Sovereign Local Currency Debt and Original Sin Redux

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Original Sin Redux

Original sin: High dependence on FC external debt (Eichengreen, Hausmann, and Panizza, 2007)

- FC debt with currency mismatch problem → High external vulnerability
  - Bad global financial conditions → EMs' currency ↓ → debt burden ↑ and default risk ↑

Since mid-2000, FC external debt share ⇓: 85% → 50%

Original sin redux: High external vulnerability with LC external debt
(Hofmann, Shim, and Shin, 2020, Hofmann, Patel, and Wu, 2022)

- Foreign investors' unhedged FX exposures generate a negative feedback loop:

Global Financial Shocks → Local Currency Depreciation → Foreign Inv. Asset Sales (Capital Ouflows) → Bond Price ⇓

This Paper: Role of Domestic Financial Sector

Low financial development relative debt level amplifies the negative feedback loop?

Global Financial shocks → LC Depreciation → Foreign Inv. Asset Sales (Capital Ouflows) → Bond Price ⇓ (Default risk ⇑)

Domestic Banks' Government Bond Holding ⇑ → Private Credit ⇓

Intensity depends on financial development and debt level

What I Do: Empirical

0. Decompose LC bond yield into default risk and currency risk for 11 EMEs (Du & Schreger, 2016)

$$\text{Default Risk}_t = \underbrace{y_t^{LC}}_{\text{LC bond yield}} - \underbrace{y_t^*}_{\text{US treasury yield}} - \underbrace{\rho_t}_{\text{currency risk}}$$

1. Measure credit channel vulnerability for each country
   - Credit channel vulnerability: Private credit sensitivity to foreign LC bond investment

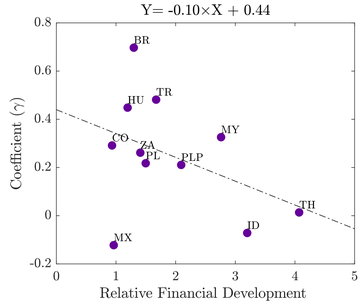
$$\Delta\text{Private Credit}_t = \gamma\Delta\text{Foreign Holding}_t + \beta_l X_{t-1} + \beta_g \text{Global}_t + \epsilon_t$$

2. Document relationship of γ with financial development relative to debt level

3. Document relationship of γ with external vulnerability

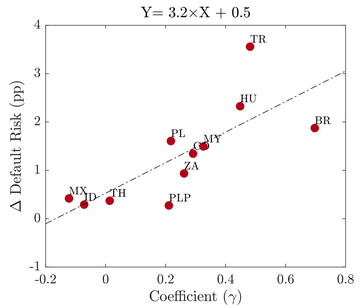
Financial Development Relative to Debt & Credit Channel Vulnerability

Lower financial development relative to debt level
→ Higher disruption of private credit when capital outflows from LC bond market



Credit Channel Vulnerability & External Vulnerability

Higher credit channel vulnerability → Higher external vulnerability
(default risk sensitivity to global financial conditions)



Relationship of External Vulnerability with Banks' Capability

Financial development relative to debt to GDP
||
Relative Financial Development ⇓ → Credit Channel Vulnerability ⇑ → External vulnerability ⇑
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Sensitivity of private credit supply to foreign LC bond investment

A Three-period Sovereign Default Model with Domestic Banks

- Household: members randomly switch between workers and bankers
  - Workers: save, consume, supply labor, pay labor income tax.
  - Bankers: buy the government bond and rent capital to firms.
- Firms: produce consumption goods using labor and capital
- Foreign investors: buy the government local currency bond
- Government: finance expenditure using tax revenue and debt in local currency

Key Features of the Model

- Foreign holdings of government bonds are endogenous: $\frac{E_t(\tilde{r}_t)^2}{2\Gamma \text{Var}_t(\tilde{r}_t)}$
  - ⇓ with default risk, expected currency depreciation, currency volatility
- Collateral constraints on domestic banks limit access to household savings: χN
  - Government debt issuance may crowd out capital investment
- High risk in global financial states: currency depreciation and volatility ↑ (exogenous)

Foreign Investors' LC bond holdings

In period 0 and 1, a unit mass of foreign investors labeled by $i \in [0, 1]$ solves

$$\max_{b^*_{i,t}} (E_t(\tilde{r}_t) - i) b^*_{i,t} - \frac{\Gamma}{2} \text{Var}_t(\tilde{r}_t) b^{*2}_{i,t}$$

where, $b^*_{i,t}$: investor i's investment in government bond, $\tilde{r}_t$: log return

- Heterogeneous participation costs, i per dollar invested (Alvarez, Atkeson, and Kehoe, 2009)
- The investor i's bond holding then satisfies:

$$b^*_{i,t} = \frac{E_t(\tilde{r}_t) - i}{\Gamma \text{Var}_t(\tilde{r}_t)}$$

- $\hat{i}_t$ is the marginal foreign investors purchasing the bond: $\hat{i}_t = E_t(\tilde{r}_t)$.
- Foreign holdings of the government bonds b^*_t:

$$\underbrace{\int_{i=0}^{i=\hat{i}_t} b^*_{i,t} di}_{b^*_t} = \frac{1}{\Gamma \text{Var}_t(\tilde{r}_t)} \int_{i=0}^{i=\hat{i}_t} (E_t(\tilde{r}_t) - i)\ di = \frac{E_t(\tilde{r}_t)^2}{2\Gamma \text{Var}_t(\tilde{r}_t)}$$

Main Mechanism

High Risk → Foreign Investment ⇓ → Domestic Banks: Goverment bond ⇑ → Domestic Banks: Private Credit ⇓ → Default Risk ↑

↑
collateral constraints χ:
level of financial development

→ ***Model generates empirical patterns!***