How (In)active was Bank Supervision during the 2022 Monetary Tightening?

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Background: Crisis of the U.S. Regionals

- Simple combination of events leading to the collapse of Silicon Valley Bank (SVB), First Republic Corporation, and Signature Bank:
 - Large exposures to long-term securities that lost significant market value as the Federal Reserve began raising interest rates during 2022
 - 2 Classification of large portion of securities as HTM allowed banks to avoid marking down these securities on their balance sheets
 - 3 Excessive reliance on uninsured depositors exposed these bank to liquidity risks that materialized in the first quarter of 2023

Motivation

"Where were the regulators? The Dodd-Frank Act added hundreds of thousands of pages of regulations, and an army of hundreds of regulators. The Fed enacts *"stress tests"* in case regular regulation fails. How can this massive architecture fail to spot basic duration mismatch and a massive run-prone deposit base?"

- John Cochrane in The Grumpy Economist

- Many potential explanations for supervisory failure:
 - Supervisors did not understand the risks that were emerging
 - Supervisors lacked discretionary powers
 - Scarce supervisory resources
 - Regulatory Forbearance
- Difficult to evaluate regulatory performance because the process is shrouded in secrecy. What are the facts?

This Paper

[Empirical Approach:] Use confidential CAMELS ratings data to learn about what regulators did and did not do during the monetary tightening of 2022

[Research Questions:]

- Did supervisors incrementally downgrade banks with large interest rate risk exposures? When?
- 2 Were supervisors more likely to downgrade banks with excessive reliance on unstable sources of funding? When?
- 3 Did supervisors respond differently to unrealized losses on banks' securities portfolios depending on their accounting classification?
- 4 What economic factors explain the intensity and timing of supervisory actions?
- 5 Did rating downgrades help curb interest rate and liquidity risks?

Related Literature

Interaction between Interest Rate and Liquidity Risks, and Financial Stability

Dreschler, Savov, Schnabl (2021, JF); Dreschler, Savov, Schnabl, and Wang (2023, WP); Egan, Hortacsu, and Matvos (2017, AER); Jiang, Matvos, Seru, and Piskorski (2024, JFE forthcoming); Xiao (2020, RFS)

Banking Supervision and Financial Stability

Agarwal et al. (2014, QJE); Rezende and Wu (2014, WP) Costello, Granja, and Weber, (2019, JAR); Hirtle et al (2020, JF); Kandrac and Schlusche (2021, RFS); Eisenbach, Lucca, and Townsend (2022, JF); Bonfim et al. (2023, M.Sc); Granja and Leuz (2024, JFE forthcoming)

Regional Banking Crisis of 2023

Dreschler et al (2023, WP); Fischl-Lanzoni, Hiti, Kaplan, and Sarkar (2024, WP) Jiang et al. (2024, JFE forthcoming); McPhail et al. (2023, WP); Granja et al, (2024, WP); Cookson et al. (2023, WP); Choi et al. (2023, WP); Caglio et al. (2023, WP); Kim et al. (2023, WP);

Outline

Descriptive Statistics

- Bank Supervision and Interest Rate Risk
- Bank Supervision and Unstable Sources of Funding
- Bank Supervision and HTM Accounting
- Heterogeneity and Portfolio Allocations
- Policy Discussion

Monetary Policy and Unrealized Losses in Bal. Sheets



Fed Funds Rate \uparrow in 2022:Q2; large unrealized losses in 2022:Q1

of Inspections and CAMELS Composite Rating



of inspections stable but % of downgrades \uparrow in 2022:Q4 and 2023:Q1

CAMELS Subcomponents



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Interest Rate Risk: Univariate - Full Sample



+ Pre-Tightening • Post-Tightening

"S" and "L" downgrades unrelated to interest rate risk (IRR) prior to 2022:q2 but increase monotonically across IRR bins after 2022:q2

Interest Rate Risk: Regression Framework

Downgrade_{it} = $\gamma_t + \beta_0 Int$. Rate Risk_{it} + $\beta_1 Int$. Rate Risk_{it} × Post_t + $\Gamma X_{it} + \epsilon_{it}$

	(1)	(2)	(3)	(4)	(5)	(6)			
			I(L-Downgrade)=1						
Share of LT Sec	-0.002	-0.008							
	(0.002)	(0.017)							
Share of LT Sec \times Post	0.022***	0.013							
	(0.008)	(0.011)							
Duration			-0.001*	0.001					
			(0.000)	(0.003)					
Duration \times Post			0.006***	0.004**					
			(0.001)	(0.002)					
Av. Mat. Gap					-0.002*	0.003			
					(0.001)	(0.013)			
Av. Mat. Gap \times Post					0.015***	0.012***			
					(0.002)	(0.003)			
Observations	7125	5643	7125	5643	7126	5650			
Adjusted R^2	0.087	0.073	0.089	0.074	0.092	0.077			
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes			
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes			
Bank Fixed Effects	No	Yes	No	Yes	No	Yes			

Interest Rate Risk: Regression Framework

 $Downgrade_{it} = \alpha_i + \gamma_t + \beta_0 Int. Rate Risk_{it} + \beta_1 Int. Rate Risk_{it} \times Post_t + \Gamma X_{it} + \epsilon_{it}$

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Interest Rate Risk: Multivariate - Timing

 $Downgrade_{it} = \gamma_t + \left| \beta_t \right| Int. Rate Risk_{it} \times \gamma_t + \Gamma_t X_{it} + \epsilon_{it}$



- Response to IRR contemporaneous with the start of monetary tightening but after large unrealized losses in long-term securities
- No responses with CAMELS subcomponents other than "S" and "L"

Robustness: MRAs and MRIAs?



Panel A. # of Supervisory Actions

CAMELS downgrades not preceded by large increase in MRAs and MRIAs

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Bank Supervision and Unstable Sources of Funding

Did supervisors downgrade banks with greater exposure to unstable sources of funding?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		I(L-Downgrade)=1				I(S-Downgrade)=1		
Share Uninsured	0.004	-0.010			-0.002	-0.029		
	(0.003)	(0.032)			(0.004)	(0.023)		
Share Uninsured \times Post	0.008	0.011			-0.002	0.002		
	(0.007)	(0.012)			(0.006)	(0.009)		
Share Uninsured			-0.004				-0.008	
			(0.012)				(0.012)	
Share Uninsured × Post			0.002				0.015	
			(0.011)				(0.010)	
Dep. Beta				0.004				0.000
				(0.003)				(0.004)
Dep. Beta \times Post				-0.001				-0.001
				(0.007)				(0.007)
Observations	7302	5806	7302	7303	7302	5806	7302	7303
Adjusted R ²	0.084	0.069	0.083	0.083	0.018	-0.009	0.018	0.018
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes

Supervisors not more likely to downgrade banks with larger shares of uninsured deposits

Bank Supervision and Unstable Sources of Funding

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Proximity to Wells Fargo as instrument for share of uninsured deposits (Granja, Makridis, Yannelis, and Zwick, 2022; Ruan and Vij, 2024)

Strong 1st stage: ↑ Wells Fargo local share of deposits by 10p.p. → ↑ 5 p.p share uninsured deposits; F-Stat: 423.4

Bank Supervision and Unstable Sources of Funding

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Similar results using measure of strength of the deposit franchise from the work of Dreschler, Savov and Schnabl (2021, JF)

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Bank Supervision and HTM Accounting

Were supervisors less sensitive to unrealized losses in HTM?

- AFS: AFS securities must be marked-to-market with unrealized losses hitting other comprehensive income
- HTM: Banks must declare intent and ability to hold securities until their maturity. Unrealized losses on these securities do not affect balance sheet and statements of comprehensive income and are only disclosed on the footnotes
 - HTM losses are less salient
 - HTM losses will revert to zero if banks do hold the securities until maturity
- Do supervisors behave as if banks' commitments to hold to maturity are credible and HTM losses are temporary? Or do they find those commitments not credible?

Bank Supervision and HTM Accounting



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Taking Stock

Three facts:

- Supervisors downgraded banks most exposed to interest rate risks but only after the second quarter of 2022
- 2 Supervisors were not more likely to downgrade banks with greater reliance on unstable sources of funding
- 3 Supervisors were faster to downgrade banks with exposures to AFS unrealized losses than they were to downgrade banks with HTM losses

Three questions:

- \rightarrow External validity: How does this episode compare with the past?
- \rightarrow Heterogeneity: Can differences across regulators explain the results
- \rightarrow Enforcement: Did downgrades of "S" and "L" components curb interest rate risks?

Past Monetary Cycles



- Fed Funds rate ↑ from 6.58% to 9.81% between 1988:q1 and 1989:q2 and ↑ from 2.96% to 6.05% between 1993:q4 and 1995:q2
 - Relation between IRR measure rises during tightening periods and declines in loosening periods
 - Statistically significant relation between uninsured deposits and likelihood of downgrade in some periods that does not follow a clear cyclical pattern

Heterogeneity in Supervisory Downgrades

What factors might explain differences in the intensity and timing of supervisory actions?

- Differences in incentives and resources across agencies (e.g., Agarwal et al. (2014)
 - Surprisingly, no significant differences across agencies
- 2 Sensitivity to local economic conditions
- 3 Bank visibility and outside scrutiny
- **4** Frequency of examination

Heterogeneity in Supervisory Downgrades

Do differences in banks' local economic conditions or outside scrutiny explain (in)action?



Some suggestive evidence that supervisors were more intense and timely to act on banks facing low local unemployment and on public banks

Supervisory Downgrades and Portfolio Allocation

Did supervisory downgrades prompt banks to reduce IRR?



Consistent with reduction in IRR after a downgrade
Downgrade associated with small ↓ in share LT sec of ≈ 1 p.p.
- ≈ 5% of the unconditional average of the share of LT. Sec (21.5%)

Supervisory Downgrades and Portfolio Allocation - II



Some reallocation from securities to cash

Caveats: (1) Anticipation effects?; (2) Short panel

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Policy Discussion

If regulators understood interest rate risks, why were they unable to prevent the regional banking crisis of 2023?

- Effects of Supervisory downgrades on risk taking were not large enough to significantly curb exposures
 - Banks, on average, reallocate securities to cash in the amount of 0.5% of their total assets following a downgrade but held approximately 27% of their assets in AFS and HTM securities
- 2 Could earlier downgrading actions have prevented significant losses on bank balance sheets?
 - Back of the envelope: Average averted losses of ≈ \$9 billion or 1% of Tier 1 capial of counterfactually downgraded banks
- 3 Could similar supervisory treatment of unrealized losses in AFS and HTM securities have forced banks to correct course earlier?

Conclusion

- Three facts about supervisory actions during the 2022 monetary tightening:
 - Supervisors incrementally downgraded banks most exposed to interest rate risks but only after tightening had begun
 - 2 Supervisors did **not** incrementally downgrade banks that relied heavily on unstable sources of funding
 - 3 Supervisors incrementally downgraded banks with large unrealized losses in AFS after tightening had begun but only downgraded banks with unrealized losses in HTM after SVB collapsed

Consistent with supervisors having some understanding of interest rate risks but not acting with sufficient intensity to correct deficiencies

Descriptive Statistics: Selection to Exams based on Observables?

Predetermined exam rotation \implies Exam selection likely \perp to observables

	Pre-Tightening Exams			Post-T	ightening E			
	Mean	St. Dev.	Ν	Mean	St. Dev.	Ν	Diff	t-stat
Duration	10.26	5.340	4445	9.760	5.360	2657	-0.500	-1.540
Share of LT Sec	0.220	0.230	4445	0.210	0.230	2657	-0.0100	-0.610
Hedging Intensity	0.0200	0.0500	4576	0.0100	0.0500	2701	0	-2.580
Share Uninsured	0.400	0.160	4576	0.430	0.150	2701	0.0300	4.030
Dep. Beta	0.320	0.0900	4576	0.320	0.0900	2701	0	-0.0900
Ln(Assets)	12.77	1.580	4576	12.88	1.570	2701	0.100	1.640
Loans as % Total Assets	59.06	16	4576	57.90	16.97	2701	-1.160	-0.850
ROA	0.0200	0.0200	4576	0.0100	0.0200	2701	-0.0100	-0.500
LLR as % Total Assets	0.850	0.400	4576	0.810	0.380	2701	-0.0400	-4.010
NPL as % Total Assets	0.440	0.650	4576	0.310	0.540	2701	-0.120	-4.850
Equity as % Total Assets	10.98	3.200	4576	9.250	3.730	2701	-1.730	-8.690

Some statistical differences in terms of reliance on uninsured deposits and capitalization but not in terms of exposure to interest rate risk