Discussion of “Sovereign Debt Portfolios, Bond Risks and the Credibility of Monetary Policy” by Wenxin Du, Carolin Pflueger and Jesse Schreger

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What this paper does

This paper:

1. Provides empirical evidence that countries with more countercyclical inflation issue less local-currency debt $s^L$
   - $\text{Corr} \left( \beta_{\pi, Y}, s^L \right) > 0$

2. Presents a model offering a causal interpretation of this correlation relying on inflation credibility $p$
   - $p \uparrow \Rightarrow \beta_{\pi, Y} \uparrow \text{ and } s^L \uparrow$

3. Calibrates the model to show that it can be quantitatively consistent with the empirical evidence

4. Provides supportive evidence in favor of the causal mechanism

This discussion:

- Reviews the argument in some detail
- Offers comments and suggestions along the way
Introduction

Key empirical fact

- Clever use of financial market data to show this evidence in multiple ways
- Surprisingly robust across measures:
  a) Beta of LC bonds on stocks
  b) Revisions of 2-year fcasts
  c) Realized $\pi$ vs realized $Y$
- Which one is the better one theoretically?

![Graph showing local currency debt shares, inflation betas, and bond-S&P betas](image)
Risks in government borrowing

- Consider stylized 2-period model to get intuitions
- $t = 0$: govt needs to raise real amount $V > 0$ with local currency debt $D^L$, foreign currency debt $D^F$, and inflation-linked debt $D^R$

\[ P_0 V = D^L + E_0 D^F + P_0 D^R \]

- $P_t$ is domestic price level, $E_t$ nominal exchange rate
- $t = 1$: govt receives income $Y_1$, consumes $C_1$, repays debt

\[ P_1 C_1 = P_1 Y_1 - (1 + i) D^L - E_1 (1 + i^*) D^F - P_1 (1 + r) D^R \]

- $i$ home nominal, $i^*$ foreign nominal, $r$ home real risk-free

- For now, risk-neutral lenders. No arbitrage $\Rightarrow$ Fisher equation & UIP

\[ (1 + r) \frac{\mathbb{E}[P_1]}{P_0} = 1 + i = (1 + i^*) \frac{\mathbb{E}[E_1]}{E_0} \]
Risks in government borrowing

At $t = 0$, form portfolio shares

$$1 = \frac{1}{V} \frac{D^L}{P_0 s^L} + \frac{1}{V} \frac{\varepsilon_0 D^F}{P_0 s^F} + \frac{D^R}{V s^R}$$

At $t = 1$, using Fisher equation & UIP

$$C_1 = Y_1 - (1 + r) \left( s^L \frac{\mathbb{E}[P_1]}{P_1} + s^F \frac{\varepsilon_1 \mathbb{E}[P_1]}{P_1 \mathbb{E}[\varepsilon_1]} + s^R \right) V$$

1. Unexpected inflation ($\frac{P_1}{\mathbb{E}[P_1]} \uparrow$) lowers real burden of LC debt
   - Fisher effect

2. Unexpected deprec. of RER ($\frac{\varepsilon_1}{P_1} \uparrow$) raises real burden of FC debt
   - Foreign-currency debt-deflation effect
Suppose FC borrowing unavailable ($s^F = 0$). Normalize $r = 0$.

Government

$$\max_{s^L} \mathbb{E} \left[ \frac{C_1^{1-\gamma}}{1-\gamma} \right]$$

s.t. $C_1 = Y_1 - \left( s^L \frac{\mathbb{E}[P_1]}{P_1} + (1 - s^L) \right) V$

If $(Y_1, P_1)$ stochastic and exogenous:
  - $s^L \uparrow$ when $\text{Cov}(Y_1, P_1) \downarrow$, since LC debt better hedge
  - cf lit. on pf choice with background risks (Campbell-Viceira etc)

Key point of DPS: in data, correlation is the opposite!

Their key observation: $P_1$ is not exogenous
Refined intuition: no commitment

- No commitment govt plays game with future self
- Self 1 takes $s^L$ as given and

$$\max \frac{C_1^{1-\gamma} - \alpha \left( \frac{1}{P_1} - 1 \right)^2}{1 - \gamma}$$

s.t. $C_1 = Y_1 - \left( s^L \frac{\mathbb{E}[P_1]}{P_1} + (1 - s^L) \right) V$
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  \max \frac{C_1^{1-\gamma}}{1-\gamma} - \alpha \left( \frac{1}{P_1} - 1 \right)^2
  \]
  s.t. \( C_1 = Y_1 - \left( s^L \frac{\mathbb{E}[P_1]}{P_1} + (1 - s^L) \right) V \)

- Solution ('no-commitment inflation rule')
  \[
  P_1 = \frac{1}{1 - \frac{s^L V}{2\alpha} \mathbb{E}[P_1] C_1^{-\gamma}} \approx 1 + \mathbb{E}[P_1] \frac{s^L V}{2\alpha} Y_1^{-\gamma}
  \]

- Endogenously, \( \text{Cov} (Y_1, P_1) < 0 \)
- Self-0 likes this... but also internalizes effect on \( \mathbb{E}[P_1] \), so reduces \( s^L \)
- Commitment/flexibility tradeoff (Amador-Werning-Angeletos 06)
- Low commitment govtts have \( \text{Cov} (Y_1, P_1) < 0 \) and low \( s^L \)
Refined intuition, full commitment

- Under full commitment, time-0 govt has plan for $P_1(z)$

$$\max_{P_1(z), s^L} \mathbb{E} \left[ \frac{C_1^{1-\gamma}}{1-\gamma} - \alpha \left( \frac{1}{P_1} - 1 \right)^2 \right]$$

s.t. $C_1(z) = Y_1(z) - \left( s^L \frac{\mathbb{E}[P_1]}{P_1(z)} + (1 - s^L) \right) V$

- Force for high $s^L$ and complete hedging $\text{Cov}(Y_1, P_1) < 0$
  - Intuition: decentralizes the risk-sharing problem with RN investors
Refined intuition, full commitment

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$$
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$$

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- To increase $\text{Cov}(Y_1, P_1)$, introduce investors with risk aversion $\phi$
  - Intuition: risk-sharing rule $\Rightarrow$ country bears own output fluctuations
  - But how can we flip the sign? Seems to defeat risk-sharing!
  - Explain $\phi$ vs $\gamma$ better.
Comments on model

- Overall: nice work given not-so-tractable model!
- You may be asking too much from it:
  - Endogenous $\text{Cov}(Y_1, P_1) > 0$? Many reasons why this is true in developed economies (cf Phillips curve)
  - Model highly stylized, so calibrating to data is very difficult
- Instead of calibration, would favor clear discussion of what empirical objects are relevant for the theory
  - Realized inflation vs actual inflation vs beta of stocks and bonds
Long maturities

- Inflating away public debt with long maturities?
  - In practice, mp can only affect nominal prices with a lag
  - So, only long maturity LC debt is affected
  - Quantitatively challenging to get much reduction in real debt from such policy in US (eg. Hilscher-Raviv-Reis 2013)
  - May be even harder in EMs (more FC debt, shorter maturities)
- Yet, paper provides clear evidence of countercyclical inflation in emerging markets
  - Direct evidence that this is due to attempts to inflate the public LC debt?
- Could also explore and test relationship between monetary credibility and LC debt maturity
Conclusion

- New, robust and interesting set of stylized facts
- Intuitive rationalization, nice work on model
- Thought provoking on the role monetary-fiscal interactions in determining inflation cyclicality and macro outcomes