

# Bank Capital Regulation in a Monetary Union

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## Motivation

- Since GFC, many countries tightened capital requirements to strengthen the resilience of their domestic banking sector
- Not clear how domestic regulatory changes spillover to other countries
- This is especially relevant for monetary unions

## Research Questions

- What are the **cross-border effects** of capital requirement changes?
- Which economic and institutional features affect the **size of the spillovers**?
- What are the implications for the **optimal level** of capital requirements?

## This paper

Model of MU with 2 (symmetric) countries with:

- Domestic and cross-border bank lending
- Risky financial intermediation
- Domestic capital requirement changes
- International institutional features:
  - Reciprocity of macroprudential policy measures
  - Deposit insurance scheme (national vs common)

## Main Results

- Capital requirement changes entail **cross-country spillovers**
- **Channels: trade & bank lending & bank solvency**
- Size and sign of net spillovers affected by
  - **Reciprocation of measures**
  - **Deposit insurance scheme** (national vs common)
- **International coordination** in general desirable
  - Losses from uncoordinated decisions small if spillovers offset one another
  - Losses larger for some instruments or institutional settings

## Banking Sector Problem

- Two types of banks  $j$ : one that lends locally  $L$  and one that lends abroad  $EX$
- Bank  $j$  maximizes the NPV of the bankers' equity conditional on not defaulting

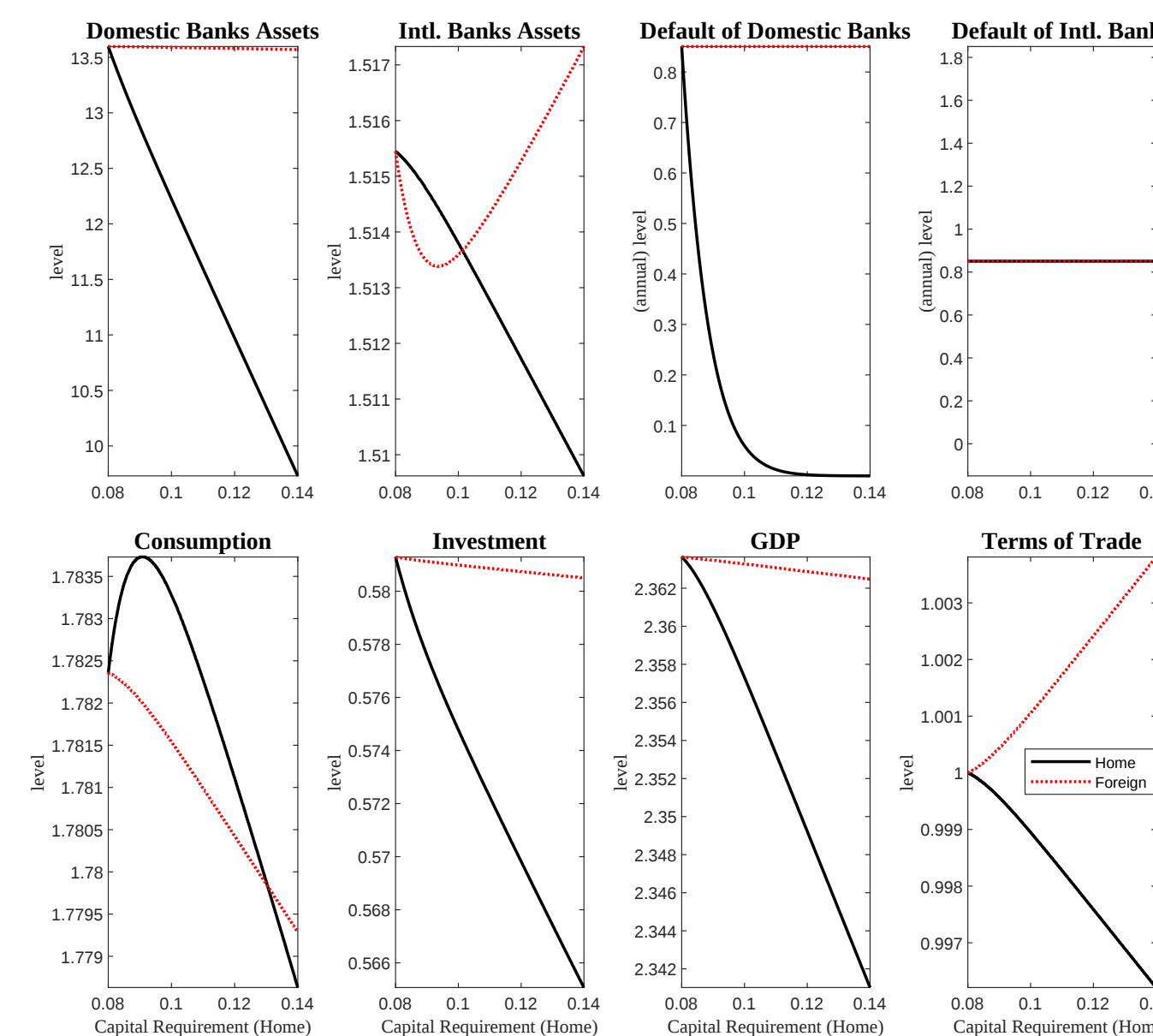
$$\max_{k_{j,t}, d_{j,t}} \mathbb{E}_t \left[ \Lambda_{B,t+1} \max \left\{ \omega_{j,t+1} R_{K,j,t+1} q_{j,t} k_{j,t} - R_{D,t} d_{j,t}, 0 \right\} \right] - \nu_t EQ_{j,t}$$

subject to

$$\begin{aligned} [BC] \quad & q_{j,t} k_{j,t} = d_{j,t} + EQ_{j,t}, \\ [LC] \quad & EQ_{j,t} \geq \phi_j q_{j,t} k_{j,t}. \end{aligned}$$

- Key institutional feature in capital regulation of cross border banks:
  - Under reciprocity, cross-border loans subject to **host** country CR:  $\phi_{EX}^* = \phi_L$
  - Without reciprocity, cross-border loans subject to **home** country CR  $\phi_{EX}^* = \phi_L^*$

## Capital Req. without Reciprocity



- **Trade spillovers (-):**
  - Lower supply of Home goods
- **Bank lending spillovers (-):**
  - Foreign banks increase international lending
  - But Home banks reduce cross-country lending

## Cross-border Lending

- Capital services  $S_t$  are a CES of loans that come from Home  $K_{L,t}$  and Foreign capital  $K_{IM,t}$

$$\min_{K_{L,t}, K_{IM,t}} r_{L,t} K_{L,t} + r_{IM,t} K_{IM,t},$$

$$\text{s.t. } S_t = \left[ \chi_k^{1/\gamma_k} K_{L,t}^{\frac{\gamma_k-1}{\gamma_k}} + (1 - \chi_k)^{1/\gamma_k} K_{IM,t}^{\frac{\gamma_k-1}{\gamma_k}} \right]^{\frac{\gamma_k}{\gamma_k-1}}$$

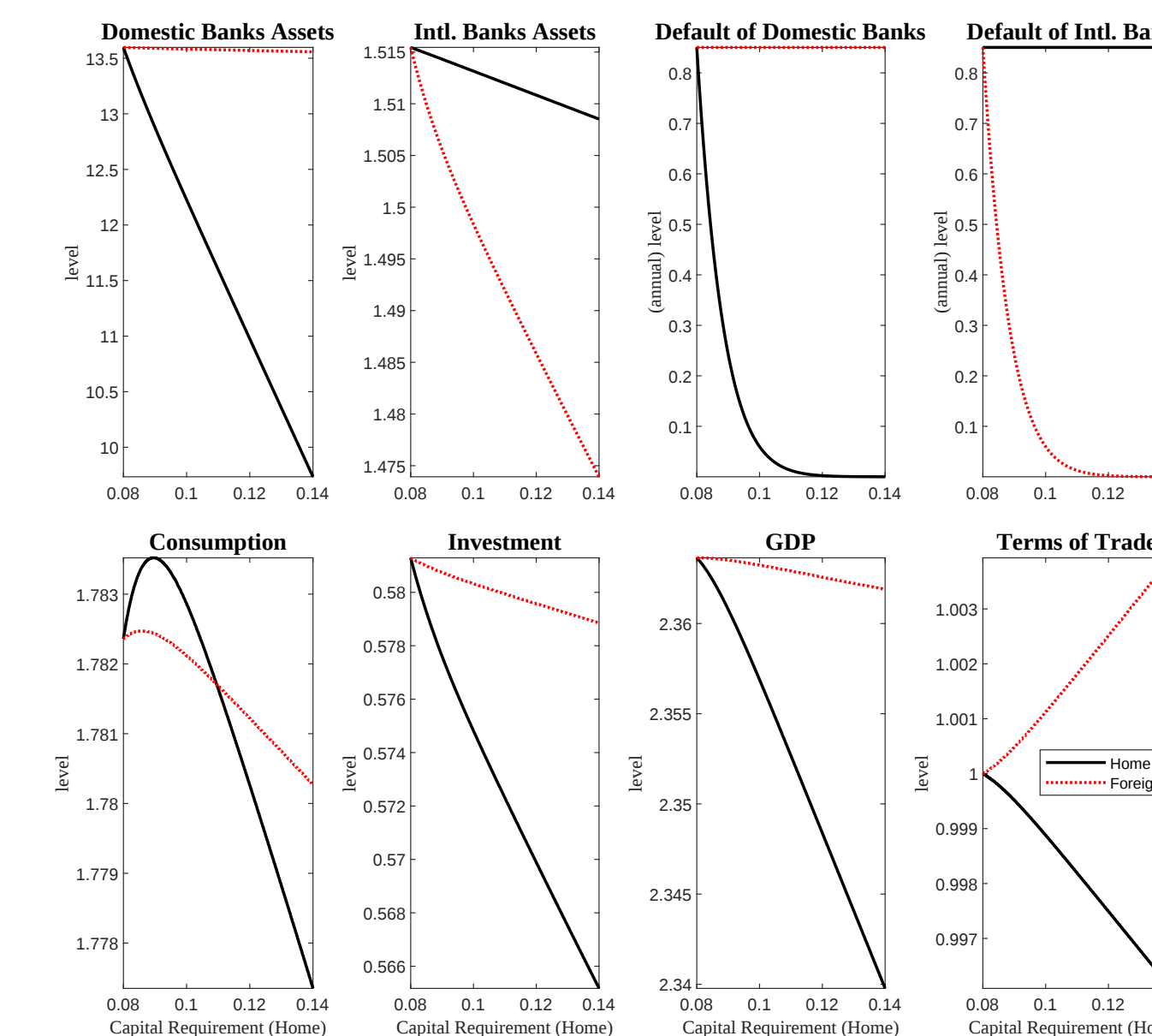
- Foreign capital comes from Foreign banks
- Home capital comes from Home banks and HHs

$$K_{L,t} = K_{B,L,t} + K_{H,t}$$

- $\gamma_k = 1.5$  following Herreno (2023) and  $\chi_k$  matches the share of cross border loans in EU (2003-2023)

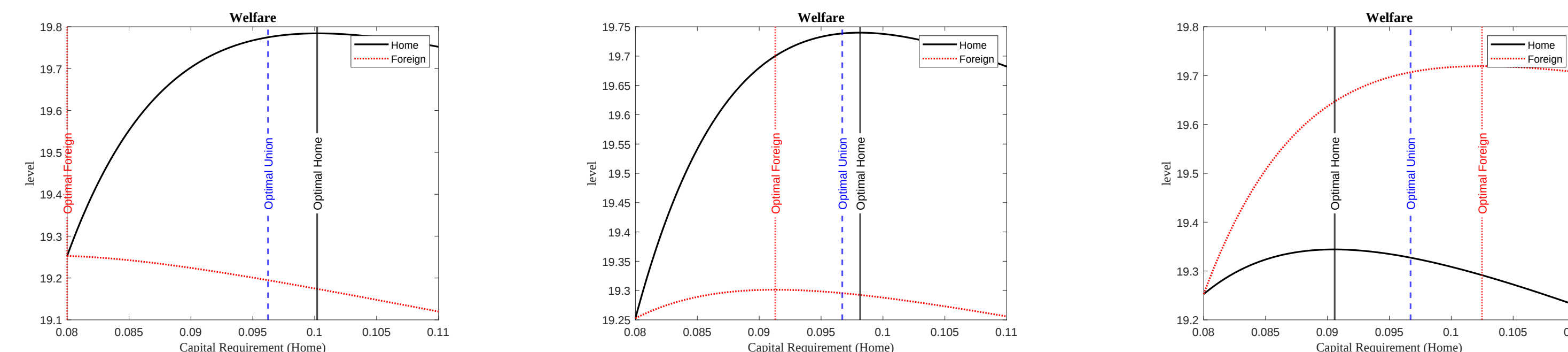
$$\frac{K_{B,EX,t}}{K_{B,EX,t} + K_{B,L,t}} = 10\%$$

## Capital Req. with Reciprocity



- **Bank solvency spillover (+):** Foreign international banks become safer  $\Rightarrow$  offsetting positive spillover!

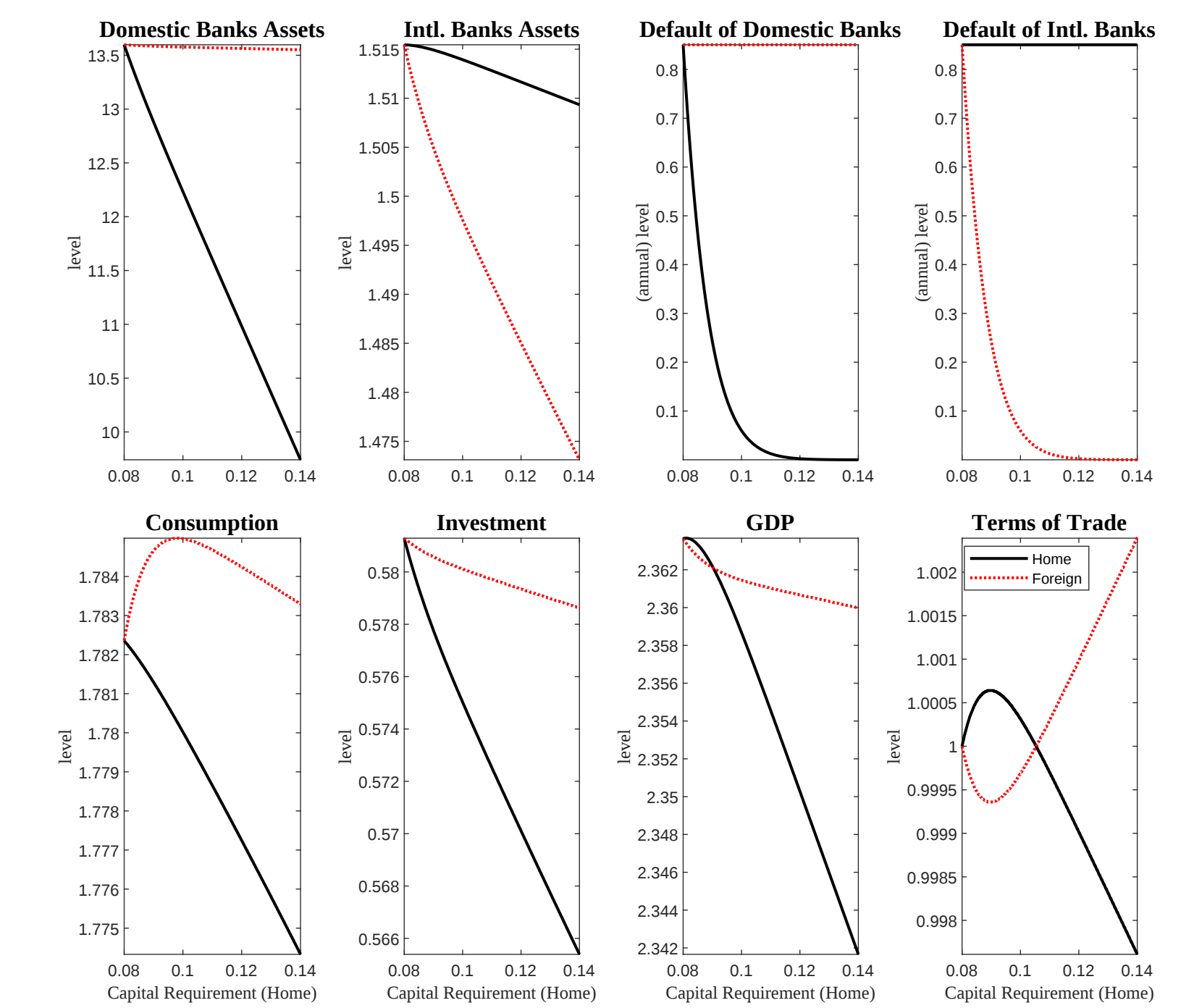
## Long-run Welfare



(a) Baseline (w/o Reciprocity) (b) Baseline (w/ Reciprocity) (c) Common DI (w/ Reciprocity)

- **With reciprocity:** offsetting negative and positive spillovers
- Smaller welfare cost from non-cooperative choices
- Sharing of DI payments, increases bank solvency spillovers  $\rightarrow$  net cross-country spillovers become positive!

## Reciprocity and Common DI



Common DI changes the way costs and benefits are distributed

- Home suffers most of the cost in terms of bank intermediation
- Half the benefit accrues to the Foreign country

## Conclusion

We study **cross-border spillovers of CRs**

- **Without Reciprocity:** Spillovers always negative
  - **Trade spillover (-):** lower supply of domestic goods also consumed abroad
  - **Bank lending spillover (-):** lower supply of foreign loans by domestic banks
  - Non-cooperatively set CRs too high
- **With Reciprocity:** Partially offsetting spillovers
  - **Solvency spillover (+):** higher CRs in one country makes the subsidiaries of foreign banks safer too
  - Non-cooperatively and cooperatively set CRs close
- **Common DI** creates very strong positive spillovers
  - Net spillovers always positive also (w/o reciprocity)
  - Non-cooperatively set CRs too low

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