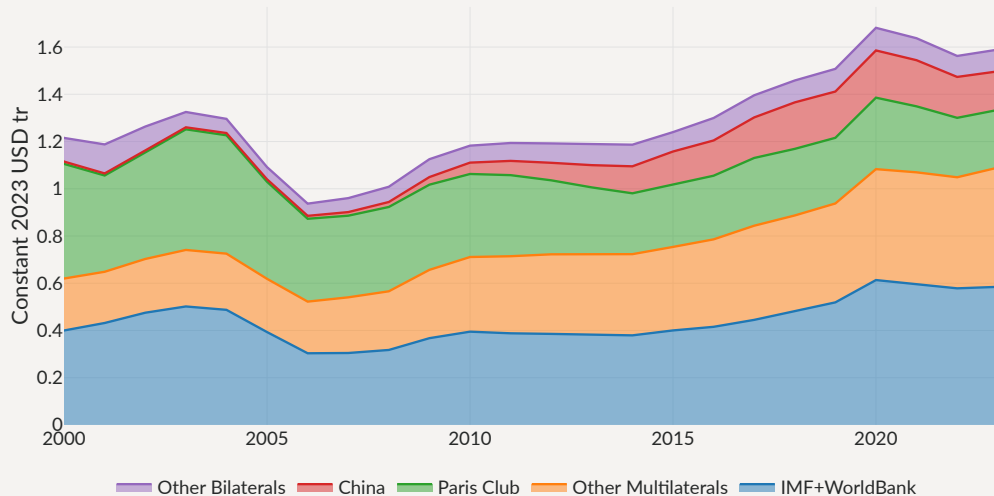


Scan to find the paper

A New Landscape for Official Sovereign Debt

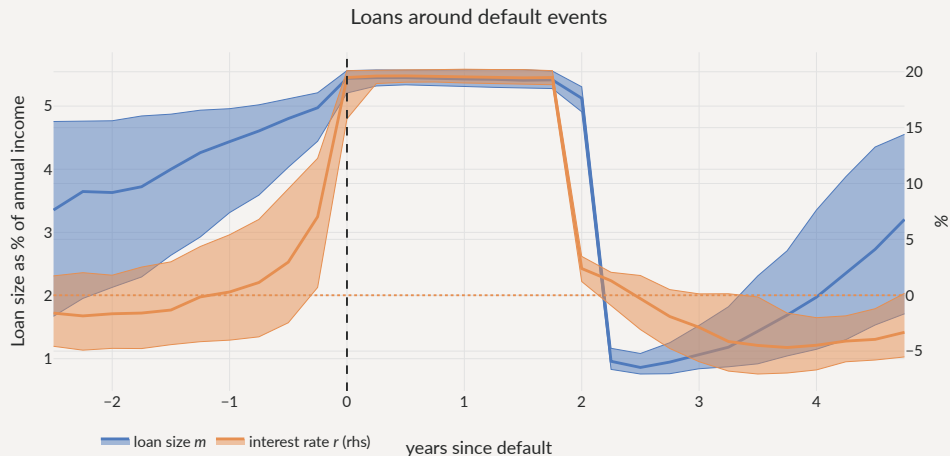
[◀ Back](#)

Total Official Debt



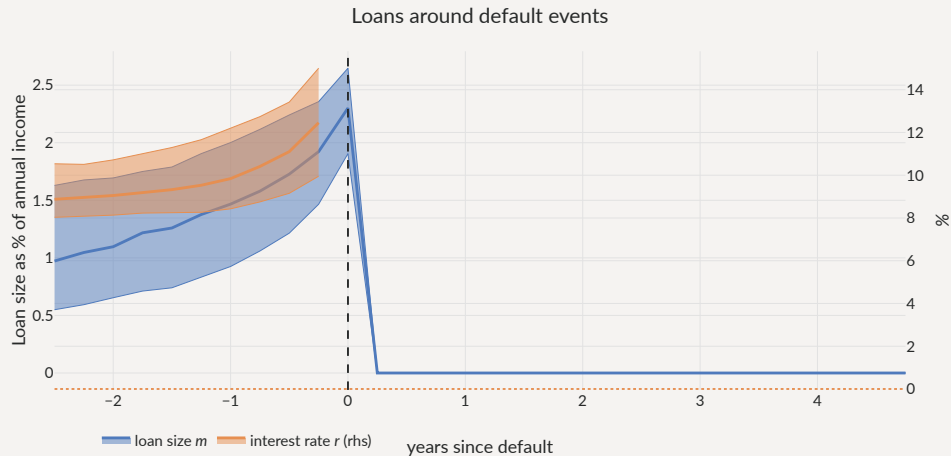
When is the Loan Used?

- Further conditioning on default events lasting exactly two years



When is the Loan Used?

- With Limited: $\Gamma(m) = m$



Loan drawings m' (Limited)

