

Discussion of “Sovereign Debt and the  
Effects of Fiscal Austerity”  
by Diego Anzoategui

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December 2018

## This paper

- Nice paper on very important question
- Quantitatively asses if austerity self defeating in model with demand determined output

## My discussion

- Review mechanism
  - Can a contraction be expansionary?
  - Promised deficit is what reduces spreads
- Comments:
  - Mapping model to data
  - What drives spreads? multiple equilibria? bailout probability?
  - No interaction between spreads and output
    - Gov't spending multipliers can be larger

## Environment

- Preferences

$$\sum_{t=0}^{\infty} \sum_{s^t} \beta^t \Pr (s^t | s_0) U (C (s^t), H (s^t))$$

$$C (s^t) = \left[ C_T (s^t)^\mu + C_N (s^t)^\mu \right]^{1/\mu}$$

- Technology  $i = T, N$

$$Y_i (s^t) = A_i (s_t) H_i (s^t)^\alpha$$

## Environment, cont.

- Households are hands-to-mouth
- Downward-wage rigidity:  $W(s^t) \geq W(s^{t-1})$
- Currency union/fixed exchange rates:  $P_T(s^t)$  given
- Government
  - Lump-sum taxes,  $T(s^t)$
  - Wasteful spending,  $(G_N(s^t), G_T(s^t))$
  - Borrower from abroad (can default)
  - Budget constraint

$$\begin{aligned} P_N(s^t) G_N(s^t) + P_T(s^t) G_T(s^t) + \delta B(s^{t-1}) \\ = \mathbf{q} [B(s^t) - (1 - \delta) B(s^{t-1})] + T(s^t) \end{aligned}$$

## Implementability conditions

Consolidated budget constraint and market clearing

$$P_T (s^t) [C_T (s^t) + G_T (s^t)] = P_T (s^t) Y_T (s^t) + \Delta B (s^t)$$

where

$$\Delta B (s^t) = q [B (s^t) - (1 - \delta) B (s^{t-1})] - \delta B (s^{t-1})$$

$$C_N (s^t) + G_N (s^t) = Y_N (s^t) = A_N (s_t) H (s^t)^\alpha$$

## Implementability conditions, cont.

$$\alpha A_i(s_t) H_i(s^t)^{\alpha-1} = \frac{W(s^t)}{P_i(s^t)}$$

$$\frac{P_N(s^t)}{P_T(s^t)} = \frac{\omega}{1-\omega} \left( \frac{C_T(s^t)}{C_N(s^t)} \right)^{1/\mu}$$

## Implementability conditions, cont.

$$\alpha A_i(s_t) H_i(s^t)^{\alpha-1} = \frac{W(s^t)}{P_i(s^t)}$$

$$\frac{P_N(s^t)}{P_T(s^t)} = \frac{\omega}{1-\omega} \left( \frac{Y_T(s^t) + \Delta B(s^t) - G_T(s^t)}{Y_N(s^t) - G_N(s^t)} \right)^{1/\mu}$$



## Implementability conditions, cont.

$$\alpha A_i(s_t) H_i(s^t)^{\alpha-1} = \frac{W(s^t)}{P_i(s^t)}$$

$$\frac{P_N(s^t)}{P_T(s^t)} = \frac{\omega}{1-\omega} \left( \frac{Y_T(s^t) + \Delta B(s^t) - G_T(s^t)}{Y_N(s^t) - G_N(s^t)} \right)^{1/\mu}$$

If  $W(s^t) \geq W(s^{t-1})$  does not bind

$$W(s^t) = \frac{-U_H(s^t)}{U_C(s^t)} \left[ \omega^\mu P_N(s^t)^{1-\mu} + (1-\omega)^\mu P_T \right]$$

If  $W(s^t) \geq W(s^{t-1})$  binds

$$W(s^t) > \frac{-U_H(s^t)}{U_C(s^t)} \left[ \omega^\mu P_N(s^t)^{1-\mu} + (1-\omega)^\mu P_T \right]$$

## Implementability conditions, cont.

$$\alpha A_i(s_t) H_i(s^t)^{\alpha-1} = \frac{W(s^t)}{P_i(s^t)}$$

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Given  $P_T, \Delta B, G$  these equations determine  $P_N, H_i, W$

## If downward wage rigidity binding

- $Y_T$  is pre-determined

$$\alpha A_T (s_t) H_T (s^t)^{\alpha-1} = \frac{W (s^t)}{P_T (s^t)}$$

- $W$  can go down
- $P_T$  given

cannot engineer generalized inflation

- But can stimulate  $Y_N$  by twisting relative price

$$\alpha A_N (s_t) H_N (s^t)^{\alpha-1} = \frac{W (s^t)}{P_N (s^t)}$$

$$\frac{P_N (s^t)}{P_T (s^t)} = \frac{\omega}{1 - \omega} \left( \frac{Y_T (s^t) + \Delta B (s^t) - G_T (s^t)}{Y_N (s^t) - G_N (s^t)} \right)^{1/\mu}$$

## Increase in $P_N$ stimulates output

How to increase  $P_N$  so  $W/P_N$  goes down?

$$\frac{P_N(s^t)}{P_T(s^t)} = \frac{\omega}{1-\omega} \left( \frac{Y_T(s^t) + \Delta B(s^t) - G_T(s^t)}{Y_N(s^t) - G_N(s^t)} \right)^{1/\mu}$$

- Increase  $\Delta B$
- Even if  $\Delta B = 0$  the increase  $G_T$  less than  $G_N$ 
  - A contraction be expansionary if it cuts  $G_N$  more than  $G_T$

## Mapping model to data

- Data

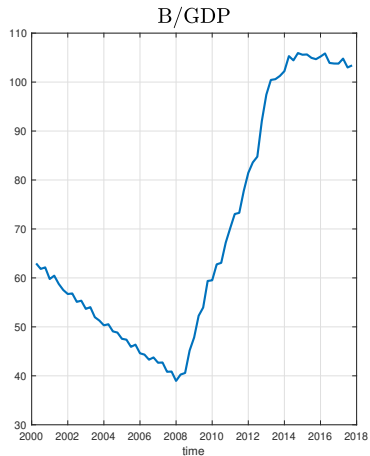
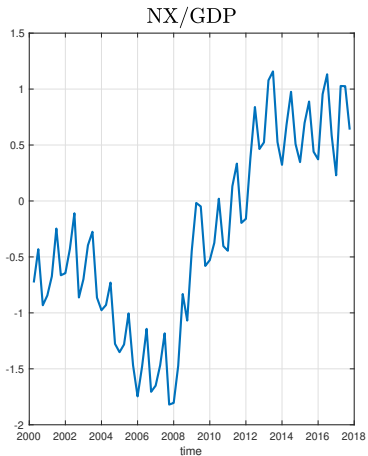
$$P_T(s^t) [C_T(s^t) + G_T(s^t) + X_T(s^t)] = P_T(s^t) Y_T(s^t) - NX(s^t)$$

- Model

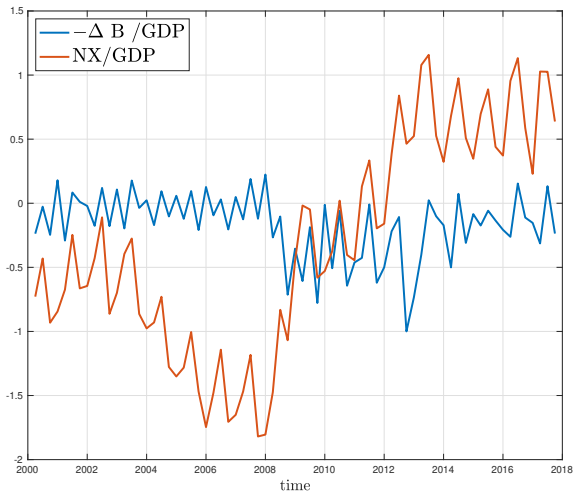
$$P_T(s^t) [C_T(s^t) + G_T(s^t)] = P_T(s^t) Y_T(s^t) + \Delta B(s^t)$$

- Mapping in the paper
  - $X(s^t) = 0$
  - $NX(s^t) = -\Delta B(s^t)$  where B is total public debt
- But public and private savings very different
  - Bocola, Bornstein, and DAVIS (2018)

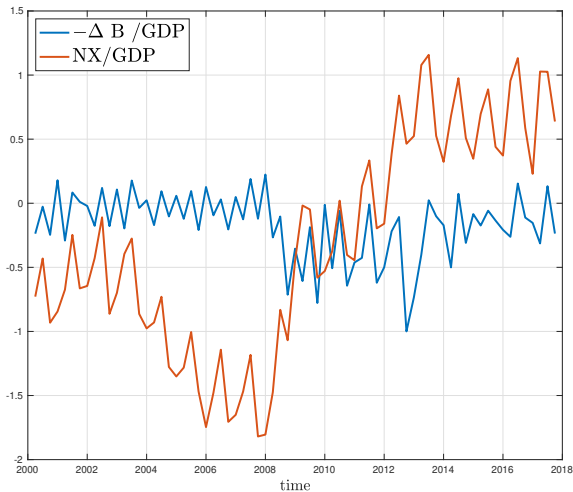
# NX vs. Public debt



## NX vs. $\Delta B$ : Negatively correlated



## NX vs. $\Delta B$ : Negatively correlated



Pre-crisis  $-\Delta B$  about zero, no inflows that push  $W$  up making downward wage rigidity big problem in crisis



## Need to think about this

- Important issue since goal of paper is quantifying effects of “austerity”
- Relevant because
  - critical in the mechanism in the model
  - very different dynamics in the data
- Nice that total government debt used
  - Relevant for distortions (Ramsey tax literature)
  - Not just external debt as much of the literature

## What drives spreads in the model?

- This is not very clear in the paper
- My understanding: Promised deficits reduces spreads (not current one)
- Promise  $\Delta B' > 0$  in near future and (distant) future fiscal consolidation
  - $\Delta B' > 0 \Rightarrow Y'_N$  goes up and spreads goes down today
  - Repay when downward wage rigidity does not bind
- Credibility of the fiscal rule?
  - In the model

$$T = t^*Y + \gamma \frac{B}{Y}$$

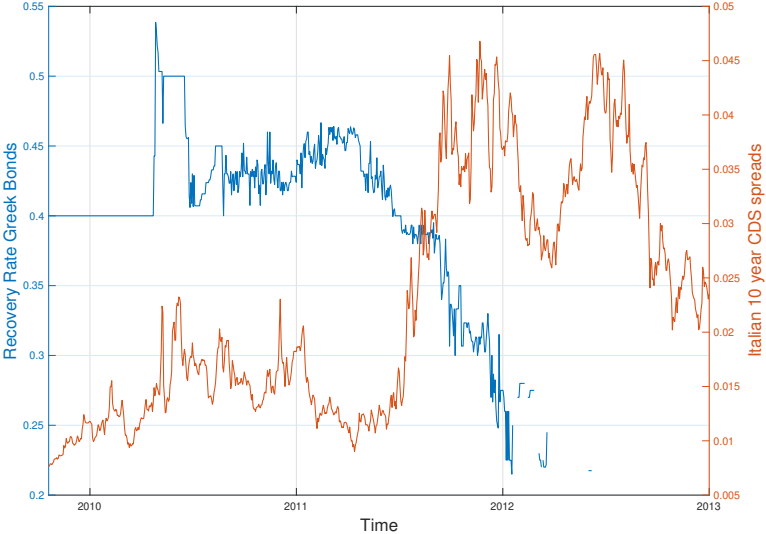
$$\log G' = \rho_G \log G + \rho_{GY} \log Y + \rho_{GB} \frac{B}{Y} + \epsilon_t$$

- with  $t^* > 0$  and  $\rho_{GY} \approx 0$  run down debt in good time
- Credibility path debt outside default is assumed

## What drives spreads in the data?

- Rollover crisis?
- Multiple equilibria?
- Bailout prospects?

# Bailout prospects?



Dovis and Kirpalani (2018)

## No channel spreads $\Rightarrow$ output

- It can be interesting to add feedback from spreads to output
  - Paper only has output affecting spreads
- Revisit estimates of gov't spending multiplier
  - Gov't spending multipliers can be larger with this effect

## Conclusion

- Nice paper on very important question
- Use model to quantify impact of austerity on output and spreads
- Think about mapping between model and data