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Systematic Risks of Short Sales on Interbank Networks

by

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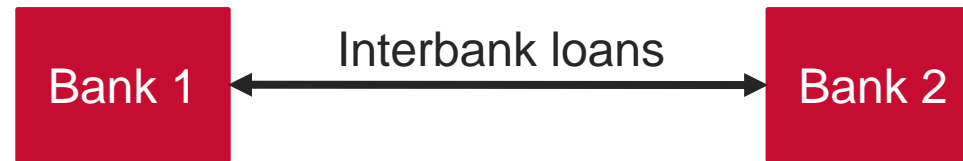


Purpose

- Understanding the effect of investment instruments/ strategies of banks on the banking system
 - short selling
- Effectiveness of regulations of strategies and interventions during crises

Interbank Network

- Random network, core-periphery network, network based interbank loan data
- Nodes: Banks
- Edges: Possible borrowing/lending



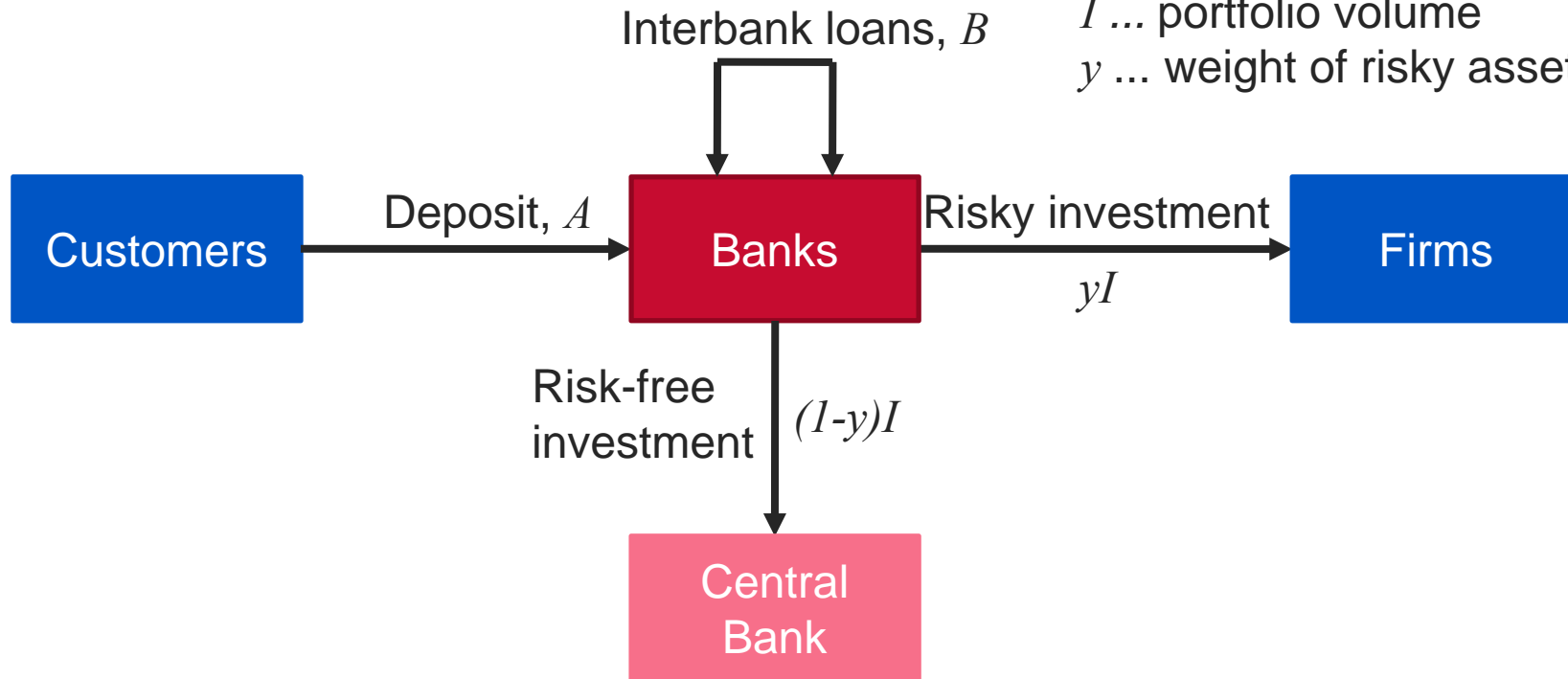
- Dynamics:



Bank

- Balance sheet: $I = A - R + B + V$

R ... min. required reserve
 V ... banking capital
 I ... portfolio volume
 y ... weight of risky asset



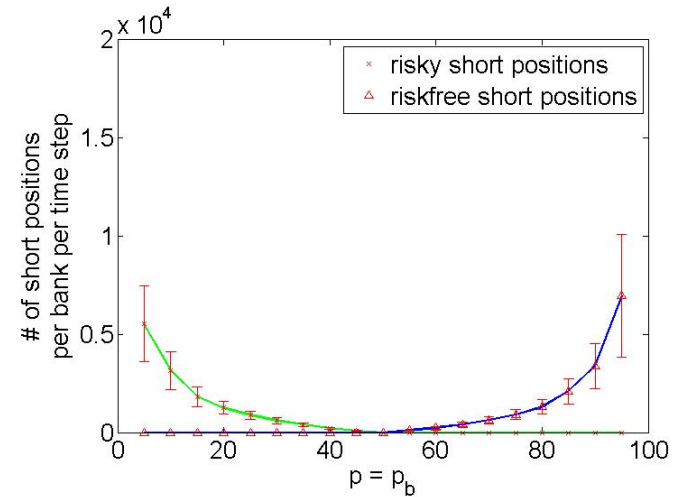
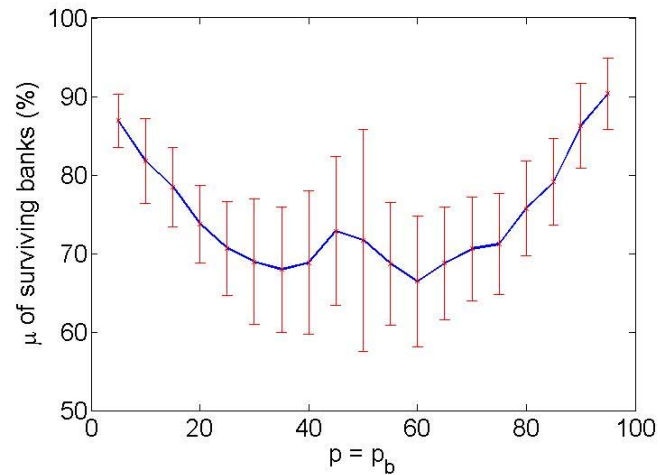
Bank's portfolio

- Relative risk aversion, $1/B$
- Utility function:
$$U(x) = \frac{B}{B-1} x^{1-\frac{1}{B}}$$
- Risky asset
 - p ...prob. of success
 - ρ^+, ρ^- ... returns
- Risk-free asset
 - r_b ... return
- Interbank loan, r_c

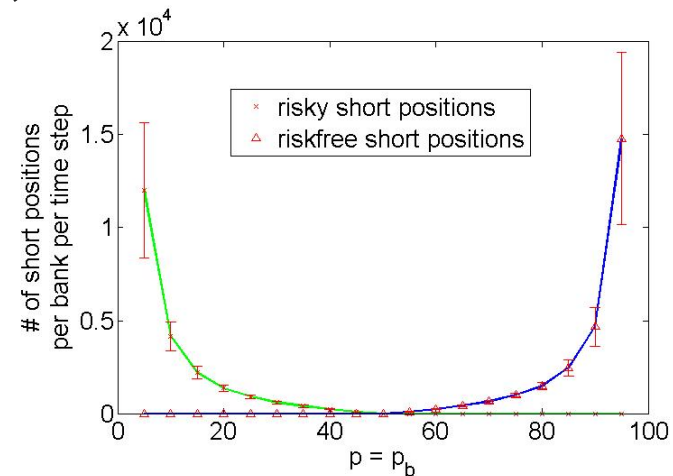
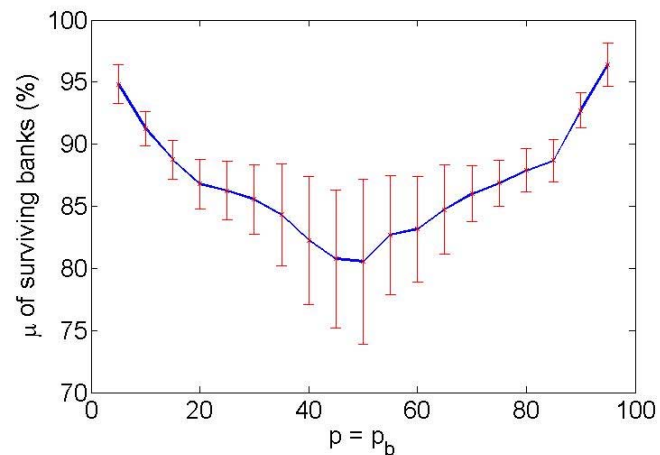
Bank's portfolio

- Optimal portfolio weight for risky asset, y^*
- Portfolio volume:
 - Optimal portfolio volume, I^*
 - Random portfolio volume, I
- Riskfree lending rate = borrowing rate
- Realistic banks
 - p ...prob. of success
 - ρ^+ , ρ^- ... returns

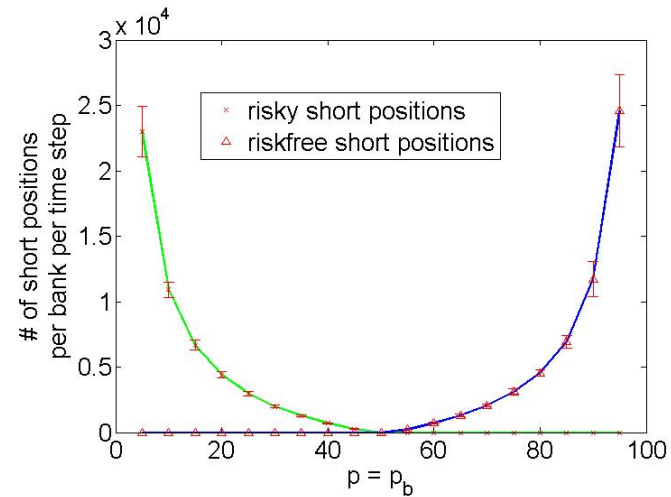
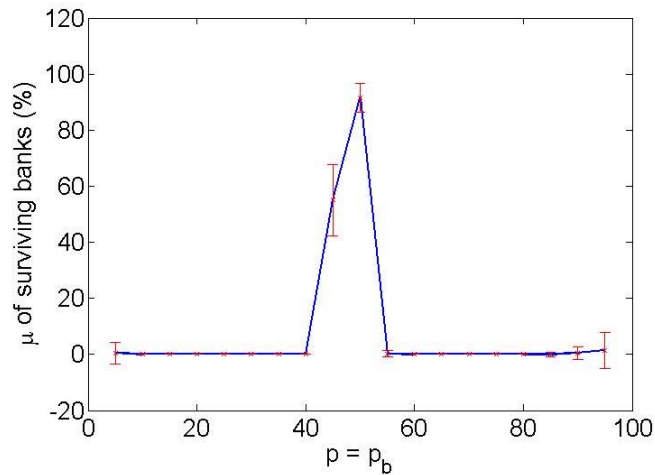
- 32 realistic banks, I^* .



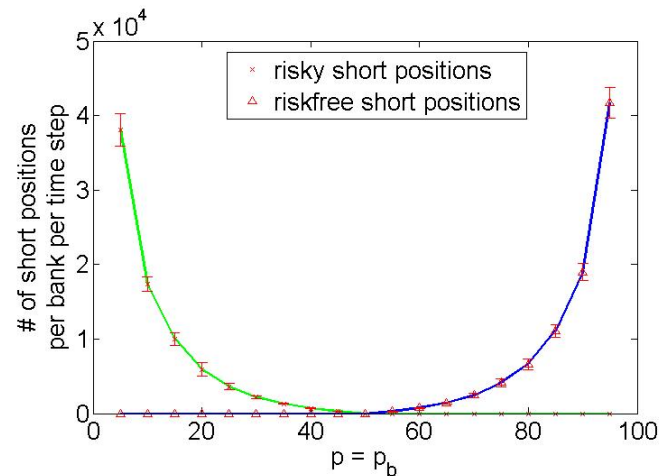
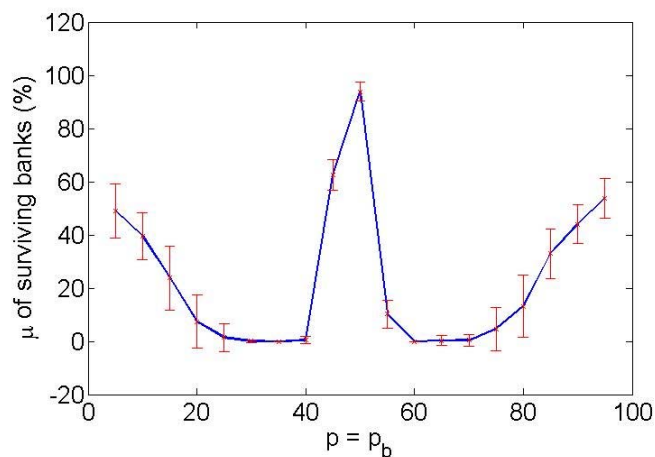
- 100 realistic banks, I^* .



- 32 realistic banks, I .



- 100 realistic banks, I .



Acknowledgement

- Drona Kandhai, Peter Sloot (UVA)