

Diverging Banking Sector: New Facts and Macro Implications

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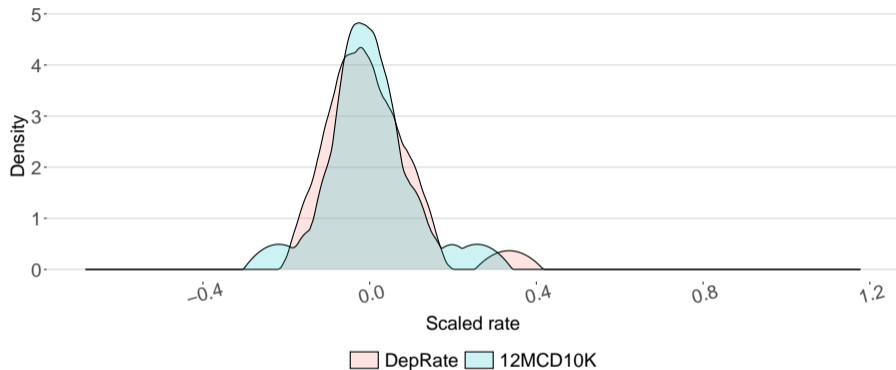
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Savings Deposit Rates: 09/2024

Financial institution	APY	Minimum opening balance
Citi Bank	4.30%	\$0
HSBC	4.30%	\$1
Marcus by Goldman Sachs	4.25%	\$0
Capital One	4.25%	\$0
Ally Bank	4.00%	\$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

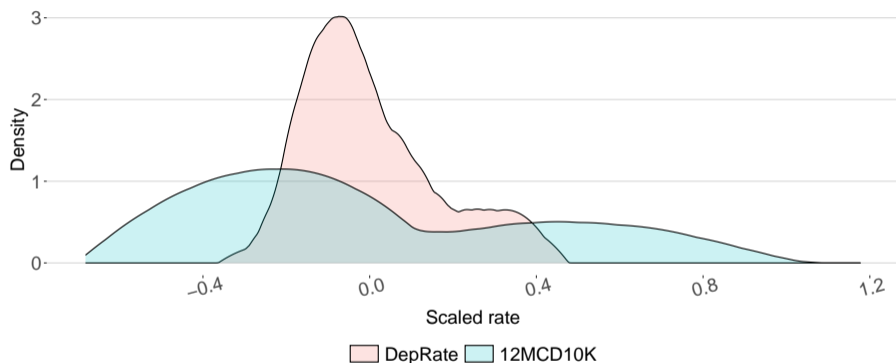
1. Large spread: 4.3%
2. Applies more broadly than savings accounts

Heterogeneity is NEW: Deposit Rates, Top 25 Banks in 2007



- ▶ Rate is scaled by Fed Funds rate and demeaned
- ▶ Federal fund rate = 5.25% and mean of DepRate (CD rate) is 3.01% (3.97%)

Heterogeneity is NEW: Deposit Rates, Top 25 Banks in 2023



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Emergence of Two Business Models in Banking

1. Growing Divergence within Banking Sector

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

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

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

- Higher # of branches
- Longer-maturity securities
- Lower lending spread and safer assets

High-rate banks take credit risk, low-rate banks 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 $\downarrow \implies$ not much lending cut

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. **Persistent** classification
 - 60% of banks are classified as one bank type
 - Another 35% are classified as one bank type for 90% of the sample period
 - Assign each bank to its major bank type

Classification Examples

High-rate Banks	Low-rate Banks
Ally Financial	Bank of Montreal
American Express	Bank of New York
Capital One	Bank of America
Citi	Charles Schwab
Deutsche Bank	Citizens Bank
Goldman Sachs	Fifth Third Bank
ING Group	JP Morgan
Morgan Stanley	SVB
National City	U.S. Bankcorp
RBS Holdings	Wells Fargo

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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# of Branches	985	2,488	-1,503**	475 ↓	3,375 ↑	-2,900***

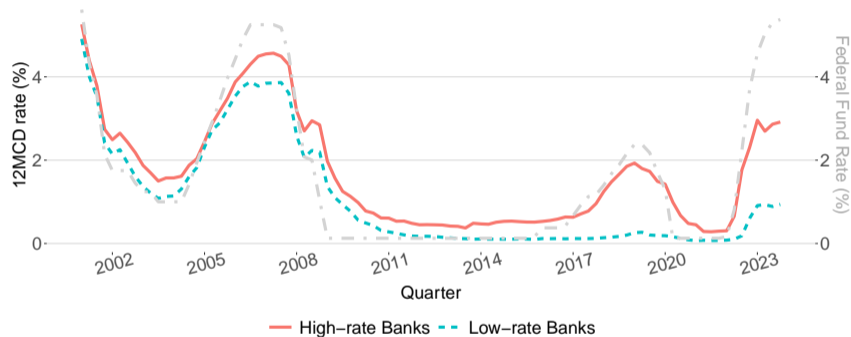
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NIM rate (%)	3.22	2.81	0.41	3.01	2.35 ↓	0.66***
Charge-off Rate (%)	0.99	0.74	0.25	0.88	0.32 ↓	0.56***
Maturity (Years)	3.80	5.84	-2.04**	4.30	7.09 ↑	-2.79***

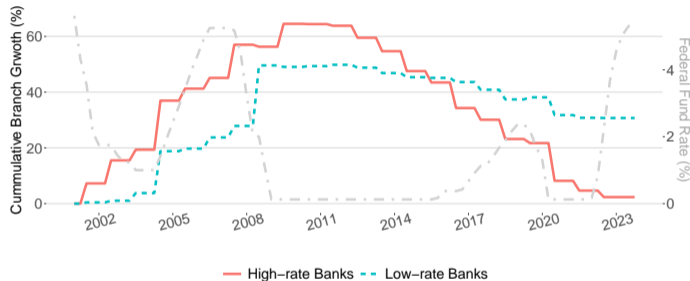
- Changes in asset side is mostly driven by low-rate banks

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

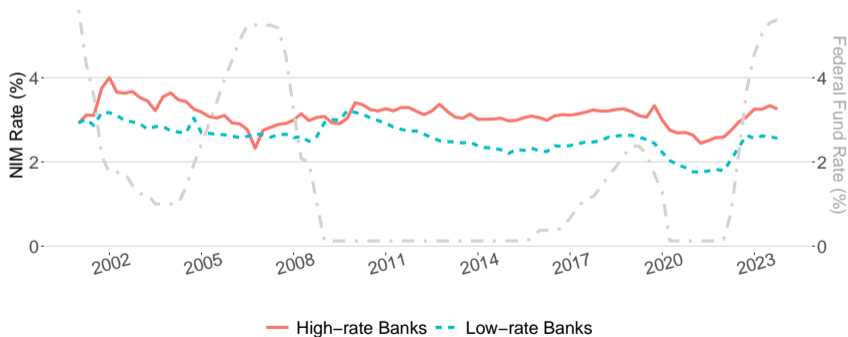


	$\log(\# \text{ Branches})$
	(1)
$\mathbb{1}(\text{High-Rate})$	-1.373^{***}
$\times \text{Post}$	(0.192)
$\mathbb{1}(\text{High-Rate})$	-0.314^{***}
	(0.112)
Quarter FE	✓
Adjusted R^2	0.297
Sample Avg.	7.042

- ▶ High-rate banks reduce 75% of branches after 2009 (Post)
- ▶ Same pattern for deposit-branch ratio and average customer age

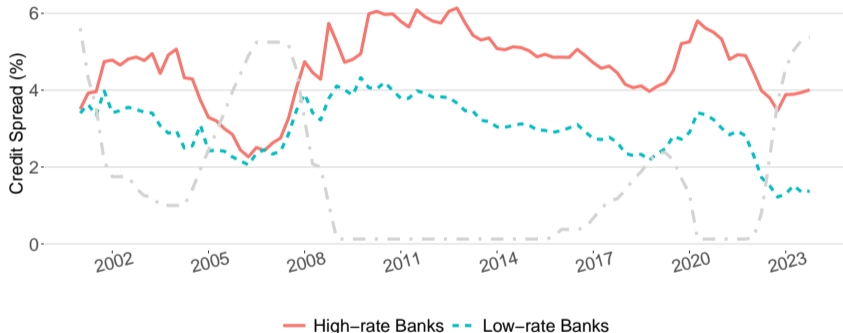
Fact #3: Divergence in Net Interest Margin

- ▶ Do high deposit rates hurt NIM rates for high-rate banks?
- ▶ **No!** High-rate banks' NIM rates even **slightly increase**
 - They maintain more than a **50** basis-point advantage!



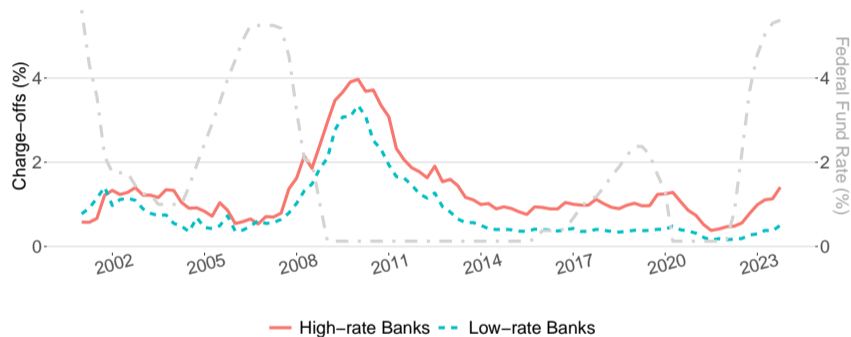
Fact #4A: Divergence in Credit Risk (Ex-ante Credit Spreads)

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



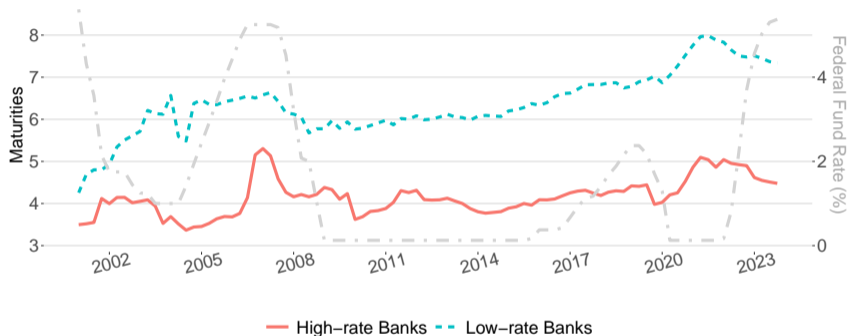
- ▶ High-rate banks earn a spread from riskier lending, charging credit spread of **5%** compared to **1.7%** for low-rate banks in 2023

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



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

Fact #5: Divergence in Asset Maturity



- ▶ 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 do Banks Achieve Divergent Credit Risk and Maturities?

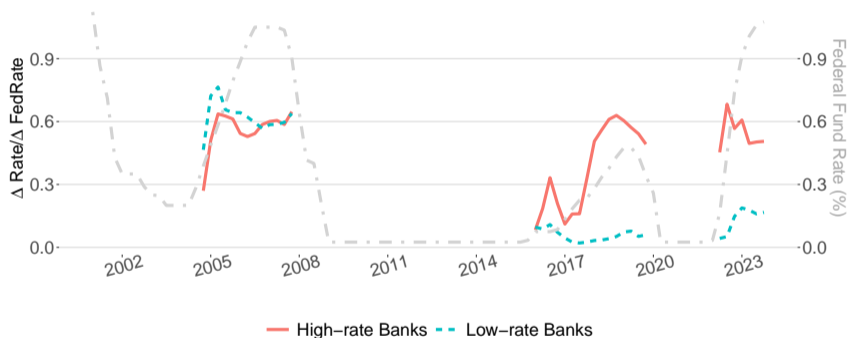
	Loans				Securities	
	Pers. Share (1)	C&I Share (2)	RE Share (3)	Others (4)	MBS Share (5)	Others (6)
1(High-Rate) × Post	6.441*** (1.223)	2.733*** (0.682)	-12.470*** (0.724)	4.078*** (0.416)	-2.519** (1.229)	1.737** (0.866)
1(High Rate)	4.113*** (1.085)	-0.656 (0.506)	6.414*** (0.588)	-1.521*** (0.349)	-8.803*** (1.142)	0.452 (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

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

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: 0.15; high-rate banks: 0.56

Macro Implication #1: Monetary Policy Transmission to Lending

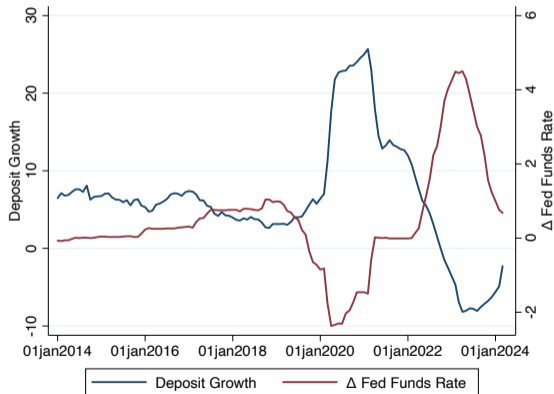
	Δ Pers. Share _{i,y} (1)	Δ C&I Share _{i,y} (2)	Δ RE Share _{i,y} (3)	Δ MBS Share _{i,y} (4)
Δ Fed Funds _y × 1(High-rate) × Post	1.046*** (0.241)	0.406** (0.142)	-0.438* (0.249)	-0.561** (0.261)
Δ Fed funds _y × 1(High-rate)	-0.825*** (0.216)	-0.423*** (0.107)	0.082 (0.155)	0.935*** (0.242)
Δ Fed funds _y × Post	0.313** (0.122)	-0.411** (0.205)	0.611*** (0.221)	-0.128 (0.132)
Δ Fed funds _y	-0.003 (0.100)	0.784*** (0.141)	-0.099 (0.121)	-0.435*** (0.081)
Sample Average (%)	13.375	15.181	29.619	16.994

► After 2009, when Fed Funds rate ↑ 100 bps

- High-rate banks:
0.53% ↑ pers. share,
0.36% ↑ C&I share
- Low-rate banks:
0.56% ↓ MBS share

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

- ▶ In 2022, banks experienced annual deposit outflows of **over 8%**, the largest in percentage terms since 1973

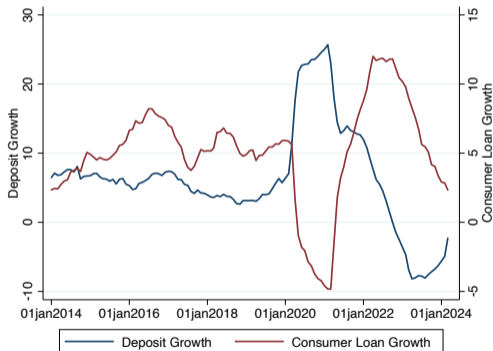


Explains the Absence of a Large Credit Crunch in Recent Rate Hikes

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

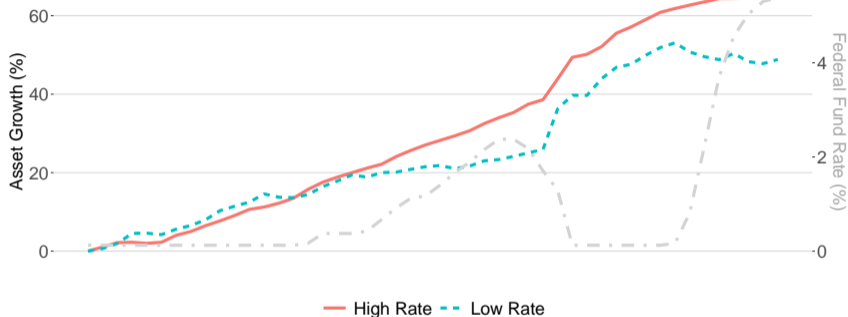


(a) Treasuries and MBSs



(b) Consumer Loans

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

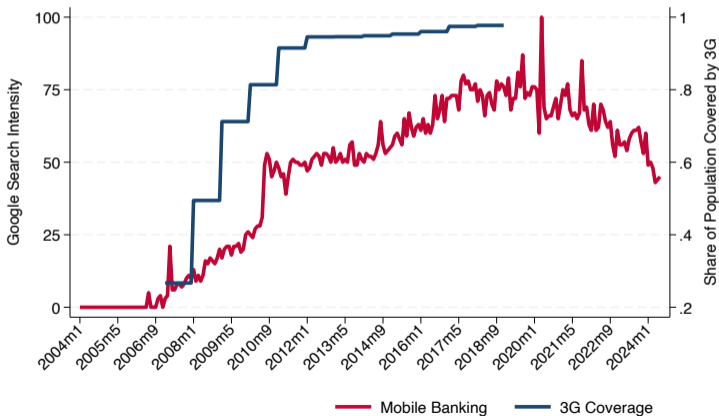


- ▶ 10% deposits shift \Rightarrow banking sector holds assets with 5% shorter maturity but assumes about 8% higher credit risk
- ▶ Credit risk concentrated among a subset of high-rate banks

Channels

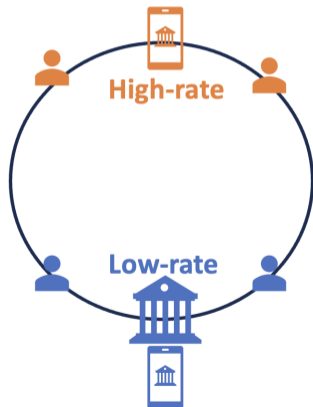
What Explains the Divergence?

- ▶ e-banking allows banks to offer services w/o branches (Jiang, Yu, Zhang 2023)
 - Similar results if replacing Post by 1) Google search intensity of "Mobile Banking" and 2) 3G network coverage



Intuition From A Simple Model

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



Low-rate banks offer both branches and e-banking:

- ▶ Offer lower and steady deposit rates
 - Earn higher spreads from depositors
 - Do not take risky loans to safeguard steady-stream incomes from deposit side
 - Invest long-term asset to match maturity

Conclusion

1. Diverging Banking Sector

- High-rate banks: fewer branches, shorter-term but risky loans
- Low-rate banks: more branches, longer-term, and safer securities

2. ↑ Interest rates → deposits flow to high-rate banks

- Credit supply to personal and C&I loans are less affected by monetary policy
- Banking sector credit risk ↑ and maturity transformation ↓