Interest Rate Risk and Cross-Sectional Effects of Micro-Prudential Regulation

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A Discussion by
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Macrofinance & bank regulation

- Productive firms & Households
- Banking sector (representative) with wealth share η_t

- **Time-series focus** – "Resilience trade-off" (with Gopalakrishna & Merkel)
  - Amplification, fire-sales, deflation
  - But … delayed bounce-back (worse resilience)
    - Shift in wealth share of banking sector is key state variable
    - *Major contributions by Juliane Begenau with …*

- **Cross-sectional focus**
  - Banks are heterogenous in
    - Lending capacity
    - Money creation capacity
    - Monitoring
    - Diversifying

THIS PAPER

Summary

- Two periods
- Heterogenous banks
  - Loans (with credit risk)
  - Bonds (with interest rate risk) ω
  - Risk-free asset $(1-\omega)(1+r)$

	Insured Deposits
	Uninsured Deposits
	Equity

- Q1: Why can't portfolio weight … not be chosen?
  - Local monopolies
- Households (representative)

$$U(C_0, C_1, \{D_i^I\}, \{D_i^U\}) = \log(C_0) + \psi \log\left(H\left(\{D_i^I\}, \{D_i^U\}\right)\right) + \beta \log\left(\mathrm{E}\left[C_1^{1-\varphi}\right]^{1/(1-\varphi)}\right)$$

  - CES liquidity aggregator.

$$H\left(\{D_i^I\}, \{D_i^U\}\right) = \left[\alpha\left(\int_0^1 (A_i^D D_i^I)^{\rho_I} di\right)^{\eta/\rho_I} + (1-\alpha)\left(\int_0^1 (A_i^D D_i^U)^{\rho_U} di\right)^{\eta/\rho_U}\right]^{1/\eta},$$

- Q2: Is Discrete Choice Model equivalent? Q3: Why $\rho_U \neq 1 - \rho_I$?

Main Calibration Results (selective)

1. Bank size concentration
   - Due to DRS loan technology
2. Large banks hold loans and issue uninsured deposits **=> only run on them**
   - Largest banks hold more bonds than large banks (to contain run risk)
3. Small banks hold bonds and issue insured deposits
   - Focus on deposit business

Comparative Static

- Increasing risky bond volatility (symmetrically)
  - Doubles defaults of large banks
- Increases down risk risk of (risky) bond returns

Q: Does this depend on ω?

Remark: Model has may degrees of freedom (esp. liquidity preferences)

Remark 2: Banks' franchise value is much larger in multi-period model and depends on discount rate. How does it affect calibration?

Leading examples

- Silicon Value Bank, First Republic Bank, Signature Bank
- Run from midsized bank(s)
- …. to large TBTF banks (JP Morgan, …)
- TBTF analysis in paper
  - Bailout guarantee needs to higher run risk (due to increased risk taking)
- Remark: Model run from and to banks.

  (cash runs are less likely these days)

Risk modeling

- Aggregate risk R_K independent R_B
- Idiosyncratic risk ε_i
- Run risk (idiosyncratic) ς_i, R_K, R_B

- Loan risk $A_i^K \varepsilon_i R_K K_i^{1-\kappa}$. --- more "loan-productive banks"
  - Higher returns
  - Higher risk exposure (aggregate and idiosyncratic)
    - worse risk managers (diversifiers)!
  - Q: Do cross-sectional results depend on this assumption?
- Loan risk R_K and bond risk R_B are independent
  - Low R_K in recessions are times when interest rate decline (R_B increases)
  - Flight-to-safety

Economies of scale and scope

- **Economies of Scale**
  - $R_K A_i^K \epsilon_i K_i^{1-\kappa}$ paper assumes DRS. --- key for heterogeneity in size
  - Literature: Increasing Returns to Scale
    - Diversification improvements
    - IT fixed cost expenditures
  - Remark 3: Justify decreasing returns to scale
    (do they only hold locally)

- **Economies of Scope**
  - A_i^K and A_i^D are perfectly correlated
  - Kinked function: $A_i^D = \overline{a} + A^- \min\{A_i^K - med(A_i^K), 0\} + A^- \min\{A_i^K - med(A_i^K), 0\}$

Exogenous fire-sale discount δ

- Lucas Critique
- Fire-sale discount affects
  - Liquidity runs (range of $[\underline{\varepsilon}, \overline{\varepsilon}]$)
  - Solvency bankruptcy
  - Cross-sectional (heterogenous) portfolio/funding choices (leverage)
- + deflationary pressure (liability side of banks)
    - Even if run is a single (zero measure) bank, there could be predatory behavior.

Policy Implications

- Higher **liquidity** requirements targeting uninsured deposits
  => reduce run risk

- **Size-dependent capital** required
  => reduce run risk (but also cause misallocation in the lending market)

Conclusion

- First rate finance paper!
- Explains cross-sectional empirical regularities
- Match with SVB, First Republic Bank?

- Modeling choices
  - 2 periods – does it capture true franchise value?
  - Productive bankers are worse risk managers
  - No flight-to-safety (hedge)
  - Economies of scale and scope --- DRS κ is key
  - Endogenous fire-sale prices feeds back to cross-section

- Nice policy implications