Sudden Stop with Local Currency Debt

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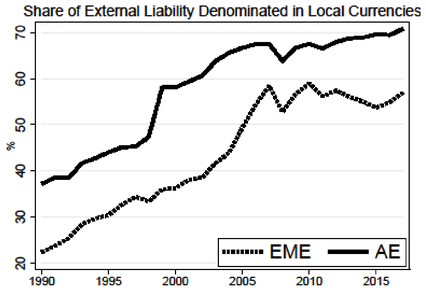
Motivation

- Emerging market economies (EMEs) have more external liabilities denominated in foreign currencies.
  - Vulnerable to sudden stop crises!
  - Policy recommendations based on this fact: limit debt volume to improve financial stability.
- But EMEs are issuing more local currency debts now.



Research Questions

- How does the rising local currency share of a country affect its economic resilience during a financial crisis?
- Are the existing policies still effective in today's environment?
- What are the optimal capital control policies under the presence of local currency debt?

Model Environment

We embed the choice of debt denomination into an otherwise standard sudden stop model à la Bianchi (2011).

Representative agent:

- Receives stochastic tradable endowment $y_{T,t}$ and constant nontradable endowment $y_{\{N,t\}} = \bar{y}_N$.
- The consumption good (c_t) is combined using tradable ($c_{T,t}$) and nontradable consumption good ($c_{N,t}$).
- Maximizes lifetime utility $E_0 \sum_{t=0}^{\infty} \beta^t u(c_t)$.
- Endogenous prices of $c_{N,t}$ (p_t^N) and c_t (p_t^C) **are increasing in $c_{T,t}$**.
- Issues foreign currency debt (FCD) and local currency debt (LCD):
  - FCD payoff =1 (noncontingent).
  - LCD payoff = real exchange rate = p_{t+1}^C (contingent).
- Faces an extra LCD issuance cost: $(\phi/2)(b_{t+1}\delta_{t+1})^2$, which captures the difficulties that EMEs face when issuing LCD on the international financial market.
  - b_{t+1}: total amount of debt issued.
  - δ_{t+1}: fraction of debt denominated in LCD.
- Faces standard collateral constraint in the literature:

$$q_t^C b_{t+1}\delta_{t+1} + q_t^T b_{t+1}(1-\delta_{t+1}) \le \kappa\left(y_{T,t} + p_t^N \bar{y}_N\right)$$

International Lenders:

- Deep-pocked, competitive, with pricing kernel $\mathcal{M}_{t,t+1}$.
- Bond prices:
  - FCD: $q_t^T = E_t[\mathcal{M}_{t,t+1}]$.
  - LCD: $q_t^C = E_t[\mathcal{M}_{t,t+1}p_{t+1}^C] = E_t[\mathcal{M}_{t,t+1}]E_t[p_{t+1}^C] + Cov(\mathcal{M}_{t,t+1}, p_{t+1}^C)$
- In equilibrium, our assumption on $\mathcal{M}_{t,t+1}$ ensures the covariance term is negative.
  - ⇒ Lenders charge a **premium** on LCD.

Tradeoff of local currency debt in equilibrium:

1. Hedging benefit: Unfavorable shock ⇒ $c_{T,t} \downarrow \Rightarrow p_t^C \downarrow \Rightarrow$ debt burden from LCD $p_t^C b_t \delta_t \downarrow$.
2. Costs: (1) premium paid on LCD, and (2) additional quadratic issuance cost.

Key Inefficiencies

The decentralized agents **fail to recognize** how their choice of $c_{T,t}$ influences:

1. p_t^N and thus the collateral value $\kappa(y_{T,t} + p_t^N \bar{y}_N)$.
   - ⇒Over-borrowing problem as in Bianchi (2011).
2. p_t^C and thus the
   1) Real debt burden $p_t^C b_t \delta_t$, and
   2) Previous bond price $q_{t-1}^C = E_{t-1}[\mathcal{M}_{t-1,t} p_t^C]$.

Since the inefficiencies influence **bond price in the previous period**, fully addressing this inefficiency **requires commitment**.

To understand the optimal policies in this environment, we characterize two social planners' allocations, one without commitment (discretionary planner, or "DP") and the other with commitment (commitment planner, or "CP"). Both internalize the two inefficiencies mentioned above.

Results

Important Result 1

A **discretionary** planner (DP):

1. **Discourages issuing LCD.** A discretionary planner always has an incentive to lower $c_{T,t}$ to reduce debt burden. Lenders understands this incentive and charges a high premium. As a result, it becomes very costly to issue LCD and a discretionary planner issues little LCD.
2. **Borrows less than the competitive equilibrium.** Being unable to enjoy the hedging benefits from LCD, the optimal discretionary policy reduces debt volume to improve financial stability.

Important Result 2

A **commitment** planner (CP):

1. **Encourages issuing LCD.** A commitment planner commits to higher $c_{T,t}$ to improve bond price and lowers the cost to issue LCD. Therefore, she issues more LCD to better utilize its hedging benefit.
2. **Borrows more than the discretionary planner.** Being able to enjoy the hedging benefits from LCD, the commitment planners borrows more than the discretionary planner.

The difference in the portfolio choices and the associated welfare results are shown in the simulation results below.

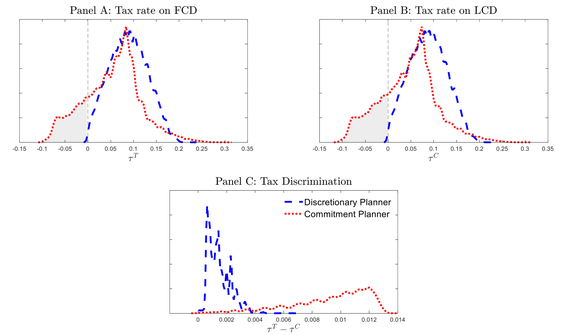
	CE	DP	CP
Avg. Debt/GDP	33.8%	32.1%	33.4%
Avg. share of LCD	13.7%	6%	20.3%
std(c_T)/std(y_T)	1.43	1.19	1.23
std(ca)/std(y_T)	1.03	0.46	0.73
Prob. of Crisis	6%	0.9%	2.4%
Severity of crisis (%Δc_T)	-24.4%	-13.4%	-16.6%
Avg. wel. gain	-	0.053%	0.062%
Avg. wel. gain relative to FCD only economy	0.116%	0.15%	0.157%

Important Result 3

The planners' allocations can be decentralized by using two macroprudential taxes, one on FCD and the other on LCD.

1. The optimal **discretionary** policies always tax both LCD and FCD in order to reduce borrowing.
2. The optimal policies **under commitment** sometimes subsidize borrowing in order to boost consumption and support bond price. In addition, the optimal policies under commitment also tax FCD more heavily than LCD to encourage using more LCD.

The differences are shown in the ergodic distribution of tax rates below.



Important Result 4

Despite the new inefficiencies, introducing LCD alone can **deliver significant welfare gains** (0.116%) that are comparable to the optimal prudential regulations (0.12%) in an FCD-only economy.

This result suggests that financial integration could be a substitute for financial regulations in a dollar-debt economy.

Policy Takeaways

- The optimal financial regulation should consider currency denominations.
- With LCD, the optimal financial regulation requires commitment.
- Financial integration could be a substitute for financial regulations in a dollar-debt economy.