Bank Loan Markups and Adverse Selection

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Motivation

Bank market concentration has doubled since 1990 for the top 10 largest banks

- Is market concentration good or bad?
  - Need to be able to measure effect that it has on prices
  - $\Rightarrow$ Need proper measure of markups

- Paper: novel data to measure markups stripping out price of risk

Summary of Paper Contributions

1. Novel measure of bank markups

   Novel Y-14 data $\Rightarrow$ banks' internal forecasts of
   - 28,000 new loans originated from 2014Q4 to 2020Q3 by 23 BHCs
   - Filters: keep domestic, remove financial, gov, individual, nonprofit, publicly traded
     1. **Probability of Default (PD)**
     2. **Loss Given Default (LGD)**

   Calculate value of markups adjusting for PD and LGD
   - Strips out the cost of default (or cost of acquiring information)
   - Risk adjusted markup does not predict default

2. Test theoretical question: **Does asymmetric information drive bank markups?**
   1. NO: $\uparrow$ concentration $\Rightarrow\uparrow$ markup
   2. YES: $\uparrow$ concentration $\Rightarrow\downarrow$ markup
      - Find: YES
        - Study markups across counties/MSAs with different concentration measures
        - Add firm FE to main regression

          -Larger, more profitable, low leverage $\Rightarrow\downarrow$ markup

Banking Theory - More Concentrated (Less Competitive) Markets

- Static Cournot models - ↑ concentration →↑ markup (price)

  firms internalize impact of production on price, produce less

- Dynamic models - ↑ concentration →↑ collusion →↑ markup

  In credit markets w/ asymmetric information, sign can flip

  1. Borrowers know more about their creditworthiness than banks
  2. Some banks know more about borrowers' creditworthiness than others
     - ⇒ Hold-up problem - best borrowers obtain lending from a bank, cannot leave that bank because another bank will not know if they chose to leave or were dismissed & pools with bad borrowers
     - ↑ concentration - ↓ hold-up problem, easier to discern dismissed borrowers

Number banks ↓, easier for banks to know if borrower has been dismissed by another bank

Paper utilizes this fact to test whether areas with higher HHI have lower markups

Summarize Empirical Approach

Conceptually - interest rate (IR) broken into 3 parts

1. Marginal Cost due to credit risk
2. Marginal Cost due to administering/monitoring loan
3. Markup

$$IR = MC_{risk} + MC_{non-risk} + MU$$

- For loan l, by bank b, in quarter t

$$IR_l = \beta_0 PD_l + \beta_1 LGD_l + \beta_2 (PD_l \times LGD_l) + \gamma X_l + \delta_{b,t} + \alpha_{i,t} + u_l$$

  - Regress IR on risk, use betas to calculate the predicted IR adjusted for all risk, subtract predicted IR from actual, the residual is the markup
  - Make sure estimate for markup does not predict loan default

Effect of Market Share on Markup

For loan l, by bank b, in quarter t

$$\widehat{MU}_l = \beta HHI_c + \gamma Z_{f,t} + \delta_{b,t} + \alpha_{i,t} + u_l$$

$\widehat{MU}_l$ = Risk-adjusted markup

HHI_c = County/MSA level $HHI = \sum_{i=1}^{N} s_i^2$

$Z_{f,t}$ = vector of firm characteristics

$\delta_{b,t}$ = bank by quarter fixed effects

$\alpha_{i,t}$ = industry by quarter fixed effects

u_l = error term

Finds that $\uparrow$ concentration $\Rightarrow \downarrow$ markup

First Main Comment - Effect of Market Share

Hatfield, Wallen 2022 - Largest 3 banks compete in multiple markets

- BOA, JP Morgan Chase, Wells Fargo
- 2001-2020 multi-mkt contact increased 60%
  - Largest 3 held 32% national deposits despite $\sim$5,000 depository institutions
- Banks discipline eachother in multiple markets
- Tacit collusion: if bank lowers rates in one market, it's disciplined in another market
  - Prices $\uparrow$ in markets that largest 3 banks share (*coastal areas*)
  - When largest 3 enter mkt, intentionally keep local mktshr low & national mktshr high

Higher concentration in local markets driven by smaller banks

- Concern: Picking-up effect of multi-mkt contact $\uparrow$ prices on coasts, $\downarrow$ prices in mid-USA
  - Not Asymmetric Info & $\uparrow$ concentration $\Rightarrow\downarrow$ prices in mid-USA
  - Control for this: add in a measures for markets largest 3 banks share

First Main Comment - Effect of Market Share (cont'd)

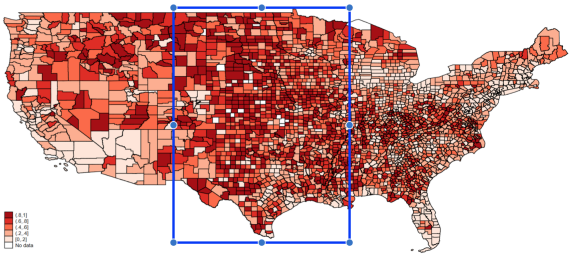
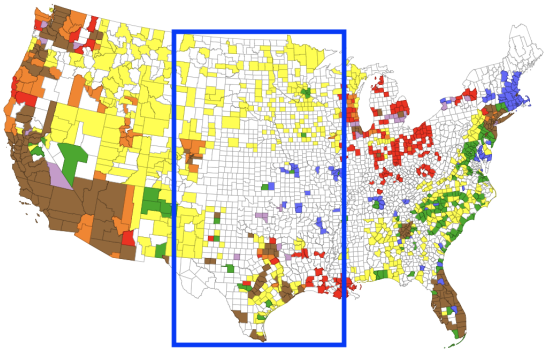


Figure 1: Loan HHI Heat Map



(b) 2018 Branch Network

(*purple* BoA/JP, *green* BoA/Wells, *orange* JP/Wells, *brown* All)

Thank You

Appendix

Minor Comments

Organization

- Estimation of markup should go in one section rather than 3.1 and 3.4
- Data section should come before section 3
- Table 7: According to their argument in the main analysis, I would expect higher market share of a bank to decrease markups
  - In these areas, there are fewer banks, so banks find it easier to know which borrowers had been rejected from another bank and therefore should charge higher markups