Diverging Banking Sector: New Facts and Macro Implications

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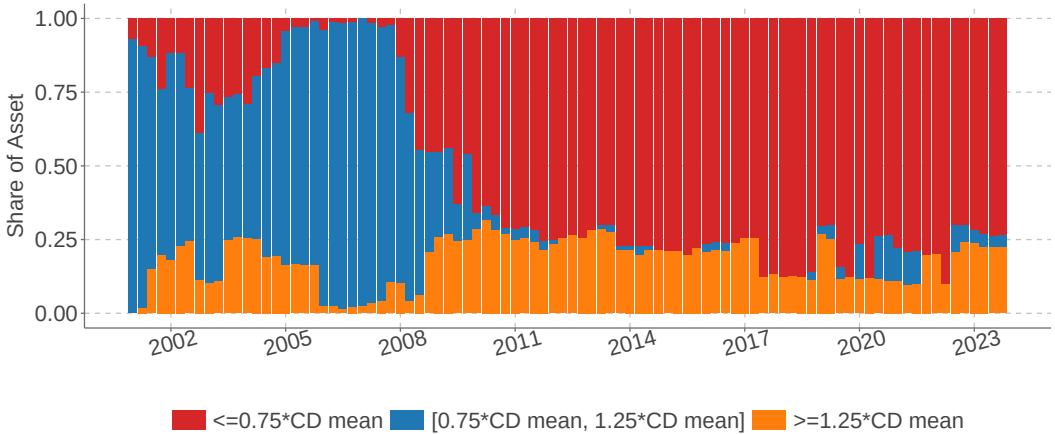
Savings Deposit Rates: 05/2025

Financial institution	APY	Minimum opening balance
PNC	3.95%	$0
Citi	3.70%	$1
Marcus by Goldman Sachs	3.75%	$0
Capital One	3.60%	$0
Ally Bank	3.60%	$0
TD Bank	0.02%	$0
Chase	0.01%	$0
U.S. Bank	0.01%	$25
Wells Fargo	0.01%	$25
Bank of America	0.01%	$100

1. Large spread: 3.7%
2. Applies more broadly than savings accounts

Heterogeneity is *NEW*



▸ Call Reports

Emergence of Two Business Models in Banking

1. **Growing Divergence within Banking Sector**

High-Rate Banks (e.g.,Citi, PNC)

- Fewer # of branches
- Shorter-maturity loans
- Higher lending spread and risk-taking

Low-Rate Banks (e.g., BOA, Chase)

- Higher # of branches
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High-rate banks take credit risk, low-rate bank do maturity transformation

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2. **Macro Implications:** (1) Monetary policy transmission; (2) Banking sector's risk-maturity profile
   - Fed rate $\uparrow$, deposits of low rate banks $\downarrow \Longrightarrow$ not much lending cut

Contribution to Literature

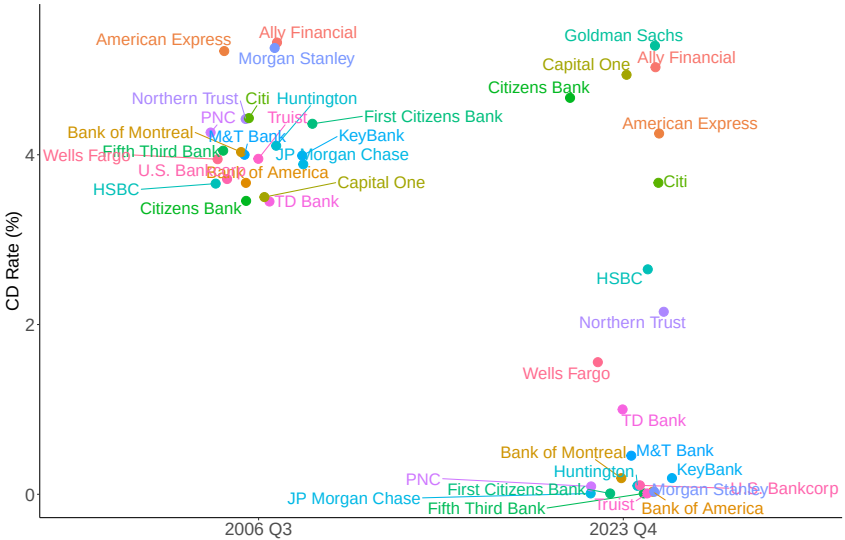
1. Variation in deposit distribution affects transmission of monetary policy
   - Monetary policy transmission through banking sector: e.g., Bernanke and Blinder, 1988; Kashyap and Stein 1994; Bolton and Freixas 2000; Van den Heuvel et al., 2002; Drechsler, Savov and Schnabl 2017, ...
   - Through FinTechs: Erel, Liebersohn, Yannelis, and Earnest 2023; Koont, Santos and Zingales 2023, ...
2. Distribution of deposit rates *across* banks
   - Deposit rates within and across banks: e.g., Radecki 1998; Granja and Paixao 2021; d'Avernas, Eisfeldt, Huang, Stanton and Wallace 2023; Iyer, Kundu and Paltalidis 2023
3. Impact of digitization on banks' business models
   - Online banks and deposit rates e.g., Jiang, Yu, and Zhang 2022; Koont 2023
4. Stability of banks in recent era
   - Fragility of banks: e.g., Drechsler, Savov and Schnabl 2021; Haddad, Hartman-Glaser and Muir 2023, ...

Facts: Diverging Banking Sector

Generalized Classification of High and Low-Rate Banks

1. Focus on **systematically important banks**: top 25 banks based on assets
2. Rank banks based on both DepRate and CD rate each quarter
3. Standardize ranks (from 0 to 1) and take the average
4. Top Tercile are ”high-rate” banks and the remaining are ”low-rate” banks
5. **Persistant** classification
   - 60% of banks are classified as one bank type
   - another 30% are classified as one bank type during 80% of the sample period
   - assign each bank to its major bank type

Classification Examples



Summary Statistics

High vs. Low-rate Banks Comparison

	2001-2007			2017-2023		
	High	Low	Diff	High	Low	Diff
CD (%)	2.97	2.63	0.35***	1.18	0.16↓	1.02***

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NIM rate (%)	3.22	2.81	0.41	3.01	2.35 ↓	0.66***

- Changes are mostly driven by low-rate banks

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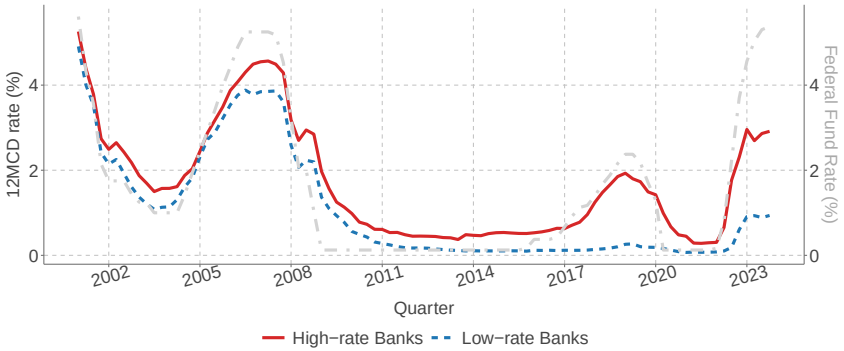
NIM rate (%)	3.22	2.81	0.41	3.01	2.35 ↓	0.66***
Charge-off Rate (%)	0.99	0.74	0.25	0.88	0.32 ↓	0.56***
Maturity (Years)	3.80	5.84	-2.04**	4.30	7.09 ↑	-2.79***

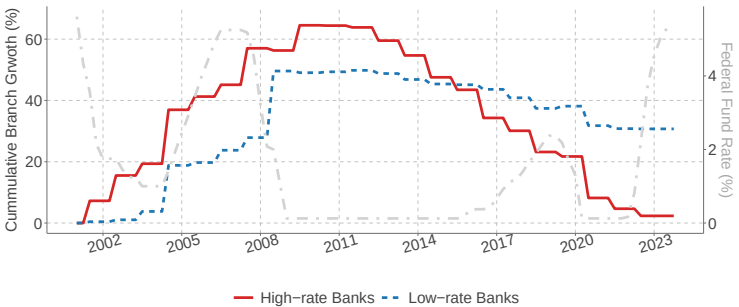
- Changes are mostly driven by low-rate banks

Fact #1: Divergence in Deposit Rates



- Deposit rates diverge in the last two rate hiking cycles
- Low-rate banks become very insensitive to Fed funds rate moves

Fact #2: Divergence in Branches

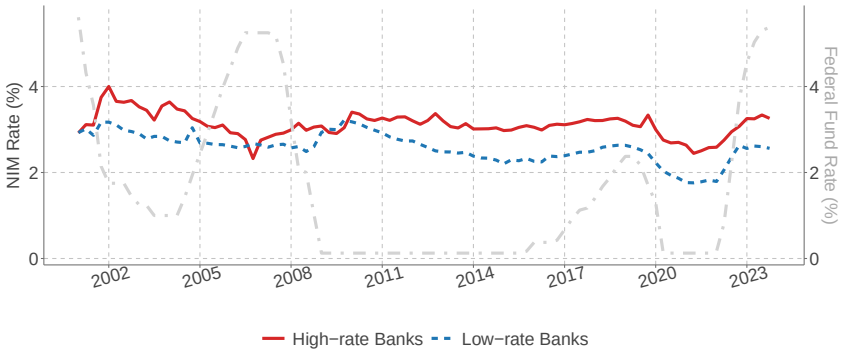


	log(#Branches)
$\mathbb{1}$(High-Rate) $\times$Post	-1.373***
	(0.192)
$\mathbb{1}$(High-Rate)	-0.314***
	(0.112)
Quarter FE	✓
Adjusted R^2	0.297
Sample Avg.	7.042

- High-rate banks reduce 75% of branches after 2009 (Post)

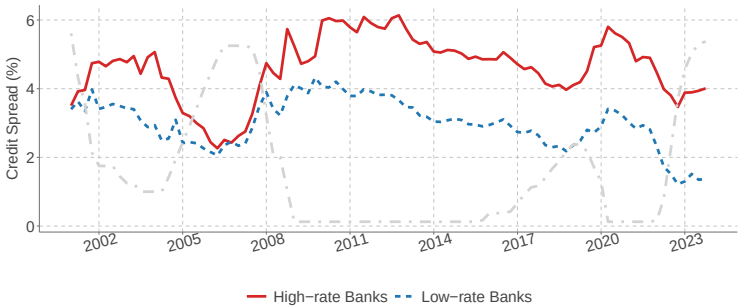
Fact #3: Divergence in Net Interest Margin

- Do high deposit rates hurt NIM rates for high-rate banks?
- No! High-rate banks' NIM rates even slightly higher than low-rate banks
  - they maintain a roughly 50 basis-point advantage!



Fact #4A: Divergence in Credit Risk (Ex-ante Credit Spreads)

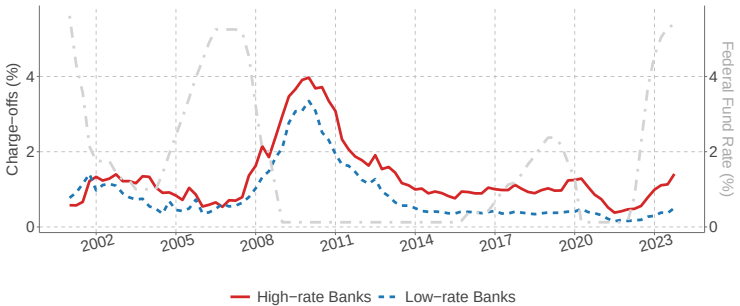
- Credit spread = Lending rate - Maturity-matched treasury yield



	Credit Spread
$\mathbb{1}$(High-Rate) $\times$Post	0.782***
	(0.234)
$\mathbb{1}$(High-Rate)	1.371***
	(0.224)
Quarter FE	✓
Adjusted R^2	0.403
Sample Avg.	3.243

- High-rate banks earn a spread from riskier lending, charging credit spread of 5% compared to 1.7% for low-rate banks in 2023

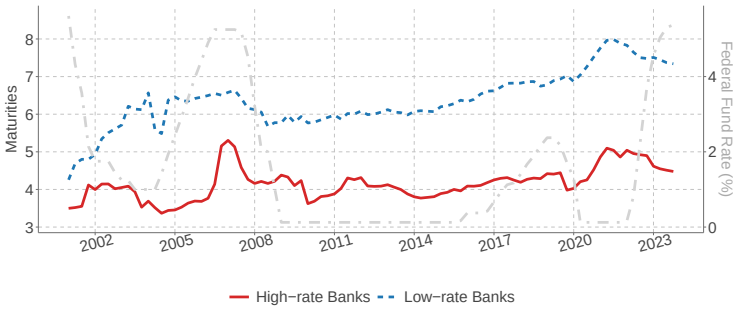
Fact #4B: Divergence in Credit Risk (Ex-post Charge-off Rates)



	Charge-offs
$\mathbb{1}$(High-Rate) $\times$Post	0.246***
	(0.090)
$\mathbb{1}$(High-Rate)	0.359***
	(0.082)
Quarter FE	✓
Adjusted R^2	0.165
Sample Avg.	0.852

- High-rate banks earn a spread from riskier lending, reporting 3x higher charge-off rate in 2023

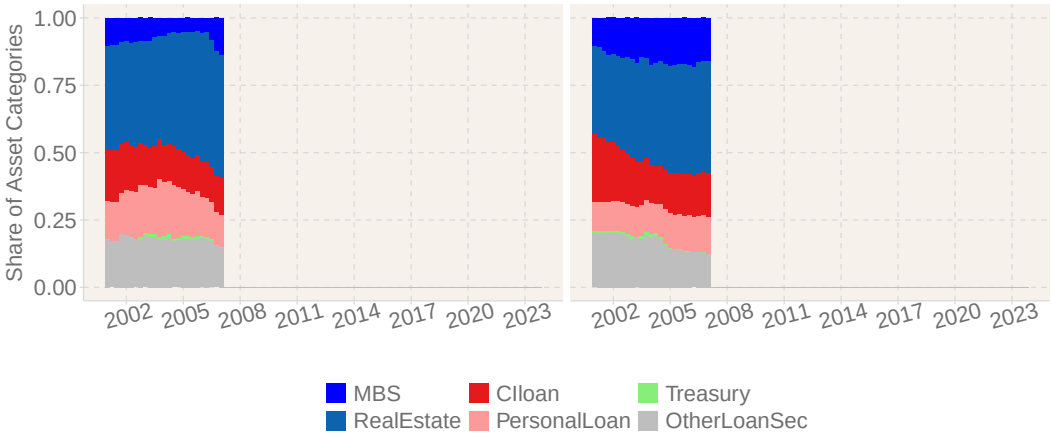
Fact #5: Divergence in Asset Maturity



	Maturity
$\mathbb{1}$(High-Rate) $\times$Post	-0.454**
	(0.227)
$\mathbb{1}$(High-Rate)	-1.962***
	(0.202)
Quarter FE	✓
Adjusted R^2	0.287
Sample Avg.	5.932

- Low-rate banks hold longer-maturity assets, holding assets with 7.5 years maturity compared of 4 years for high-rate banks

Fact #6: How to Achieve Diverged Credit Risk and Maturities?



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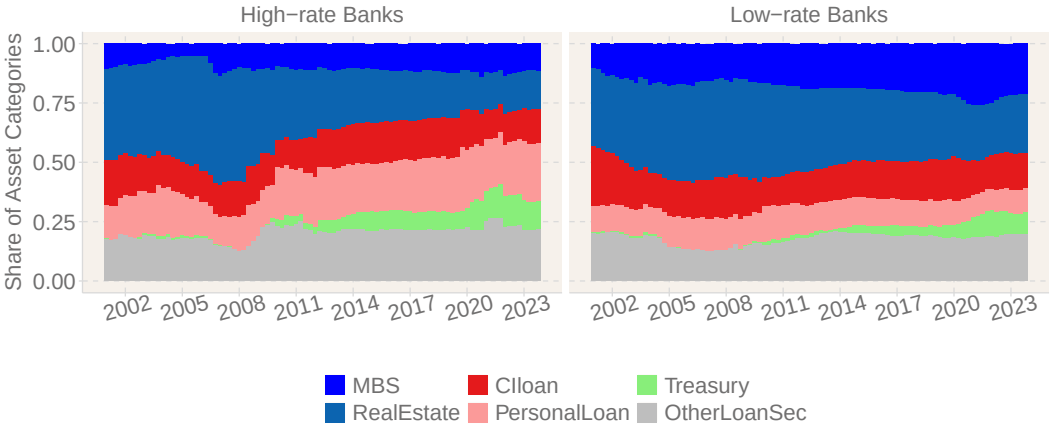

- High-rate banks: Personal, C&I and other loans (short-term but risky)
- Low-rate banks: MBS and real estate loans (long-term but safe)

Fact #6: How to Achieve Diverged Credit Risk and Maturities?

	Loans				Securities	
	Pers. Share	C&I Share	RE Share	Others	MBS Share	Others
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}$(High-Rate) $\times$Post	6.441***	2.733***	-12.470***	4.078***	-2.519**	1.737**
	(1.223)	(0.682)	(0.724)	(0.416)	(1.229)	(0.866)
$\mathbb{1}$(High Rate)	4.113***	-0.656	6.414***	-1.521***	-8.803***	0.452
	(1.085)	(0.506)	(0.588)	(0.349)	(1.142)	(0.775)
Quarter FE	✓	✓	✓	✓	✓	✓
Charge-offs (%)	2.286	0.600	0.437	0.222	-	-
Maturity (years)	1.924	1.924	12.294	1.924	17.164	5.967

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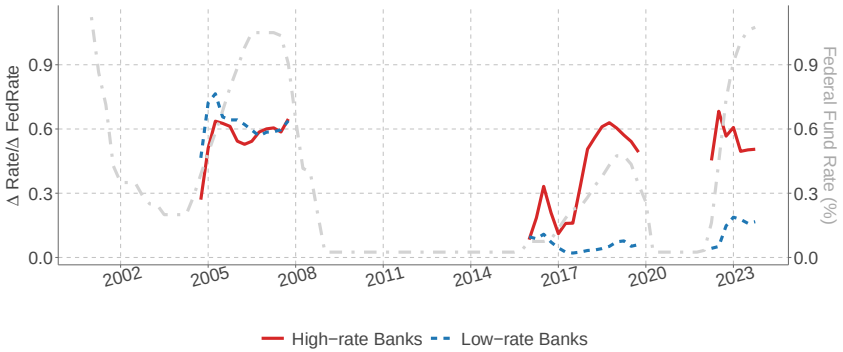
Macro Implications

Divergence in Deposit Rate Sensitivity to Fed Funds Rate

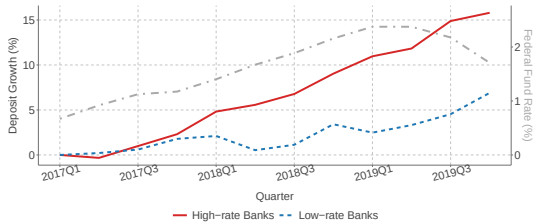
- Deposit sensitivity diverges in the last two rate hiking cycles



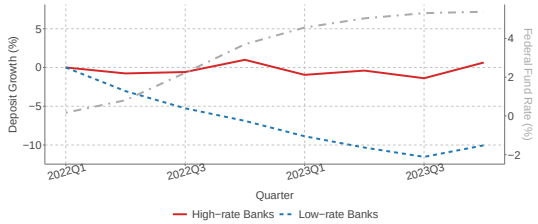
Savings | Call Reports

- In recent two cycles: sensitivity of low-rate banks: 0.12; high-rate banks: 0.48

Divergence in Deposit Flows



(a) 2016-2020



(b) 2022-2023

- The deposit growth patterns are similar before 2009

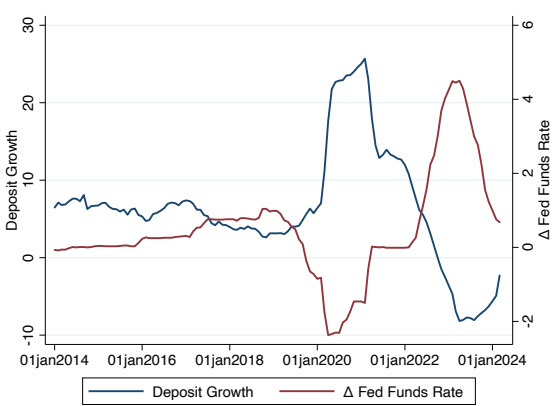
Macro Implication #1: Monetary Policy Transmission to Lending

	ΔPers. Share$_{i,y}$ (1)	ΔC&I Share$_{i,y}$ (2)	ΔRE Share$_{i,y}$ (3)	ΔMBS Share$_{i,y}$ (4)
ΔFed Funds$_y \times$ $\mathbb{1}$(High-rate) $\times$Post	1.046***	0.406**	-0.438*	-0.561**
	(0.241)	(0.142)	(0.249)	(0.261)
ΔFed funds$_y \times$ $\mathbb{1}$(High-rate)	-0.825***	-0.423***	0.082	0.935***
	(0.216)	(0.107)	(0.155)	(0.242)
ΔFed funds$_y \times$Post	0.313**	-0.411**	0.611***	-0.128
	(0.122)	(0.205)	(0.221)	(0.132)
ΔFed funds$_y$	-0.003	0.784***	-0.099	-0.435***
	(0.100)	(0.141)	(0.121)	(0.081)
Sample Average (%)	13.375	15.181	29.619	16.994

- After 2009, when Fed Funds rate $\uparrow$ 100 bps
- High-rate banks: 0.53% $\uparrow$ pers. share, 0.36% $\uparrow$ C&I share
- Low-rate banks: 0.56% $\downarrow$ MBS share

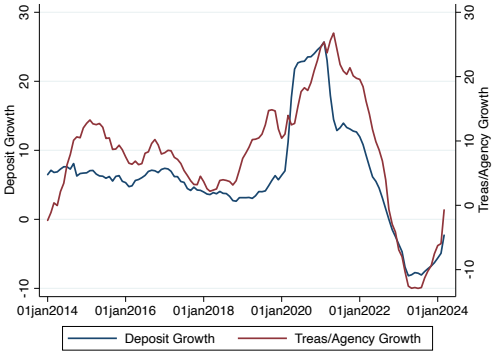
Explains the Absence of a Large Credit Crunch in Recent Rate Hikes

- Starting 2022, banks experience annual deposit outflows of over 8%, the largest in percentage terms since 1973

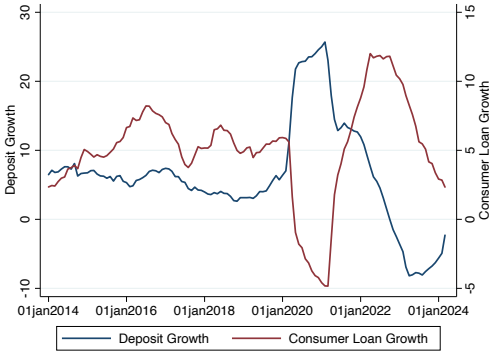


Explains the Absence of a Large Credit Crunch in Recent Rate Hikes

- However, we do not see a large credit crunch
- Because deposits flow out from low-rate banks, which hold more securities

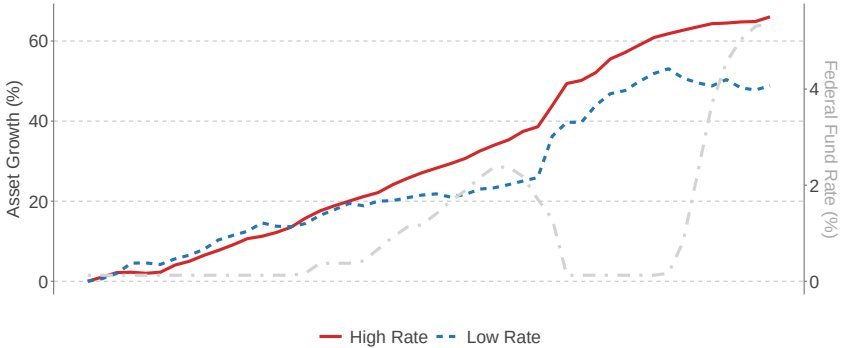


(c) Treasuries and MBSs



(d) Consumer Loans

Macro Implication #2: Banking Sector's Risk-Maturity Capacity



- 10% deposits shift $\Rightarrow$ banking sector holds assets with 5% shorter maturity but assumes about 8% higher credit risk
- Credit risk concentrates among a subset of high-rate banks

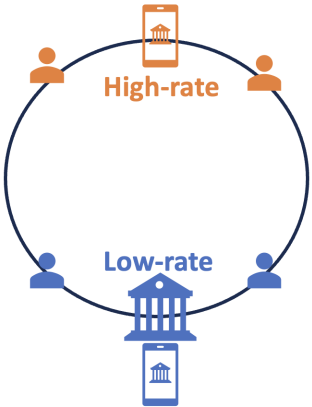
Channels

What Explains the Divergence?

- Regulation: Basel III and the Dodd-Frank Act imposed stricter capital requirements, especially for larger banks
  - Focus on 25 largest banks
  - No divergence in Tier 1/2 ratios
- QE purchase government backed securities from banks
  - No divergence in reserve holding ratio
- Emergence of e-banking (Jiang, Yu, Zhang 2023)
  - Similar results if replacing Post by 1) Google search intensity of ”Mobile Banking” and 2) 3G network coverage
  - Divergence in IT expenditure

Intuition From A Simple Model

- Customers have location proximity
- e-banking allows banks to serve customers without branches



- Diverging banking emerges naturally
- Low-rate banks invest in safer assets to safeguard steady-stream deposit spreads
- High-rate banks engage in risk-taking (Jensen & Meckling 1976)

Decomposition of Divergence

- Composition changes?
  - Hypothesis: high-rate banks enter top 25 banks after 2009
  - 1) Results hold after excluding banks that entered the top 25 only after 2009
  - 2) Results hold in simulations that randomly select 25 banks from the top 100 banks
- Within-bank strategy changes?
  - Hypothesis: Two types of banks shifted their strategies after 2009
  - Most of the results hold with BHC fixed effects, though some results exhibit notable changes in economic magnitudes
- Both contribute to the observed diverging patterns

Conclusion

Conclusion

1. **Diverging Banking Sector**
   - High-rate banks: fewer branches, shorter-term but risky loans
     - Not money market funds
   - Low-rate banks: more branches, longer-term, and safer securities
     - Long-term bond funds

2. **$\uparrow$ Interest rates $\rightarrow$ deposits flow to high-rate banks**
   - Credit supply to real estate loans are more affected by monetary policy
   - Banking sector credit risk $\uparrow$ and maturity transformation $\downarrow$

APPENDIX

Market Share of Top 25 Banks

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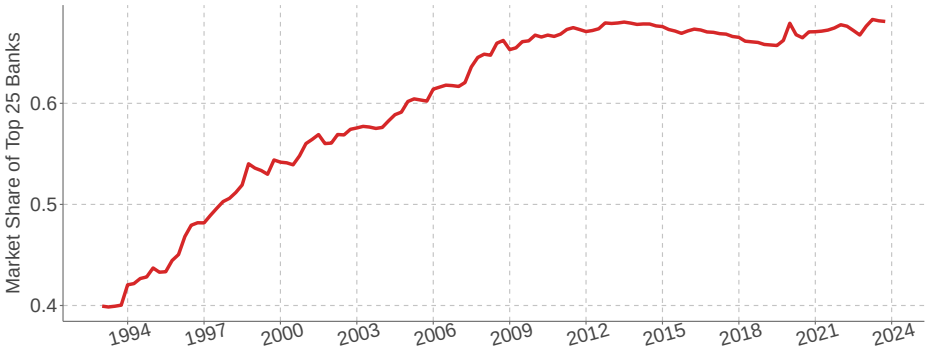

Divergence in Deposit Rates: Call Reports Deposit Rate

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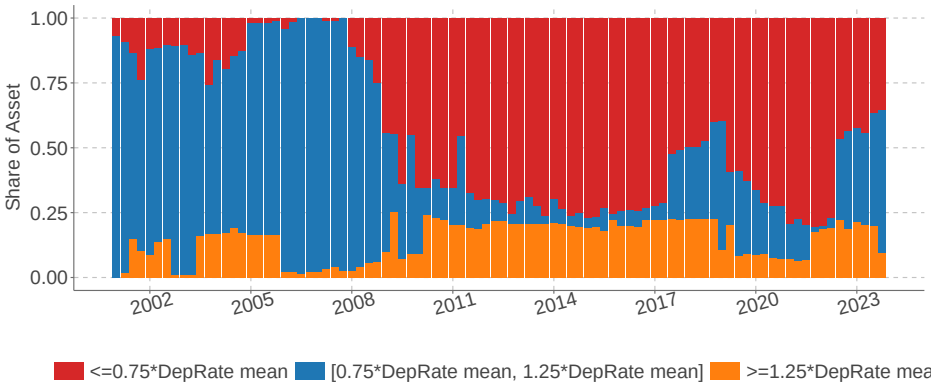
Banking sector exhibits significant secular divergence in deposit rates, weighted by bank assets



Variation in Branch Deposit Rates across Largest Banks and BHCs

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	(1) Time FE	(2) RSSD FE	(3) BHC FE	(4) RSSD+Time FE	(5) BHC+Time FE	(6) RSSD × Time FE	(7) BHC × Time FE
R^2	0.9056	0.0657	0.0674	0.9320	0.9423	0.9423	0.9636
adj. R^2	0.9056	0.0588	0.0669	0.9315	0.9422	0.9363	0.9626
N	916,859	910,276	57,545	910,276	57,545	513,270	57,401

Deposit Beta for High and Low-Rate Banks: Savings Rate

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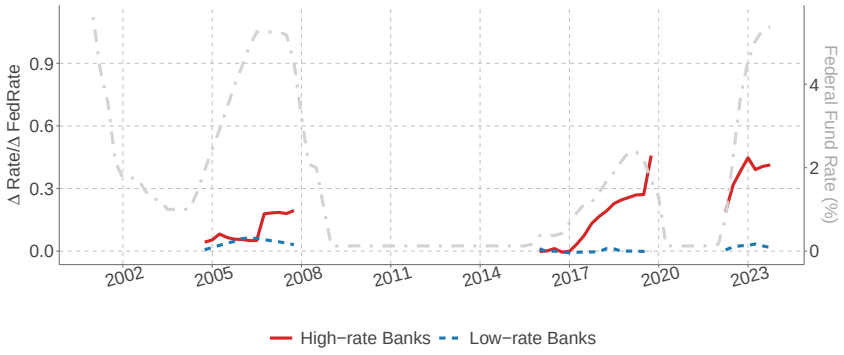
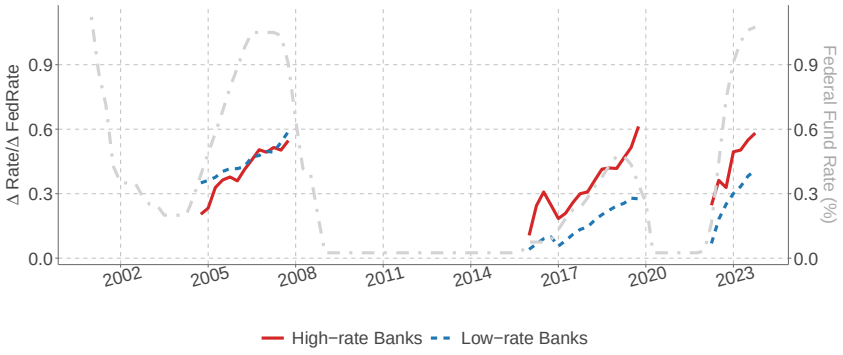


Deposit Beta for High and Low-Rate Banks: Call Reports

Back



Deposit Growth from 2004Q3 to 2007Q4

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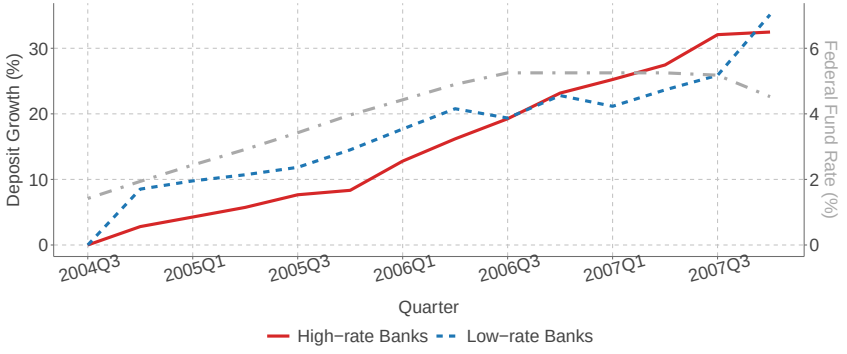

Decomposition Deposits