SOVEREIGN RISK, CURRENCY RISK AND CORPORATE BALANCE SHEETS

Wenxin Du and Jesse Schreger

Discussion by
Luigi Bocola
Northwestern University and FRB Minneapolis

The views expressed herein are those of the author and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.
INTRODUCTION

- Credit risk for external debt in local currency (LC) positive
- **Q**: why would a government default on debt issued in its own currency?
- **A**: currency depreciation has adverse effects on firms’ balance sheets
  - Construct new dataset on external debt by currency and sectors
  - Fact: corporations borrow extensively in foreign currency
  - Quantitative model of sovereign debt
  - Cross-country analysis consistent with mechanism
- Great paper. Blends new dataset with quantitative model
OUTLINE OF THE DISCUSSION

• Overview of the paper: background, dataset, economic mechanism

• Three remarks/suggestions:
  • Dataset construction
  • Some key model predictions should be tested in the data
  • Default and external private debt

• Conclusion
Local Currency Spreads

- Growing fraction of external debt of EMs in LC

- Interest rate differentials

\[ S_t^{LC/US} = S_t^{LCCS} + \rho_t \]

- Credit risk

- Currency risk

- Du and Schreger (2015) construct time series for local currency credit risk for many emerging markets
LOCAL CURRENCY SPREADS: BRAZIL

Brazil 5Y

- LC/US
- FC/US
- CCS
- LCCS
**Why Credit Spreads on Local Currency Risk?**

- Remark 0: not a “puzzle"
- Inflation more costly than outright default in some states of the world
- Mechanism in the paper: currency mismatch in firms’ balance sheets
- Authors construct a new dataset of external debt
**Dataset: External Debt by Currency and Sector**

<table>
<thead>
<tr>
<th></th>
<th>Sovereign</th>
<th></th>
<th>Corporate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Securities</td>
<td>Loans</td>
<td>Securities</td>
<td>Loans</td>
<td></td>
</tr>
<tr>
<td>LC</td>
<td>$604</td>
<td>$0.02</td>
<td>$66</td>
<td>$116</td>
</tr>
<tr>
<td>FC</td>
<td>$379</td>
<td>$29</td>
<td>$842</td>
<td>$899</td>
</tr>
</tbody>
</table>

- Document corporations borrow from abroad in foreign currency
- Argue that depreciation risk not hedged by firms (Mexico and Brasil)
- Data used to calibrate structural model
- Cross-country analysis to validate model mechanism
**Remark 1: Imputations**

<table>
<thead>
<tr>
<th>Sovereign Securities</th>
<th>Loans</th>
<th>Corporate Securities</th>
<th>Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>Various</td>
<td>Imp. (BIS, Thom)</td>
<td>Imp. (BIS, TIC)</td>
</tr>
<tr>
<td>FC</td>
<td>BIS</td>
<td>Imp. (BIS, Thom)</td>
<td>BIS</td>
</tr>
</tbody>
</table>

- Documenting facts is one key contribution of the paper
- Need to convince the reader on the imputations
- Suggestions
  - For LC securities, look just at US TIC data
  - For loans, look at syndicated loan data in Thomson dealscan
  - Does the pattern remain? Do the results hold?
ECONOMIC MECHANISM

Quantitative sovereign debt model

1. Government borrow from foreign lenders through long term bonds in LC

2. Entrepreneurs ⇒ Borrow Z from abroad (α_pZ in LC). Revenues in LC

3. Government can reduce the debt burden by
   - Inflation ⇒ Negative balance sheet effects on firms ⇒ Output costs
   - Default ⇒ Exogenous output losses

Government lacks commitment. Lenders charge premium

\[ s_t^{LC/US} \approx \mathbb{E}_t[d_{t+1}] + \mathbb{E}_t \left[ \frac{\pi_{t+1}}{1 + \pi_{t+1}} \right] \]

Main prediction: Low α_p, high \( \mathbb{E}_t[d_{t+1}] \)
ECONOMIC MECHANISM

<table>
<thead>
<tr>
<th>Share LC Debt $\alpha_p$</th>
<th>Mean LCCS $s^{ LC / CS}$</th>
<th>Mean Nom. Spread $s^{ LC / US}$</th>
<th>Credit Share $s^{ LC CS} / s^{ LC / US}$</th>
<th>Sov. Debt/GDP B/Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>10%</td>
<td>1.28</td>
<td>4.77</td>
<td>26.8%</td>
</tr>
<tr>
<td>FC Debt</td>
<td>-</td>
<td>2.0</td>
<td>2.0</td>
<td>100%</td>
</tr>
<tr>
<td>Model</td>
<td>0%</td>
<td>1.89</td>
<td>2.66</td>
<td>70.9%</td>
</tr>
<tr>
<td>Model</td>
<td>5%</td>
<td>1.67</td>
<td>2.98</td>
<td>55.9%</td>
</tr>
<tr>
<td>Model</td>
<td>10%</td>
<td>1.10</td>
<td>3.33</td>
<td>32.9%</td>
</tr>
<tr>
<td>Model</td>
<td>15%</td>
<td>0.88</td>
<td>3.73</td>
<td>23.6%</td>
</tr>
<tr>
<td>Model</td>
<td>20%</td>
<td>0.30</td>
<td>4.09</td>
<td>7.3%</td>
</tr>
<tr>
<td>Model</td>
<td>25%</td>
<td>0.05</td>
<td>4.28</td>
<td>1.2%</td>
</tr>
<tr>
<td>Model</td>
<td>30%</td>
<td>0.00</td>
<td>4.31</td>
<td>0.1%</td>
</tr>
<tr>
<td>Model</td>
<td>50%</td>
<td>0.00</td>
<td>4.34</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

$\alpha_p$ low $\rightarrow$ Inflation more costly $\rightarrow$ More incentives for outright default
Relation holds with controls, fixed effects, …
**Remark 2: Check additional predictions**

<table>
<thead>
<tr>
<th></th>
<th>Share LC Debt $\alpha_p$</th>
<th>Mean LCCS $s^{LCCS}$</th>
<th>Mean Nom. Spread $s^{LC/US}$</th>
<th>Credit Share $s^{LCCS} / s^{LC/US}$</th>
<th>Sov. Debt/GDP $B/Y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>10%</td>
<td>1.28</td>
<td>4.77</td>
<td>26.8%</td>
<td>9%</td>
</tr>
<tr>
<td>FC Debt</td>
<td>-</td>
<td>2.0</td>
<td>2.0</td>
<td>100%</td>
<td>9.8%</td>
</tr>
<tr>
<td>Model</td>
<td>0%</td>
<td>1.89</td>
<td>2.66</td>
<td>70.9%</td>
<td>8.9%</td>
</tr>
<tr>
<td>Model</td>
<td>5%</td>
<td>1.67</td>
<td>2.98</td>
<td>55.9%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Model</td>
<td>10%</td>
<td>1.10</td>
<td>3.33</td>
<td>32.9%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Model</td>
<td>15%</td>
<td>0.88</td>
<td>3.73</td>
<td>23.6%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Model</td>
<td>20%</td>
<td>0.30</td>
<td>4.09</td>
<td>7.3%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Model</td>
<td>25%</td>
<td>0.05</td>
<td>4.28</td>
<td>1.2%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Model</td>
<td>30%</td>
<td>0.00</td>
<td>4.31</td>
<td>0.1%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Model</td>
<td>50%</td>
<td>0.00</td>
<td>4.34</td>
<td>0.0%</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

*(Another) Main prediction:* currency risk increasing in $\alpha_p$

Does it hold in the data? Need countries with high credit risk having low currency risk
Remark 2: Check additional predictions

(Another) Main prediction: interest rate differential decreasing in $\alpha_p$

Does it hold in the data? Need response of currency risk $>$ response of credit risk
Remark 3: Default and Firms’ External Debt

- Experiment in the model: keeping borrowing constant, change currency composition

- Difficult to replicate it in the data (not enough variation)

- Outright defaults have large impact on external debt of private sector

- Possible solution would be modeling default costs as well
CONCLUSION

- Great paper.

- Suggestions:
  - Robustness on the imputation
  - Theory richer, use same data to validate mechanism
  - Default and firms’ external debt