

XXIV Annual Conference of the Central Bank of Chile

**“Emerging Markets Credibility, Foreign
Investors’ Risk Perceptions and Capital Flows”**



Sovereign Debt Crises and Floating Rate Bonds

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Context

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- Whatever they write on it, likely to be insightful and relevant!

Contribution and summary

- Propose new financial instrument for a sovereign borrower subject to default risk: floating rate bond
- Floating rate long bond is a long bond with a coupon indexed to interest on short bonds
- Combines desirable features of long and short bonds
 - ▶ Like long bonds immune to rollover risk
 - ▶ Like short bonds immune to dilution risk
- Very elegant result that FR bond achieves same allocation as sequence of short rate bonds

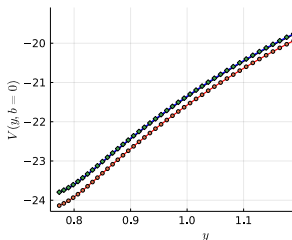
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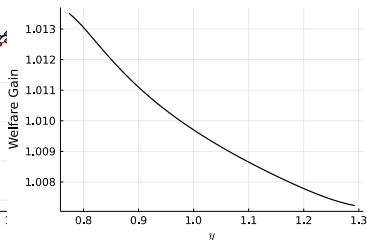
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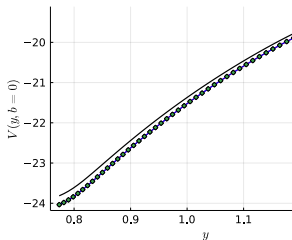
Gains from introducing Floating Rate Bonds



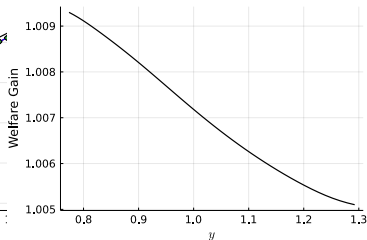
(a) Value at Zero Debt



(b) Welfare Gain

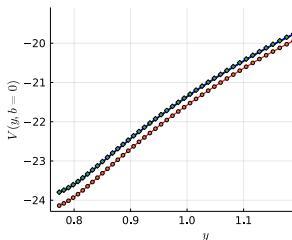


(c) Value at Zero Debt

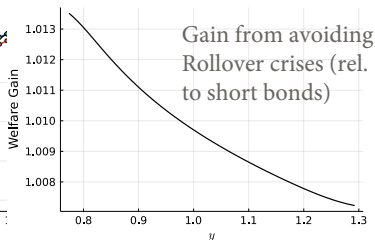


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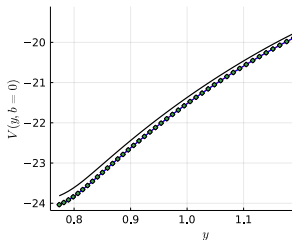
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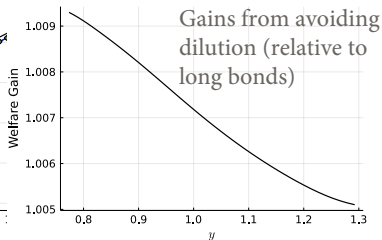
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(c) Value at Zero Debt



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In basic models sizeable gains

Discussion Outline

- A 3 period model of long and short bonds, in order to:
 - ▶ Give some additional intuition for results
 - ▶ Introduce additional role for long bonds
 - ▶ Floating rate or seniority clauses?

A 3 periods (0, 1, 2) small open economy

- Preferences: standard $u(), \beta$
- World interest rate R_t^*
- Endowments (capture emerging mkt patterns)
 - ▶ 0, $y_0 = L$, start poor
 - ▶ 1: either (π) recession ($y_1 = L, R_1^* = H$), or $(1 - \pi)$ boom ($y_1 = H, R_1^* = L$), **Spillover from N?**
 - ▶ 2: $y_2 \sim F(y)$, $E(y_2) = H$, **Commodity boom?**
- Financial mkts
 - ▶ 0, either borrow long (L_0) or short (S_0), not both
 - ▶ 1, repay S_0 , borrow S_1
 - ▶ 2, Default or repay

Default choices and prices

- Default penalty is loss of fraction α of output. Default iff

$$y_{2t}(1 - \alpha) > y_{2t} - L_0 - S_1$$

- Probability of default

$$F\left(\frac{L_0 + S_1}{\alpha}\right)$$

- Standard risk neutral lender

$$q_{S_1} = \frac{1 - F\left(\frac{L_0 + S_1}{\alpha}\right)}{R_1^*}$$

$$q_{L_0} = \frac{1 - F\left(\frac{L_0 + S_1}{\alpha}\right)}{R_0^* E(R_1^*)}$$

Economics Features

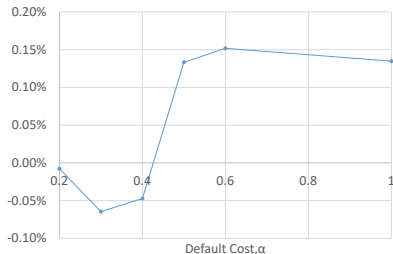
- Role for long term debt (slightly different than in the paper):
 - ▶ In the short-short sequence when economy in recession in 1 needs high borrowing at high prices to roll over short debt. **Welfare cost**. Long term debt reduce need for this, provides better hedge against recession risk.

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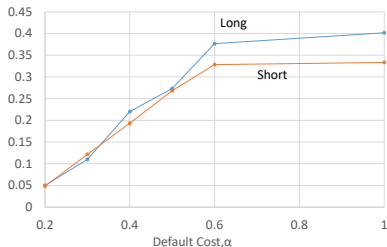
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- Debt dilution:
 - ▶ Higher S_1 increases default risk (and interest rates) of long term debt, but borrowers in t_1 do not internalize this: q_{L_0} depends on $F(\frac{L_0+S_1}{\alpha})$
Externality from t_1 govt on t_0 govt. Makes long term debt "too expensive", **under-borrowing**, welfare cost

Long term debt and default risk

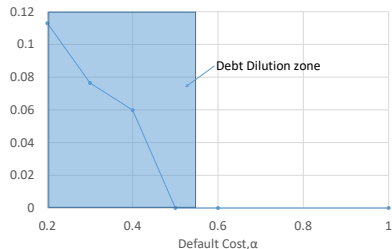
Welfare gain of long over short



Borrowing at t_0



$P(\text{Default})$ on L_0



If $P(\text{default})=0$, L_0 provides hedge, better than short

If $P(\text{default})>0$, L_0 diluted, worst than short

Would floating rate bonds help here?

- With R^* shocks (neg. correlated with y) coupon on L_0 would increase in bad times (even in absence of default): that does not make L_0 more attractive to lenders (risk neutral), but less hedge to borrower
- Floating rate would still protect L_0 from dilution, but reduce its hedge properties!
- A bit like making mortgage payments increase as credit score goes down: helps with dilution, not with hedging, not sure a good idea for long mortgages!

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- Seniority clauses (Chatterjee and Eyigungor, 2015), might be better tool to address dilution without altering hedging properties on long bonds
- Still a puzzle why don't we see much of these instruments in sovereign markets. Maybe dilution not too big of a deal? Default not too dependent on debt levels?

Conclusions

- Sharp and extraordinarily clear paper
- Proposes a simple instrument to insulate long term debt from dilution
- Public debt management offices around the world should give it a try!