Does a Currency Union Need a Capital Market Union?

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NYU

November 2014, IMF ARC

Differing views on the Eurozone crisis

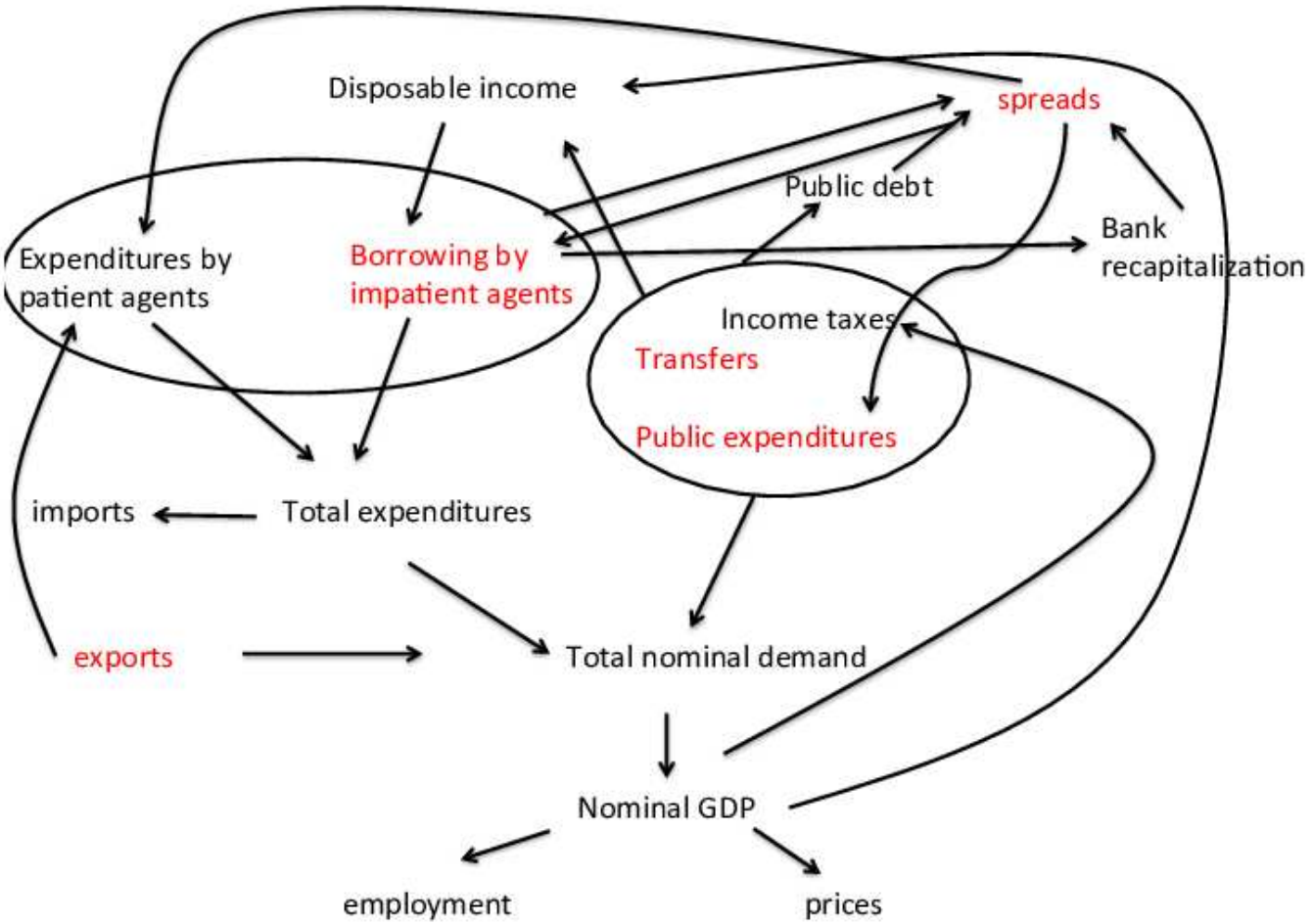
- Hans Werner Sinn (2010)
  - "The lesson to be learned from the crisis is that a currency union needs ironclad budget discipline to avert a boom-and-bust cycle in the first place"
- Paul Krugman (2012)
  - "On the eve of the crisis (Spain) had low debt and a budget surplus. Unfortunately, it also had an enormous housing bubble, a bubble made possible in large part by huge loans from German banks to their Spanish counterparts"
- Paul de Grauwe (2012)
  - "The situation of Spain is reminiscent of the situation of emerging economies that have to borrow in a foreign currency...they can suddenly be confronted with a "sudden stop" when capital inflows suddenly stop leading to a liquidity crisis"

Why so much disagreement?

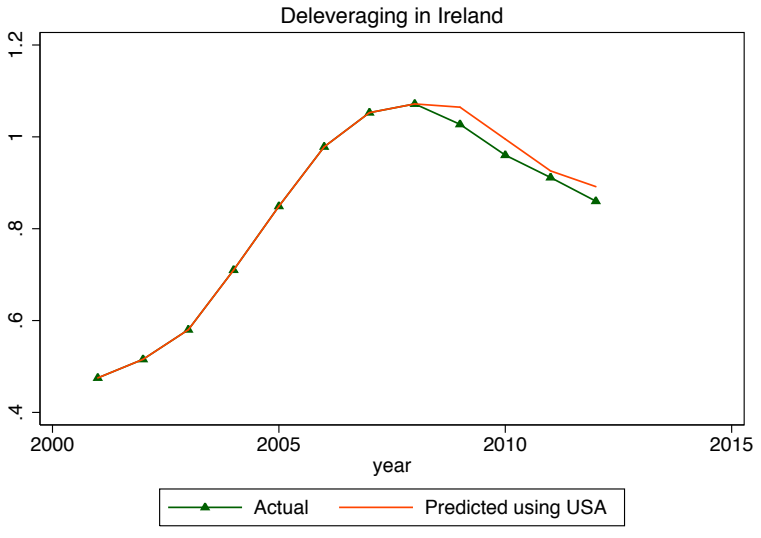
1. Because it's complicated
2. Because there was no model to think about these issues *together*

- Martin-Philippon (2014) build a model and propose an identification strategy
    1. fiscal imbalances
    2. private debt imbalances
    3. sudden stop

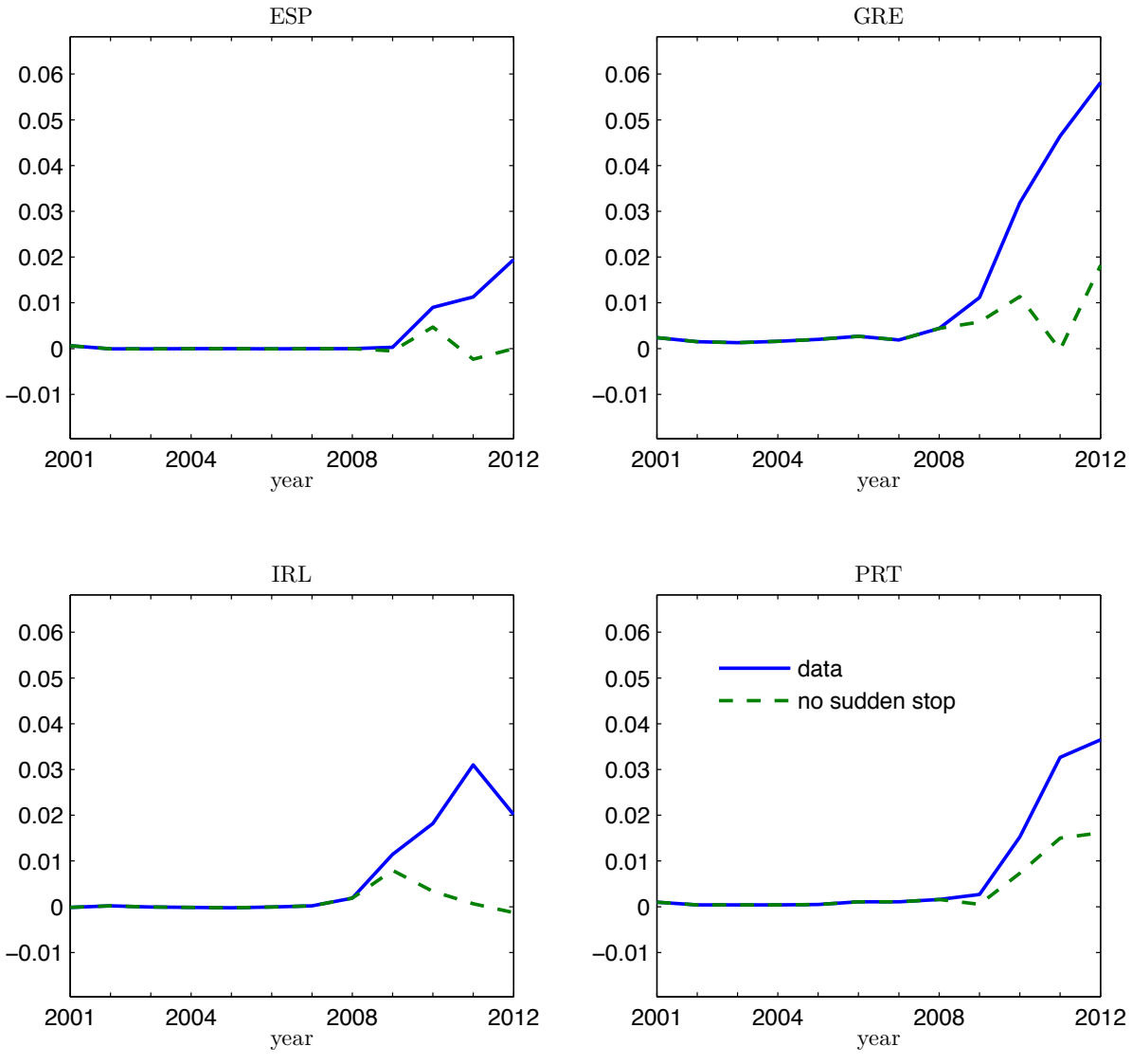
Why is it complicated?



Using U.S. States as Control Group



Martin-Philippon: Counterfactual Spreads



Next Step: Spillover

- Martin-Philippon provides:
  - identification strategy and a model that broadly fits all the cross-sectional facts
  - counter-factual (fiscal, macropru, sudden stop): large effects
- But
  - SOE paper: no spillover, no monetary policy
  - capital markets limited to short term debt
- General equilibrium effects of deleveraging and other shocks?
  - Compare three versions of a two-country economy with fixed nominal exchange rate
    - Banking union: cost of debt equalized across regions
    - Capital markets union: diversified equity ownership
    - Complete markets

Preferences and Demographics

- Two types of households $i = b, s$, borrower and saver, $\beta_b < \beta_s$, fraction χ of borrowers

$$\mathbb{E}_t \sum_{t=0}^{\infty} \beta_i^t \left[\log C_{i,t} - \nu\left(N_{i,t}\right)\right], \text{ for } i = b, s$$

- Gali-Monacelli framework

$$C_{i,t} = (1-\alpha)\log\left(\frac{C_{h,i,t}}{1-\alpha}\right) + \alpha\log\left(\frac{C_{f,i,t}}{\alpha}\right)$$

  - Borrowing constraint: $B_{t+1} < \tilde{B}_{t+1}$

- Sticky Wages W_t

Pricing and Profits

- Final good $C_h = \left[\int_0^1 c(j)^{\frac{\varepsilon-1}{\varepsilon}} \, \mathrm{d}j\right]^{\frac{\varepsilon}{\varepsilon-1}}$
  - Markup $\mu \equiv \varepsilon/(\varepsilon-1)$ –> Profits

$$\Pi_t = \left(P_{h,t} - W_t\right) N_t = (\mu - 1) W_t N_t$$

- Different economies
  - Bond economy
  - Capital markets union: domestic savers have claim to fraction φ of foreign profits

Budget Constraints and Market Clearing

- Borrowers

$$P_t C_{b,t} = \frac{\tilde{B}_{t+1}}{R_t} + W_t N_t - T_t - \tilde{B}_t$$

- Savers

$$S_t + W_t N_t - T_t + (1-\varphi^*)\frac{\Pi_t}{1-\chi} + \varphi\frac{\Pi_t^*}{1-\chi} = P_t C_{s,t} + \frac{S_{t+1}}{R_t}$$

- Clearing bond markets

$$(1-\chi)S_{t+1} + (1-\chi^*)S_{t+1}^* = \chi B_{t+1} + \chi^* B_{t+1}^*$$

Taylor Rule

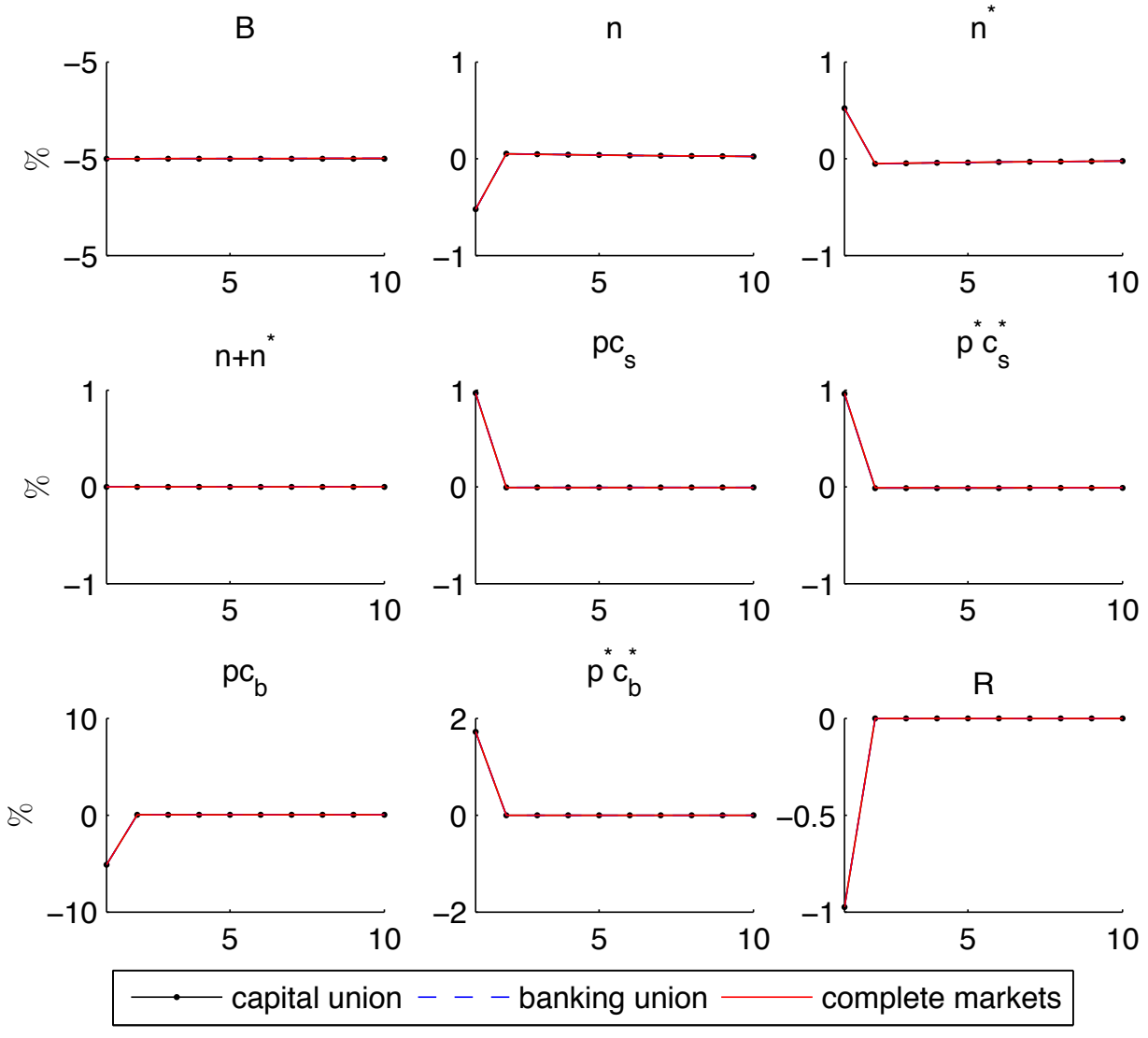
- Taylor rule

$$R_t = R_{ss}\left(\left(\frac{Y_t}{Y_{ss}}\right)^{N_{ss}}\left(\frac{Y_t^*}{Y_{ss}^*}\right)^{N_{ss}^*}\right)^{\phi_Y}\left(\left(\frac{\pi_t}{\pi_{ss}}\right)^{N_{ss}}\left(\frac{\pi_t^*}{\pi_{ss}^*}\right)^{N_{ss}^*}\right)^{\phi_\pi}$$

Experiments

- Deleveraging experiment: permanent 5% reduction in domestic borrowing limit
  - This shock may be large enough to make ZLB bind: changes aggregate outcome but not comparison between bond/capital/complete
- "Quality" shock: persistent 10% increase in α^*
  - TFP shocks as well
- Default and debt restructuring

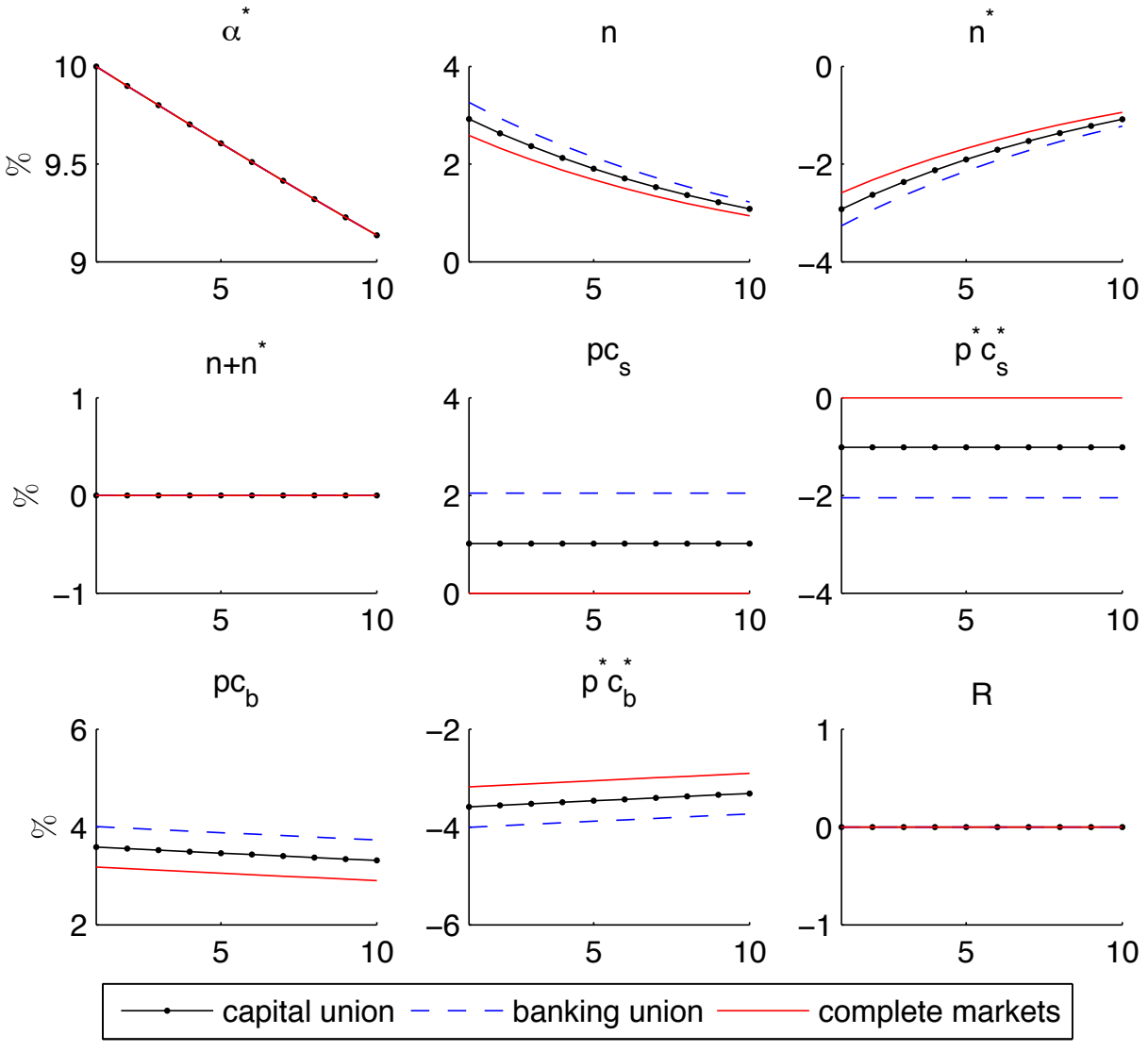
Impulse response to home deleveraging shock



Take Away 1: Deleveraging Shocks

- Banking union (or anything that guarantees equal cost of funds across regions) is enough to deal with leveraging and deleveraging shocks
- Why?
  - in SOE savers' spending does not react because NFA does not change
  - in GE, interest rate responds
  - but with BU, interest rates remain the same everywhere
  - QED
  - true even if ZLB binding

Impulse response to quality shock



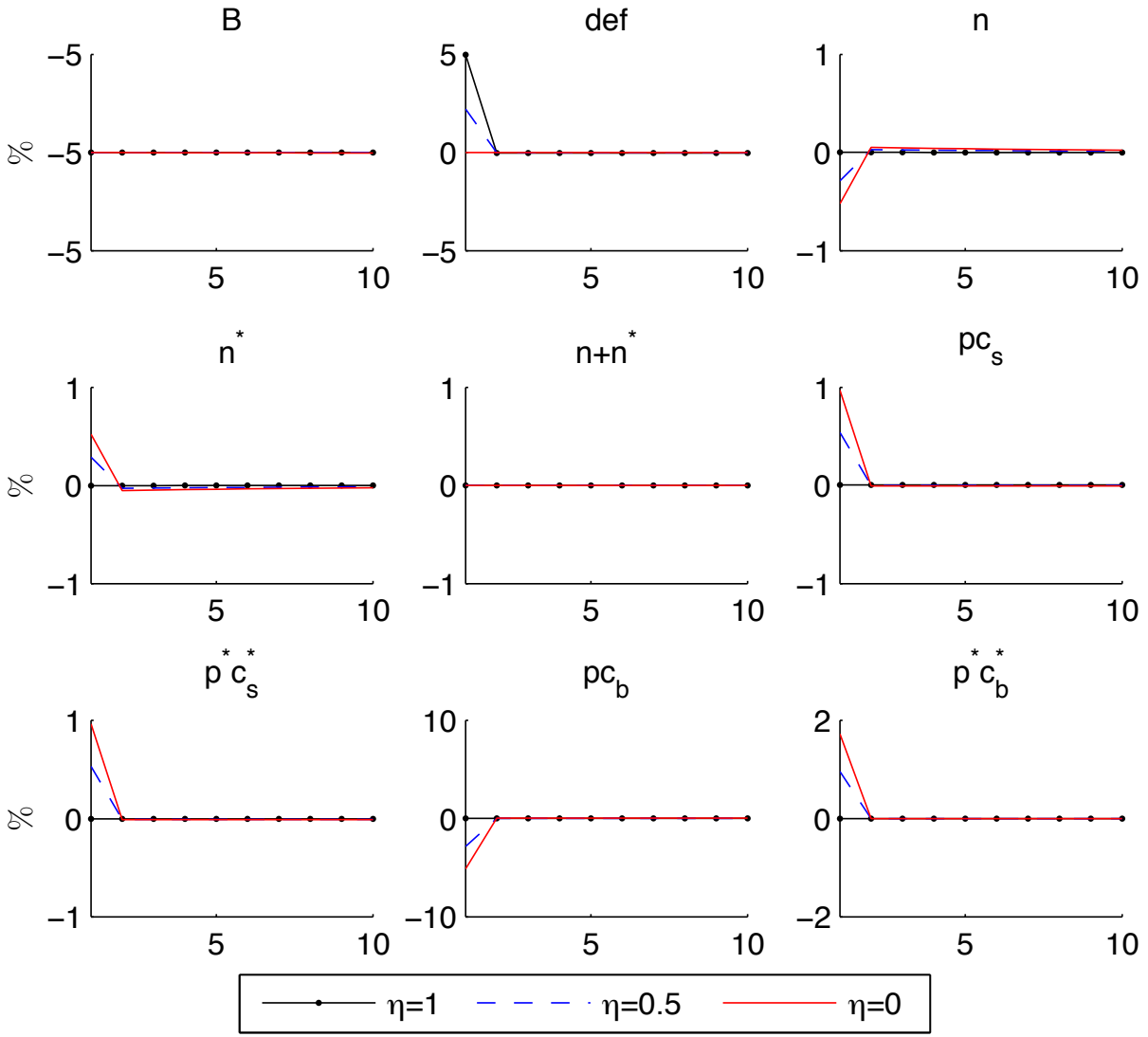
Take Away 2: Productivity Shocks

- Banking union is not enough to smooth productivity/quality/ToT shocks
- Why?
  - relative wealth shocks –> savers's spending go in opposite direction
  - foreign equity ownership soften the shock

Debt Restructuring

- Now supose that borrowers can default
  - η = amount of deleveraging achieved by default
  - Ex-post efficient: need to cut spending less
- But who bears the cost of default?
  - domestic savers?
  - foreign savers? fraction ω
- Example: banks make loans to households, bank equity is held by foreign savers
  - capital market integration of bank equity

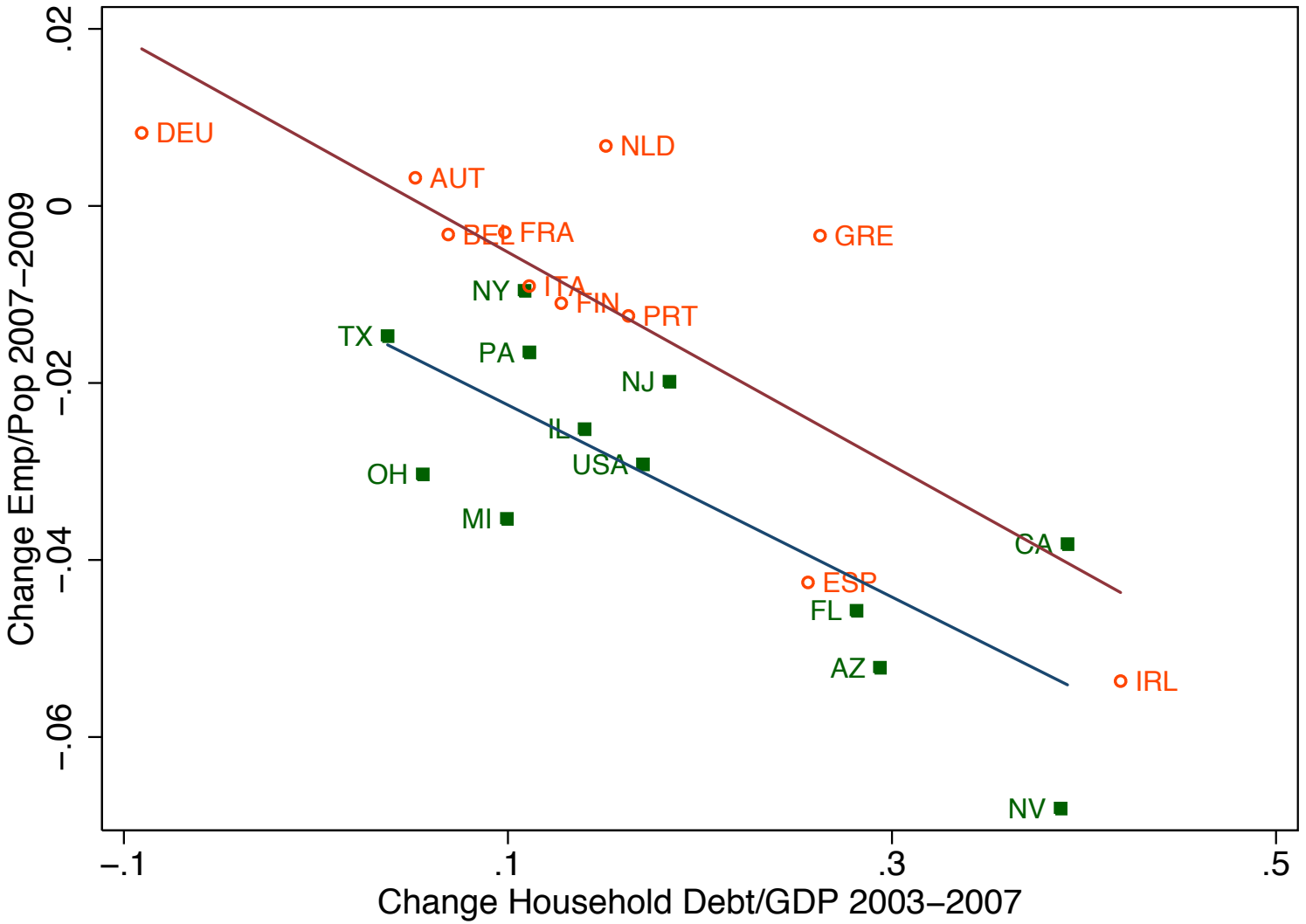
Impulse response with default, $\omega = 0.5$



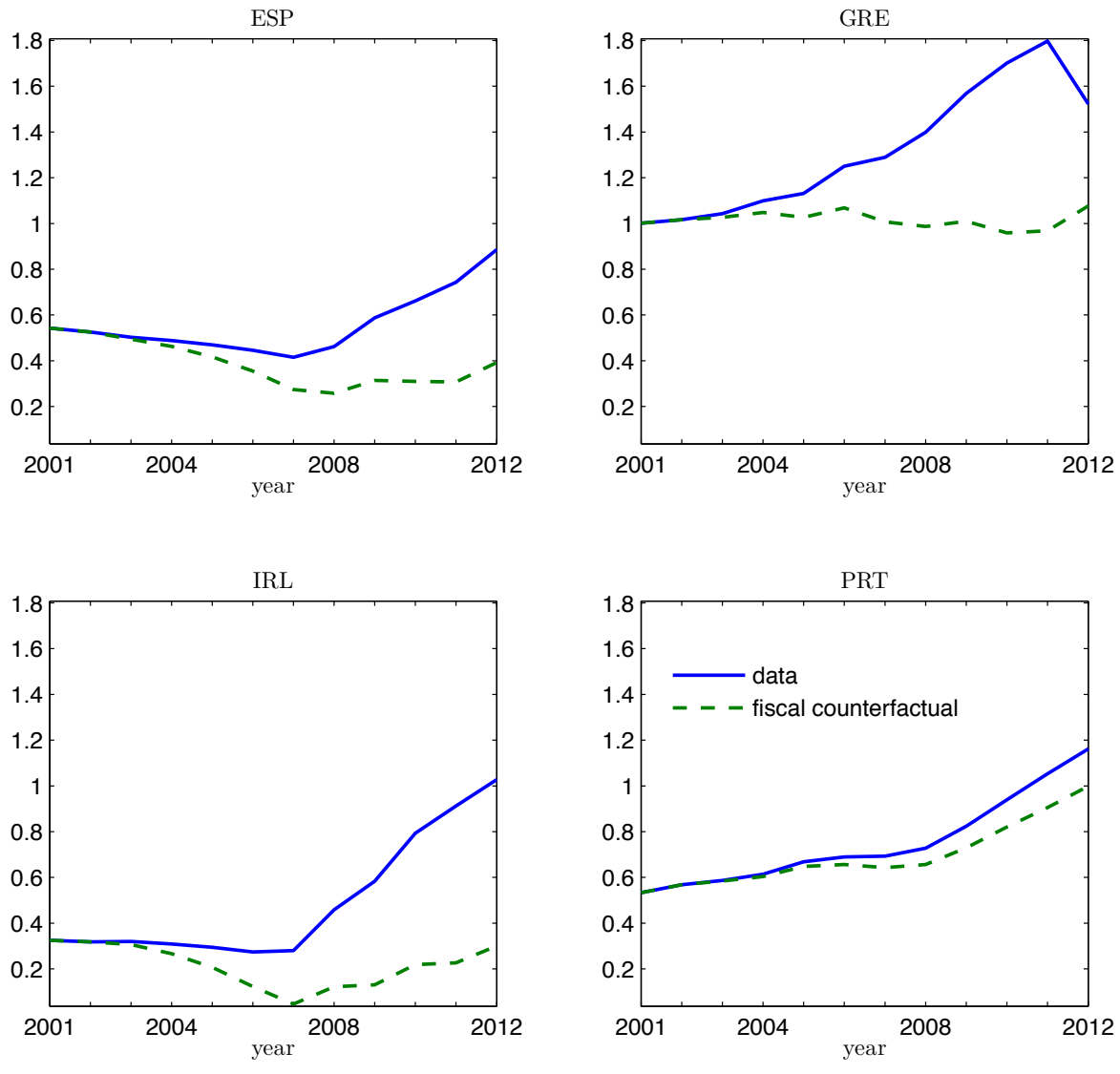
Conclusions

- Banking union achieves complete markets allocation with respect to deleveraging shocks
  - BU helps smooth all kinds of shocks but for demand shocks it replicates complete market
- Sharing of other types of shocks requires more capital markets integration
  - Capital union improves on banking union in case of productivity shocks
- Debt restructuring can be ex-post efficient
  - Integration of bank equity ownership

Extra: US vs EZ, 2007-2010



Extra: Martin-Philippon, Fiscal counterfactual: public debt



Extra: Martin-Philippon, Fiscal counterfactual: employment