Are Bank Mergers Bad for Financial Stability?

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September 20, 2024

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Motivation

- Failures of SVB, Signature Bank, and First Republic have reignited discussions around bank mergers and financial stability that began in the aftermath of the Global Financial Crisis (GFC).

FINANCE & TAX

Elizabeth Warren to Janet Yellen: You're wrong on bank mergers

Warren's rebuke revealed a major new rift with top Biden administration officials over economic policy.

Sen. Elizabeth Warren said Yellen and Hsu appear to be taking "the wrong lessons" from the failures of SVB, Signature Bank and First Republic. | Joe Raedle/Getty Images

By ZACHARY WARMBRODT
06/27/2023 12:02 PM EDT
Updated: 06/27/2023 03:17 PM EDT

Source: Politico

- Treasury Secretary Janet Yellen has said more mergers could be healthy.
- Acting Comptroller of the Currency Michael Hsu has told Congress his agency is "committed to being open-minded on the issue."
- Sen. Elizabeth Warren: Allowing additional bank consolidation runs counter to promoting competition in the economy, threatening the stability of the financial system.

Regulatory Background

- Significant consolidation over the past few decades have led to many “too-big-to-fail" financial institutions.
- Following the failure of many large financial institutions during the GFC, Congress required regulators to consider financial stability when reviewing bank mergers.
- Currently, the Federal Reserve provides a safe harbor for bank mergers that:
  - Involve an acquisition of less than $10 billion in total assets.
  - Result in a firm with less than $100 billion in total assets.
- However, it is unclear how these asset thresholds were derived because regulators lack an analytically rigorous framework for evaluating financial stability consequences of bank mergers.

Extant Literature

- No clear answer or evidence provided from academic research either.
- Robust literature examining the impact of bank mergers on borrowers and corporate lending (Jayaratne and Strahan 1996; Berger et al. 1998; Peek and Rosengren 1998; Huang 2008; Chava et al. 2013).
- However, there is little empirical evidence of how bank mergers affect financial stability.
- Opposing theories:
  - Mergers could *reduce* risk sensitivity through diversification (Estrella 2001; Shim 2019; Doerr and Schaz 2021; Gelman, Goldstein, and MacKinlay 2023).
  - Alternatively, mergers could *amplify* risk sensitivity by exacerbating moral hazard concerns resulting from “too-big-to-fail" entities (Strahan 2013; Kaufman 2014).

This Paper

- We aim to bridge the knowledge gap by utilizing *a forward-looking framework* to assess the risk perspectives and effects of bank mergers in the United States.
- Research questions:
  - Do banks become more or less resilient to shocks after mergers?
  - Does this effect differ across banks along size and diversification channels?
- What do we find?
  - On average, mergers worsen the risk sensitivities of merged banks relative to their non-merged counterpart banks.
  - Adverse effects to financial stability driven by large bank mergers.
  - Diversification does not mitigate the reduction in financial resiliency; instead, too much diversification worsens the effect.

Methodology

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- Compare projected losses of merged banks to non-merged banks, before and after the merger events in a stacked difference-in-differences design (Gormley and Matsa 2011; Cengiz et al. 2019; Deshpande and Li 2019; Baker, Larcker, and Wang 2022).

Forward-Looking Framework to Measure Bank Resiliency

- Estimate sensitivity of bank net charge-off rates ("NCOs"), before and after merger event, for treatment and control groups using approach adopted from stress testing exercises.

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- Using sensitivity estimates, we project treatment and control banks' potential losses under a severely adverse economic scenario, before and after the merger event, and compare the projected losses.

$$Y_{i,t} = \beta_1 Treat_{i,t} + \beta_2 Post_t + \beta_3 Treat_{i,t} \times Post_t + \varepsilon_{i,t}$$

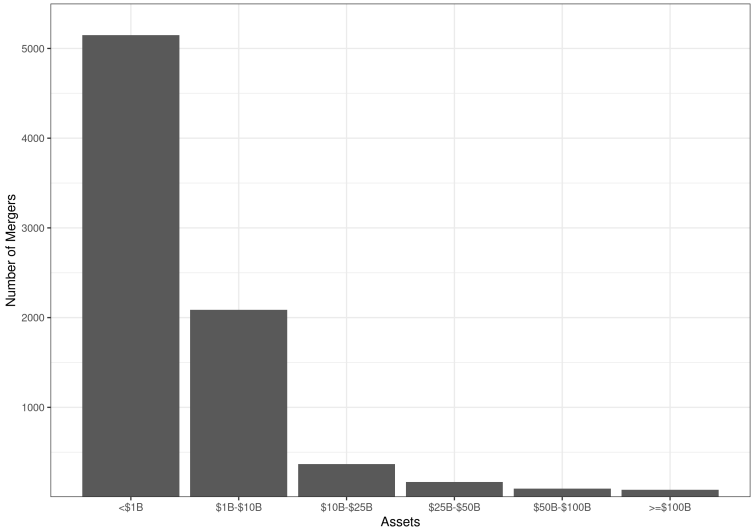
- where
  - $Y_{i,t}$ = average 13-qtr projected NCO ratio under stress
  - $Treat_{i,t} = 1$ if bank merged
  - $Post_{i,t} = 1$ if post merge quarter

Sample Statistics

- We identify merger transactions using data from the Federal Financial Examination Council's (FFIEC) National Information Center (NIC) spanning 1984 to 2013.
- In total, there are nearly 8,000 mergers beginning 1984 Q1 and ending 2013 Q4.
- Control banks must not have engaged in merger activity five years before to one year after the treatment merger transaction quarter.

Treat	log(Assets)	Loan/Assets	Noninterest Income/Assets	T1 Ratio	N
0	13.04	0.63	0.01	0.07	79,470
1	13.35	0.62	0.01	0.07	7,947

Distribution of Mergers by Assets

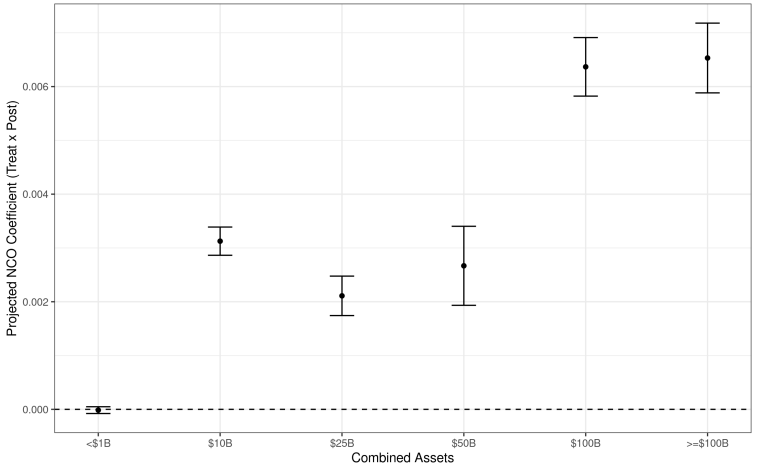


Effect of Bank Mergers on Financial Stability

	Δ Resiliency				
	All Mergers	Combined ≥ $50B	Combined < $50B	Acquirer ≥ $50B	Acquirer < $50B
	(1)	(2)	(3)	(4)	(5)
Treat	0.002***	0.007*	0.002***	0.003***	0.002***
	(0.000)	(0.004)	(0.000)	(0.001)	(0.000)
Post	0.001***	0.000	0.001***	0.000	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Treat x Post	0.002***	0.004**	0.001**	0.003***	0.001**
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
Bank Controls	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes
Observations	1,158,495	39,832	1,118,663	37,856	1,120,639
Adjusted R^2	0.088	0.322	0.089	0.410	0.089

- On average, banks became less resilient after mergers as evidenced by higher projected losses.
- Increased projected NCO ratio results in an additional $2.3 million in projected losses over 13 quarters using the median bank loan portfolio in our sample.

Too-Big-To-Fail and Moral Hazard



- Merger size matters – consistent with TBTF label and rise of moral hazard.

What about Diversification?

- Theory suggests diversification through mergers can benefit financial stability by reducing idiosyncratic risks.
- However, merging institutions that are too different may increase complexity and lead to higher losses due to the potential failure to integrate risk management and governance processes (Correa and Goldberg 2022).
- Examine diversification along two channels:
  - Portfolio diversification: difference between acquired and acquirer bank wholesale, mortgage, and consumer loan portfolios.
  - Geographic diversification: distance between acquired and acquirer headquarters.
- Given our observed effects differ by asset size, we further investigate the interaction between merger size and diversification.

Portfolio Diversification

	Δ Resiliency		
	<p25 Div. Score	p25-p75 Div. Score	>p75 Div. Score
	(1)	(2)	(3)
Treat	0.002***	0.002***	0.003***
	(0.001)	(0.000)	(0.001)
Post	0.000**	0.001***	0.001**
	(0.000)	(0.000)	(0.000)
Treat × Post	0.002**	0.001*	0.003**
	(0.001)	(0.001)	(0.001)
Bank Controls	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Observations	283,114	562,887	287,664
Adjusted R^2	0.159	0.098	0.117

- No evidence portfolio diversification mitigates the post-merger adverse effects on financial resiliency.

Effect of Portfolio Diversification in Small Mergers

	Δ Resiliency		
	<p25 Div. Score	p25-p75 Div. Score	>p75 Div. Score
	(1)	(2)	(3)
Treat	0.002***	0.002***	0.003***
	(0.000)	(0.000)	(0.001)
Post	0.000**	0.001***	0.000**
	(0.000)	(0.000)	(0.000)
Treat × Post	0.001	0.001	0.002*
	(0.001)	(0.001)	(0.001)
Bank Controls	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Observations	248,404	493,402	252,941
Adjusted R^2	0.167	0.102	0.119

- Among mergers of <$1B, portfolio diversification does not move the needle much.

Effect of Portfolio Diversification in Large Mergers

	Δ Resiliency		
	<p25 Div. Score	p25-p75 Div. Score	>p75 Div. Score
	(1)	(2)	(3)
Treat	0.081***	-0.002	-0.002
	(0.014)	(0.003)	(0.002)
Post	0.003	-0.001	0.001
	(0.004)	(0.001)	(0.001)
Treat × Post	0.007	0.000	0.011**
	(0.006)	(0.002)	(0.005)
Bank Controls	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Observations	5,239	10,257	5,876
Adjusted R^2	0.547	0.483	0.450

- Evidence of increased risk resulting from complexity within mergers between \$50 and \$100 billion.

Effect of Portfolio Diversification in Largest Mergers

	Δ Resiliency		
	<p25 Div. Score	p25-p75 Div. Score	>p75 Div. Score
	(1)	(2)	(3)
Treat	0.003**	0.001	0.004**
	(0.001)	(0.001)	(0.002)
Post	0.001	-0.001*	0.001
	(0.001)	(0.000)	(0.001)
Treat × Post	0.003***	0.004***	0.002**
	(0.001)	(0.001)	(0.001)
Bank Controls	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Observations	4,784	8,970	4,706
Adjusted R^2	0.588	0.535	0.488

- For mergers ≥$100B, risks related to moral hazard arising from TBTF institutions dominate diversification effects.

Geographic Diversification

	Δ Resiliency		
	<p25 Distance	p25-p75 Distance	>p75 Distance
	(1)	(2)	(3)
Treat	0.002***	0.002***	0.005**
	(0.000)	(0.000)	(0.002)
Post	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Treat × Post	0.003**	0.002***	0.005***
	(0.001)	(0.001)	(0.002)
Bank Controls	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Observations	142,610	285,441	141,089
Adjusted R^2	0.360	0.320	0.321

- Geographic diversification does not attenuate the decrease in financial resiliency.

What Does Help Financial Resiliency?

- Prior literature highlights the importance of bank liquidity and regulatory capital buffers in preserving financial resiliency during crisis time (Berger and Bouwman 2013).
- Examine whether banks with higher liquidity and regulatory capital buffers help mitigate the worsening of resiliency after mergers.
  - Liquidity measures: liquidity ratio, cash ratio, Treasury + MBS ratio.
  - Regulatory capital measures: leverage ratio, Tier 1 capital ratio, total capital ratio.

Liquidity Measures

	Δ Resiliency		
	Liquidity Ratio	Cash Ratio	Treasury + MBS Ratio
	(1)	(2)	(3)
Treat	0.001***	0.001***	0.002***
	(0.000)	(0.000)	(0.000)
Post	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Liquidity Measure	0.000	-0.001	-0.001***
	(0.000)	(0.001)	(0.000)
Treat × Post	0.004***	0.004***	0.003***
	(0.001)	(0.001)	(0.001)
Treat × Liquidity Measure	0.013**	0.008	-0.071***
	(0.005)	(0.005)	(0.023)
Post × Liquidity Measure	0.000	-0.002*	0.248
	(0.000)	(0.001)	(0.218)
Treat × Post × Liquidity Measure	-0.020***	-0.018**	-0.217
	(0.007)	(0.008)	(0.199)
Bank Controls	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Observations	605,163	605,163	605,163
Adjusted R^2	0.243	0.243	0.242

Regulatory Capital Measures

	Δ Resiliency		
	Leverage Ratio	Tier 1 Capital Ratio	Total Capital Ratio
	(1)	(2)	(3)
Treat	0.002***	0.001	0.001
	(0.000)	(0.001)	(0.001)
Post	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Regulatory Capital Measure	-0.002	0.000	0.000
	(0.001)	(0.000)	(0.000)
Treat × Post	0.003***	0.006***	0.006***
	(0.001)	(0.002)	(0.002)
Treat × Regulatory Capital Measure	0.003	0.004	0.004
	(0.003)	(0.010)	(0.010)
Post × Regulatory Capital Measure	-0.001	0.000	0.000
	(0.001)	(0.000)	(0.000)
Treat × Post × Regulatory Capital Measure	0.000	-0.028*	-0.027*
	(0.005)	(0.015)	(0.015)
Bank Controls	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Observations	605,163	605,163	605,163
Adjusted R^2	0.242	0.242	0.242

Next Steps

- Explore alternative matching algorithms (e.g., synthetic control, entropy balancing) to improve covariate balance.
- Examine interactions between geographic diversification and bank merger size.
- Exploit potential settings that provide “exogenous" shocks to bank mergers to address endogeneity concerns.

Conclusion

- Bank regulators lack an analytically rigorous framework to evaluate financial stability consequences of bank mergers.
- We address this shortcoming using a forward-looking framework to compare projected losses under an adverse economic scenario between merged and non-merged banks.
- Results indicate bank mergers worsen financial stability, but the effects vary by merger size.
- Conventional theories of diversification do not mitigate these effects and, in some cases, may exacerbate the negative consequences.
- Higher levels of bank liquidity and regulatory capital attenuate the decrease in bank financial resiliency.