Liquidity, Debt Denomination, and Currency Dominance

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Can liquidity explain the financial dominance of the U.S. dollar?

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- $t = 0$; Government sells Safe bonds that mature in $t = 2$. 

Mechanism/Result

- When more investors hold safe bonds, it is less costly to get them in $t = 1$.
- Entrepreneurs denominate debt on the currency with higher supply of gov. bonds.
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▶ $t = 0;$ Entrepreneurs sell bonds to finance investment that mature in $t = 2$. 
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- Entrepreneurs denominate debt on the currency with higher supply of gov. bonds.
Model: First period \((t = 0)\), BA-type Equilibrium

- **Government A**
  - Sells \(G_A\) bonds

- **Entrepreneurs A**
  - Sell \(F_A\) bonds

- **Investors**
  - Buy bonds

- **Government B**
  - Sells \(G_B\) bonds

- **Entrepreneurs B**
  - Sell \(1 - H(\hat{K})\) \(F_B\)

- **Bond Market A**
  - Buy bonds
  - Sell \(H(\hat{K})F_B\)

- **Bond Market B**
  - Buy bonds
  - Sell \((1 - H(\hat{K})) F_B\)

▶ Heterogeneous cost of using foreign currency denomination (with CDF \(H(K)\)).

Felipe Saffie on Coppola, Krishnamurthy, and Xu (2023)
Model: Second period \((t = 1)\), BA-type Equilibria

- **Entrepreneurs A**
  - Buy \(\phi F_A\) bonds

- **Entrepreneurs B**
  - Buy \(\phi H(\hat{K})F_B\) bonds
  - Buy \(\phi (1 - H(\hat{K})) F_B\) bonds

- **Investors**
  - Sell bonds

- **Bond Market A**
  - Sell bonds

- **Bond Market B**
  - Sell bonds

Matching function: \(n_j = \lambda_j m_{F,j}^\theta m_{I,j}^\theta\); Increasing returns to scale \(\theta > \frac{1}{2}\).
Indifference Condition

▶ Expected utility of a B entrepreneur with B-denominated debt:

\[ u_{B,B}^F(i) = P_{0,B} - \beta^2 + \beta \phi \alpha_{F,B} \eta (1 - \beta). \]

▶ Expected utility of a B entrepreneur with A-denominated debt:

\[ u_{B,A}^F(i) = P_{0,A} - \beta^2 + \beta \phi \alpha_{F,A} \eta (1 - \beta) - K_i. \]
Indifference Condition

- Expected utility of a $B$ entrepreneur with $B$-denominated debt:

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- Expected utility of a $B$ entrepreneur with $A$-denominated debt:

\[ u_{B,A}^F(i) = P_{0,A} - \beta^2 + \beta \phi \alpha_{F,A} \eta (1 - \beta) - K_i. \]

- The marginal entrepreneur in $B$ is indifferent. After some algebra and simplifying assumptions we get:

\[ \lambda_A [m_{F,A} + \phi m_{I,A}] - \hat{K} = \lambda_B [m_{F,B} + \phi m_{I,B}] \]

- Endogenous masses are determined by \{\(G_j, F_j, \phi\)\}. 
BA-type Equilibria

Figure 2: Characterizing equilibria in the heterogenous cost case

- Borrowing in foreign denomination: liquidity benefit vs. fixed cost. Pareto distribution gives non-monotonic pattern.
BA-type Equilibria

Figure 2: Characterizing equilibria in the heterogeneous cost case

- Borrowing in foreign denomination: liquidity benefit vs. fixed cost. Pareto distribution gives non-monotonic pattern.
- More government safe-debt issuance, more likely to have a dominant currency.
1. **Incompleteness:**
   - Entrepreneurs cannot insure their liquidity risk.
   - There are no one period bonds or contingent payment instruments.
Market Incompleteness versus Market Imperfections

1. Incompleteness:
   ▶ Entrepreneurs cannot insure their liquidity risk.
   ▶ There are no one period bonds or contingent payment instruments.

2. Imperfections:
   ▶ Trading bonds before maturity is costly (search friction).
   ▶ Debt prepayment is not allowed.
   ▶ Currency transformation is impossible in the last period (no spot exchange rate). Thus, an entrepreneur with early payoffs can only buy bonds denominated on the same currency than her obligation.
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   - Is this the less restrictive environment that we can think of to make the liquidity story work?
   - A Chilean firm will borrow in dollars because, in the event of an unexpected early revenue—it is easier to save in dollars. **Should we take the story literally?**
Default Risk and Debt Limit

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- Fiscal capacity (taxing local entrepreneurs to cover government repayment) and/or default risk can introduce a limit to government debt.
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- This extension is particularly timely given the debt ceiling discussion in the U.S. How much debt is too much debt?
Empirical Support

How do measures of market liquidity in treasury bonds (bid-ask spreads, IMF) correlate with dollar value or dollar debt issuance in EM? At what maturity?

Note: Bid-ask spread, as a percent of price, for on-the-run 10-year U.S. Treasury bonds, estimated using the high-low spread suggested by Corwin and Schultz (2012).
Increasing Returns in Matching: This is a key assumption to get currency dominance. If potential buyers and sellers of bonds double, the number of transactions more than doubles. How do we understand this in reality? Would this imply that liquidity (e.g., bid ask spread) increases non-linearly in the number of transactions?

Strategic Interactions: In a potentially bi-polar world, what is the best response function of each country on the $G$ space? How could a challenger (China) substitute the incumbent (U.S.)? Fiscal capacity to insure that debt is risk free should be key.
Final Remarks

- Interesting and very elegant paper.

- Several extensions in the paper that I enjoyed reading.

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- Several extensions in the paper that I enjoyed reading.
- More connection with current financial markets and some empirical regularities on liquidity are desirable.
- Future work could include exchange rate risk. *Anecdotal evidence*, private equity firms in the US lend only in dollars to EM market firms because of ER risk.