

# VI Seminar on Risk, Financial Stability and Banking of the Banco Central do Brasil



## Trade-offs between Banking Efficiency, Financial Resilience, and Macro Stability

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São Paulo, August 12, 2011

# Disclaimer

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**The views expressed here are those of the author and do not necessarily reflect those of the Banco Central do Brasil**



# Presentation Outline

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1. Introduction
2. The Model Overview
3. Results
4. Policy Exercise: Capital requirements
5. Final Remarks

# (2008/9 Financial Crisis)

- Crisis brought some questions about the interaction of **monetary policy (MP)** and **financial stability (FS)**:
  - Effectiveness of the interest rate tool under financial turmoil (FS → MP)
  - Incentives for taking risk in low interest rates periods (MP → FS)
- Need of better understanding of the financial intermediation role for macro stability
  - Credit channels matter: the paradigm did changed!
  - Available responses:
    - 1) Financial stabilization target
    - 2) Macro prudential policies

# Motivation

- Problem is even more general:
  - Banks are subjected to several interventions at the same time
  - In essence, interventions could be justified by the **macroeconomic policy, prudential or economic regulation**
- Efficiency as also an issue: financial intermediates are not more a veil
  - Efficiency used to be the main argument for financial deregulation
  - Need of knowing how less efficient we are under any new regulation

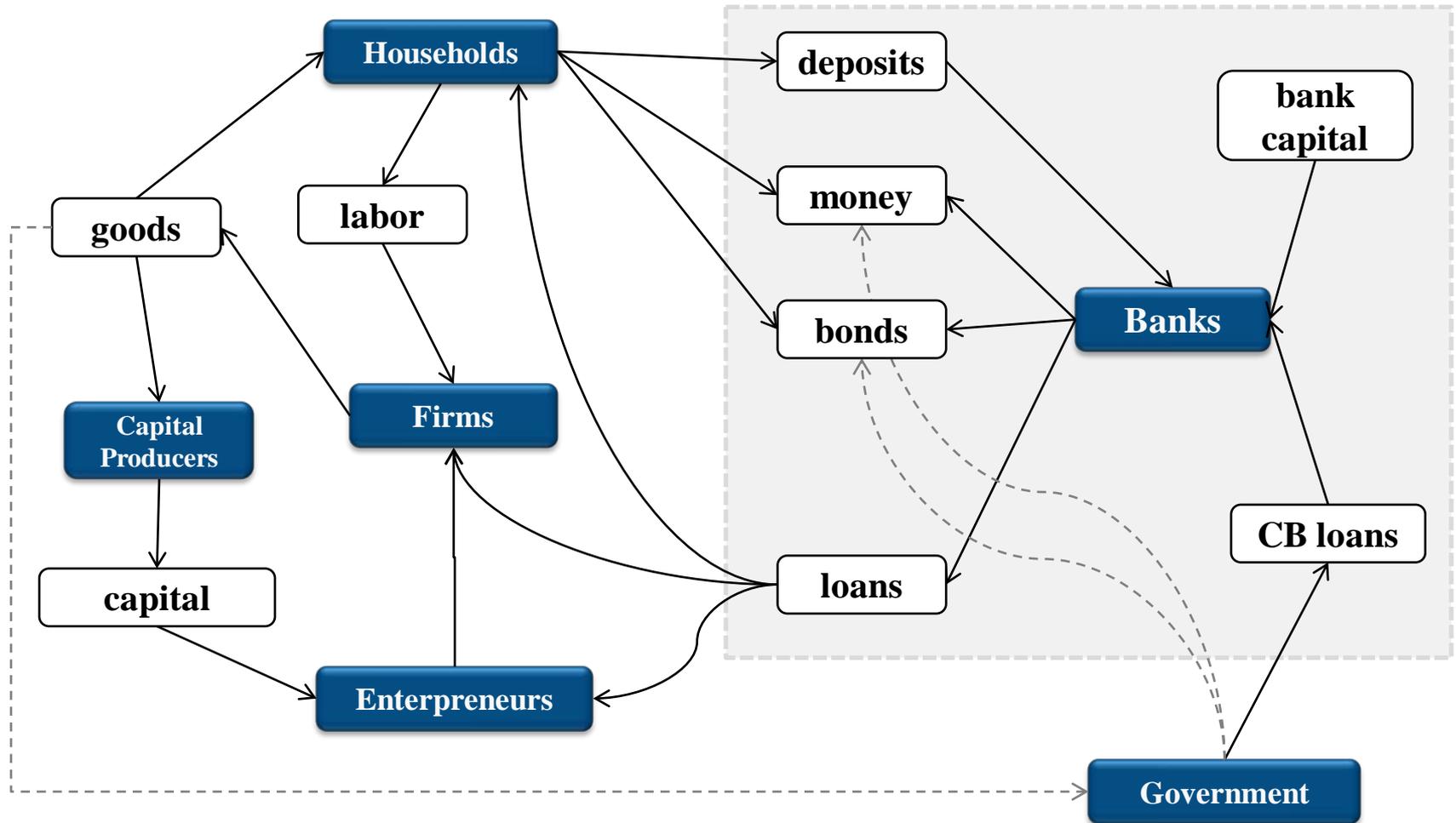
# The Research Question

- **Financial resilience, macro stability, and efficiency:**  
a three-way approach is essential
- **My research question:**  
*How could that interplay be studied in a same articulate framework?  
Are the regulation polices effective? What about the feedback effects?*
- **What I did:**  
*A DSGE model in which banks and some banking frictions were made explicit*
- **Objective:**  
*Policy analysis*

# Main results

- ❖ Potential trade-offs
  - **Financial resilience vs. banking efficiency**
  - **Credit channel effectiveness vs. financial resilience**
  
- ❖ Capital requirements regulation reduce the effectiveness of bank lending channel
  
- ❖ Monetary policy become more powerful under reserve requirement policy

# Model overview



# The Model

- Standard DSGE model features:
    - Nominal rigidities: prices *à la Calvo*
    - Real rigidities: habit persistence in consumption, adjustment costs in investment, utility from holding assets
    - Monetary policy: interest rate rule
  - Financial accelerator in investment (BGG, 1999)
- and more...

# Banking Frictions

- Banking market is explicitly modeled
  - Market-power: monopolistic competition in the credit market
  - Intermediation approach: deposits as input, loans as output
  - Costly Financial Intermediation (operational costs)



# Banking Frictions

- Balance-sheet
 
$$\underbrace{\overbrace{L_t}^{\text{loans}} + \overbrace{M_t}^{\text{money}} + \overbrace{B_t}^{\text{bonds}}}_{\text{assets}} = \underbrace{\overbrace{D_t}^{\text{deposits}} + \overbrace{\mathcal{K}_t}^{\text{own capital}}}_{\text{liabilities}}$$

- Loans Production Technology  
represents the banker's expertise in managing risks

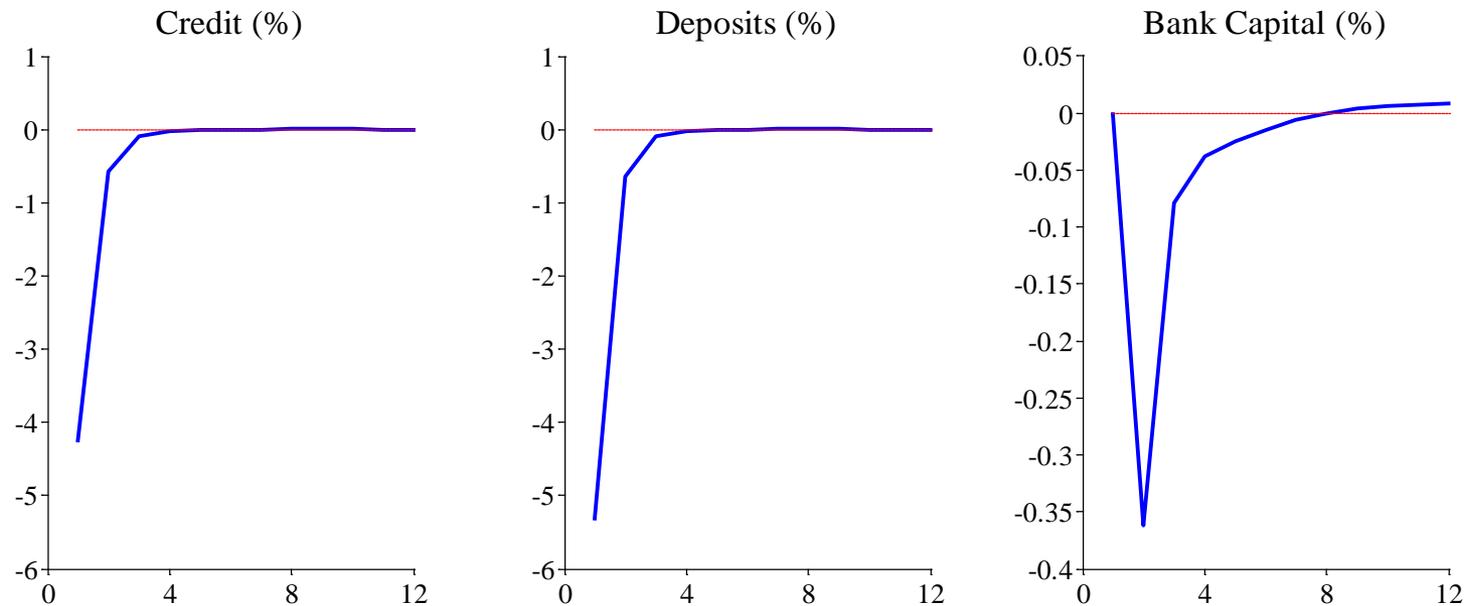
$$L_t = \mathcal{T}(D_t, \mathcal{K}_t)$$

- Money demand given by payment services needs
- Bank capital accumulation is driven by retained earnings
- Last two frictions put a **dynamic optimization problem**

# The Model

- Summary
  - 97 variables
  - 46 parameters
  - 9 stochastic shocks
- Calibration:
  - Structural parameters for Brazilian economy
  - Steady-state ratios given by banking market relations

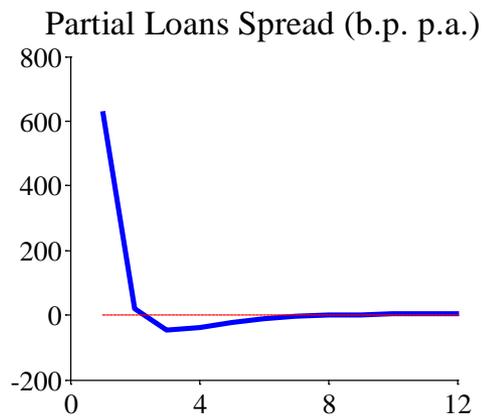
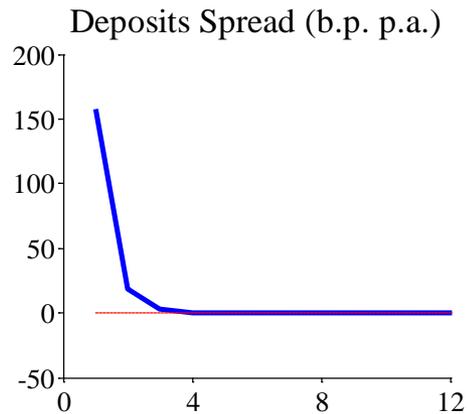
# IRFs to a monetary shock (100 basis points per annum)



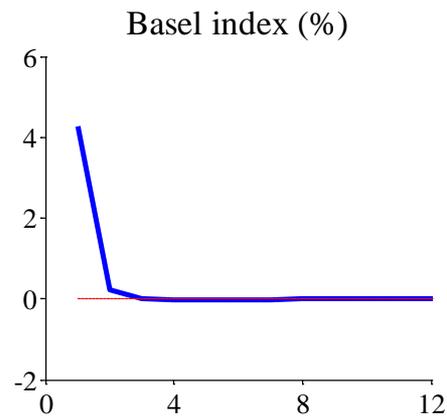
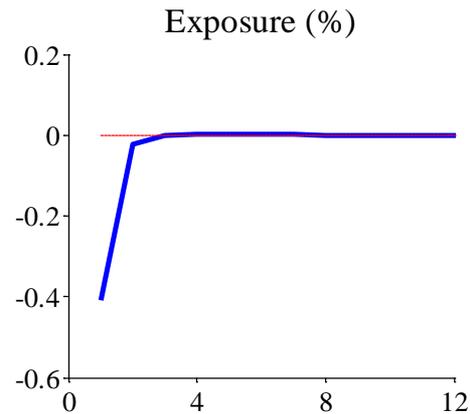
- Bank capital **attenuates** the power of transmission of the monetary shock to the credit market
- Funding is more expensive, marginal cost increases, what explains the higher spreads

# IRF to a monetary shock

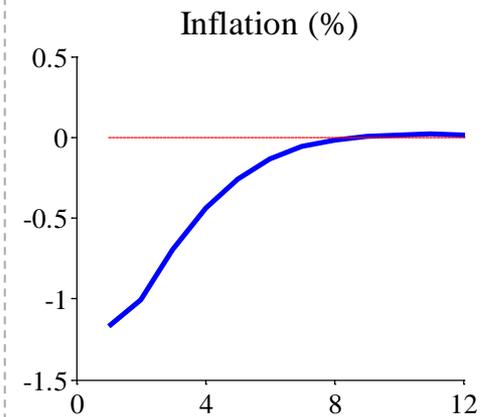
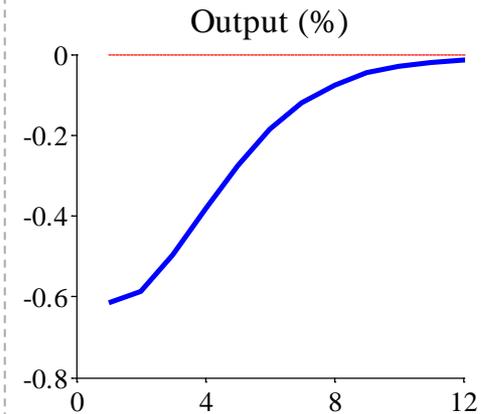
## Banking Efficiency



## Financial Resilience



## Macro Stability



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# Policy Exercises

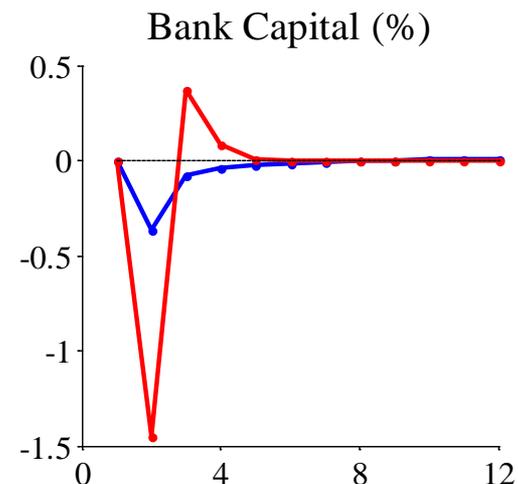
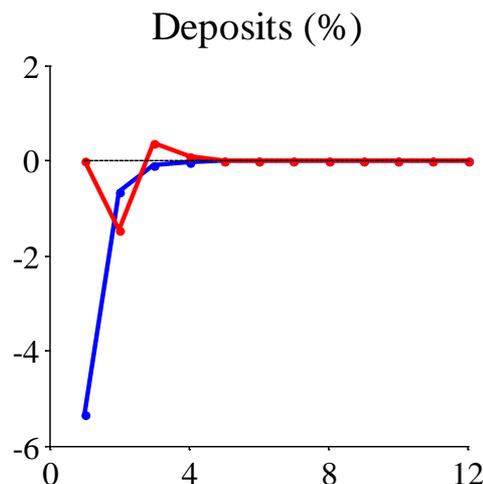
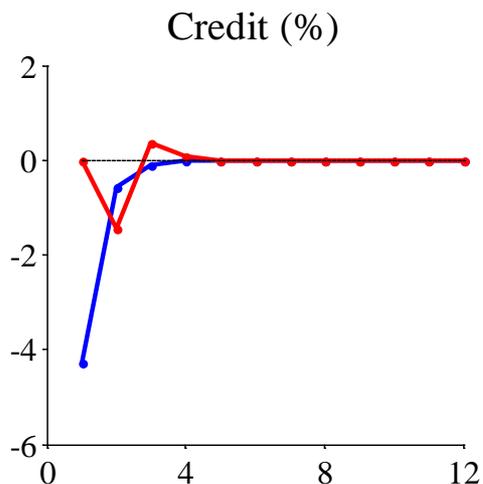


# Exercise: Capital Requirements

## Comparison of two economies:

1. (Benchmark) An economy in which the CR policy is not binding
  2. The same economy, but now CR policy is high enough such that is binding
- Capital requirements intervention modifies the steady-state equilibrium:
    - Banks are overcapitalized, what implies:
      - Better financial resilience indicators
      - Higher earnings and spreads
    - **Trade-off between banking efficiency and financial resilience**
  - And more about dynamics..

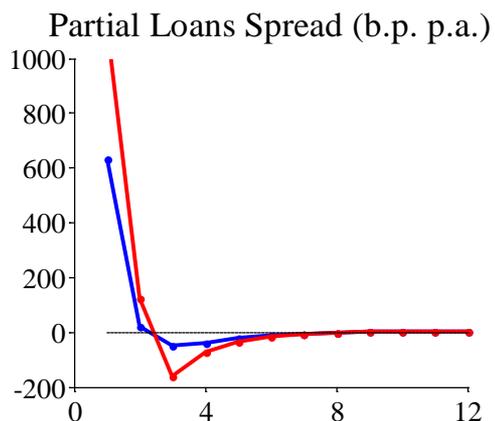
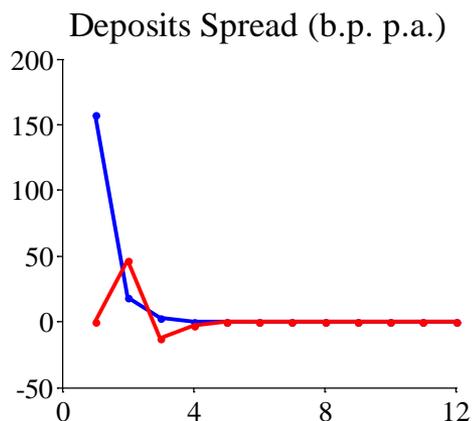
# Exercise: Capital Requirements



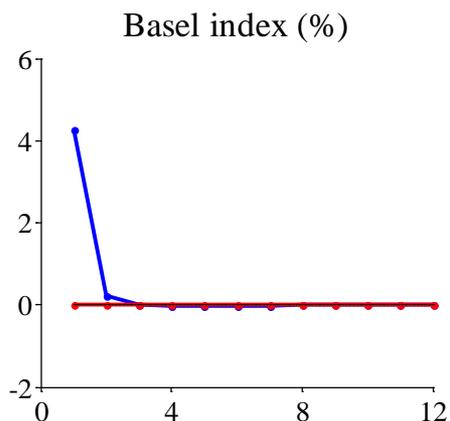
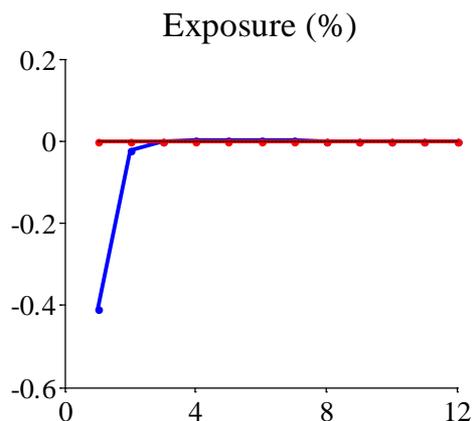
- Capital requirement intervention impose more adjustment in bank capital than deposits
- Moreover, there is a co-movement of credit, deposit, and bank capital responses under prudential regulation

# Exercise: Capital Requirements

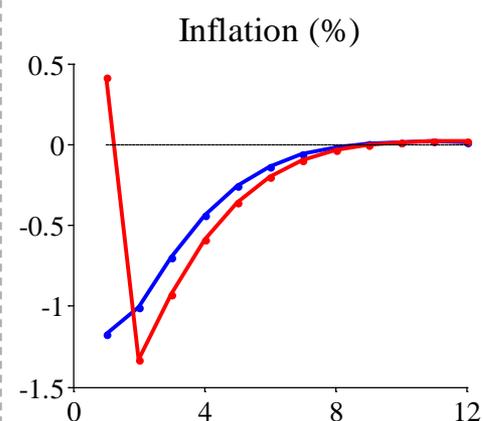
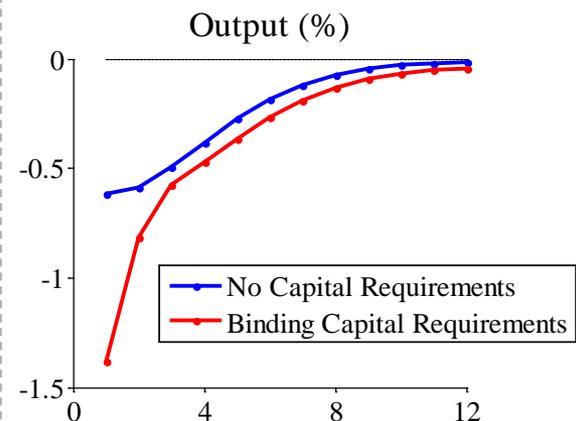
## Banking Efficiency



## Financial Resilience



## Macro Stability



# Exercise: Capital Requirements

## Conclusions

- **Trade-off between banking efficiency and financial resilience** in the steady-state equilibrium under capital requirements
- Capital requirements change adjustment dynamics in several directions:
  - Stabilize financial resilience indicators
  - Amplify loans spreads, but...
  - Bank lending channel become less effective: **trade-off between financial resilience and macro stability** suggested

# Final Remarks

- Model built reasonable **interactions between efficiency, financial resilience and macro stability** in a articulated framework
- Model brings great flexibility for policy analysis and some additional tools for understading the **role of the banks** in the credit conditions and the transmission mechanisms of economic shocks
- Framework requires a **wider, but more detailed perspective** for policy makers

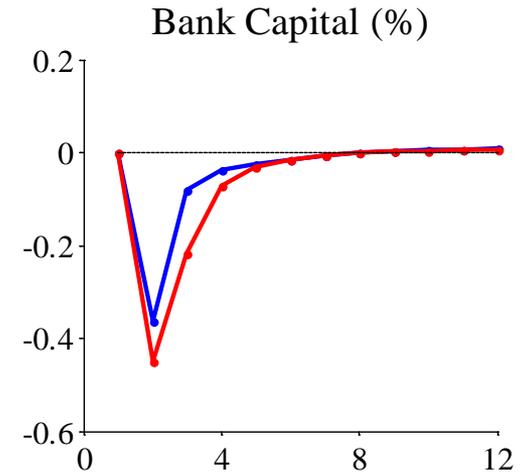
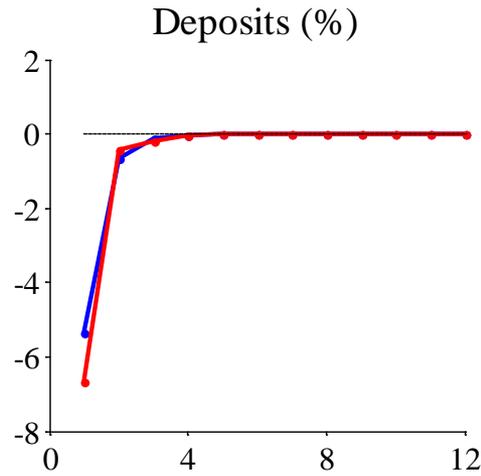
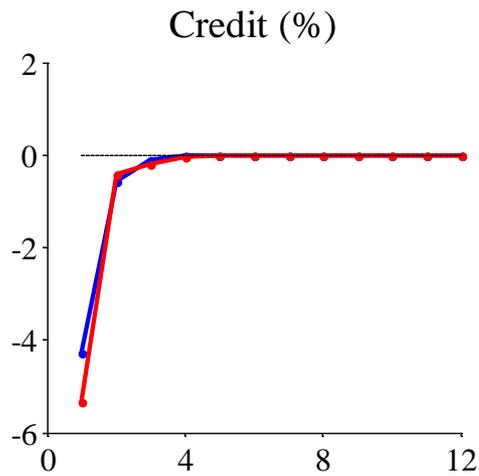
Thank you everyone!

## 2<sup>nd</sup> Exercise: Reserve Requirements

### Comparison of two economies:

1. (Benchmark) An economy in which the RR policy is not binding
  2. The same economy, but now RR policy is high enough such that is binding
- Reserve requirements intervention also modifies the SS equilibrium in a very similar way:
    - Banks need to be overcapitalized
    - The higher requirements, the better financial resilience indicators, and the higher earnings and spreads
    - **Trade-off between banking efficiency and financial resilience**
  - Adjustment dynamics are as follows

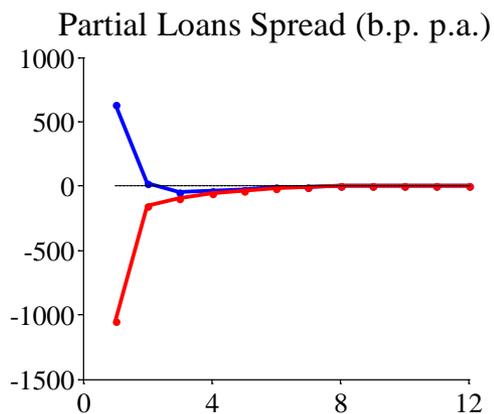
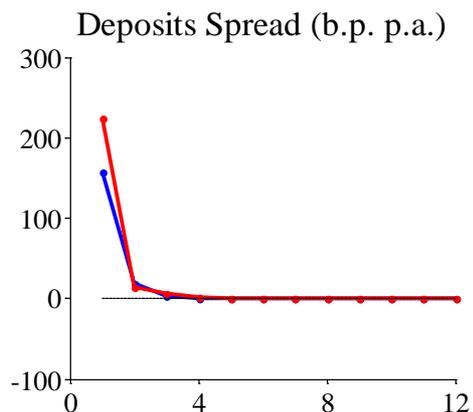
# 2<sup>nd</sup> Exercise: Reserve Requirements



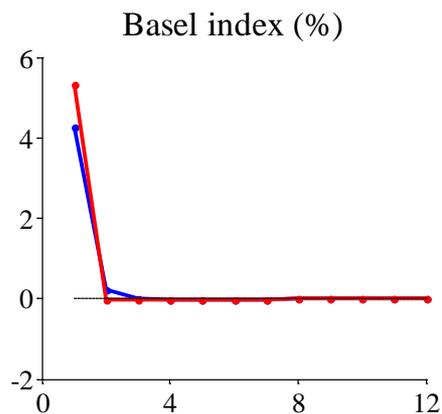
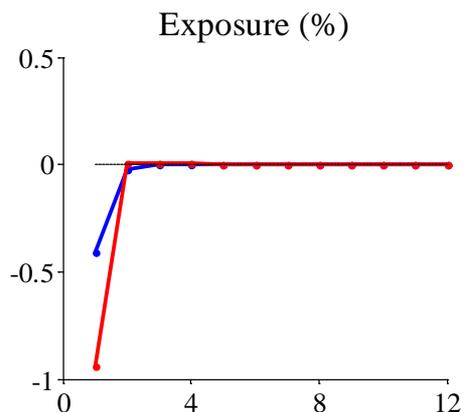
- Reserve requirement input more adjustment in bank capital than deposits
- Deposits became more expensive, so its effect is higher
- Bank lending channel is more effective under this macro regulation

# 2<sup>nd</sup> Exercise: Reserve Requirements

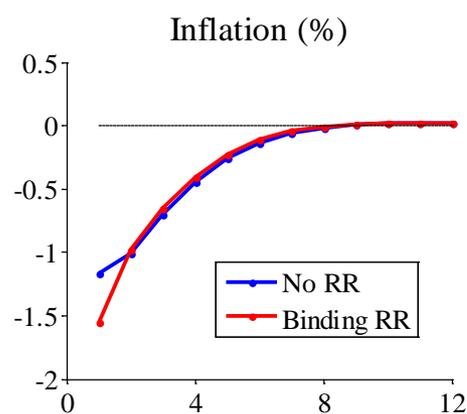
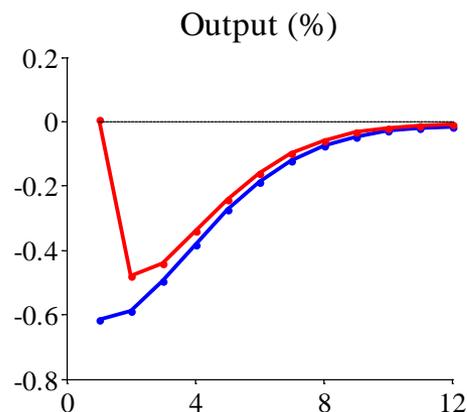
## Banking Efficiency



## Financial Resilience



## Macro Stability



## 2<sup>nd</sup> Exercise: Reserve Requirements

### Conclusions

- **Trade-off between banking efficiency and financial resilience** in the steady-state equilibrium under reserve requirements as well
- Interest rate policy transmission became more powerful under reserve requirements..
- But on the other hand, financial resilience indicators are weaker: **trade-off between financial resilience and macro stability** suggested again