



# **Did Bank Small-Business Lending in the United States Recover *After* the Financial Crisis?**

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I thank the Office of Advocacy of  
the **U.S. Small Business Administration**  
for funding this, and some of my earlier research,  
on this critically important topic.

You can find these research studies, and many more, at:

<https://www.sba.gov/advocacy>





## Introduction

- The Great Financial Crisis was predominantly driven by losses in the banking sector of the economy.
- During the crisis years, regulators closed almost 500 banks, and another 500 banks disappeared in mergers.
- Research by Profs. Reinhart and Rogoff (2014) suggests that bank-driven recessions are much more severe and last longer than typical recessions driven by events in the economic sectors, taking an average of eight years for real per capita income to return to pre-crisis levels.





## Introduction

- In my 2012 SBA research study, I documented how bank lending to small businesses plummeted during the financial crisis years of 2009 – 2010, especially at the largest banks.
- Since then, aggregate bank loan data reported by the FDIC indicate that small-business lending continued to decline during post-crisis years 2011 – 2013, but so did the number of banks, making it difficult to determine if banks have continued or loosened tight credit policies.
- Aggregate data for 2014-2018 show little in the way of any recovery in bank lending to small businesses.





## Introduction

- Why is this important?
- According to the U.S. Small Business Administration, small businesses account for:
  - 99.9 percent of all U.S. businesses;
  - 48 percent of U.S. private-sector employment;
  - half of all U.S. private-sector employment; and
  - 63 percent of net job growth in the U.S.





## Introduction

- Both theory and empirical research indicate that capital-constrained firms:
  - grow more slowly,
  - hire fewer workers and
  - make fewer productive investments than firms utilizing debt in their capital structure.
- A better understanding of how bank lending to small businesses fared during the post-crisis years of 2011 - 2018 provides policymakers with guidance regarding how to tailor legislation and regulations to boost bank lending to small firms, thereby increasing both employment and economic output.





## Introduction

- In this study, I analyze data on both the amount and number of both the stock and flow of small-business lending to provide new evidence on how bank lending to businesses, and especially to small businesses, changed after the financial crisis years of 2008 - 2010.
- I also provide results from tests for differences in the lending behavior of
  - large banks vs. small banks and
  - troubled banks vs. healthy banks





## Introduction

- I find that, despite a recovery of overall business lending by U.S. banks after the financial crisis, small-business lending remains depressed:
  - Particularly among large banks, and
  - Among banks in worse financial condition.







## Academic Literature on Small-Business Lending

- The academic literature on small-business lending dates back sixty years.
- It includes hundreds of studies that I cannot do justice to in today's presentation.
- The bibliography in my study includes the most prominent of these studies.





## Data

- To conduct this study, I use data from a number of sources.
  - FFIEC Reports of Income and Condition
  - FFIEC data on small-business loan originations
  - FDIC Institution Directory
  - FDIC Quarterly Banking Profiles





## Data

- My first primary source is the FFIEC's quarterly financial reports that are filed by each commercial bank in the U.S.
  - These are known informally as the “Call Reports.”
  - They provide information on the numbers and amounts of outstanding loans to small businesses.
  - This information can be viewed as the “stock” of small-business lending.





## Data

- My second primary source of data is the FFIEC's Community Reinvestment Act (CRA) database.
  - CRA requires larger banks to report both the numbers and amounts of small loans originated by each bank in each year. About 700 banks filed for 2016.
  - CRA doesn't cover smaller banks, but covers the vast majority (>80%) of bank assets.
  - This information can be viewed as the “flow” of small-business lending.





## Data: Adjusting for Effect of Mergers

- It is important to adjust small-business lending data for the impact of mergers.
  - In 2008, BofA acquired Countrywide, and JPM acquired WaMu.
  - Hence, BofA and JPM reported large YoY “increases” in small-business lending from 2007 to 2008, but mostly because of these acquisitions.
  - We should account for small-business loans held/originated in 2007 by these acquired institutions.
  - Consequently, I merger-adjust by combining balance sheet items of merged banks in the pre-merger year, using merger data from the FDIC Institutions Directory.





## **Large vs. Small Banks and Healthy vs. Troubled Banks**

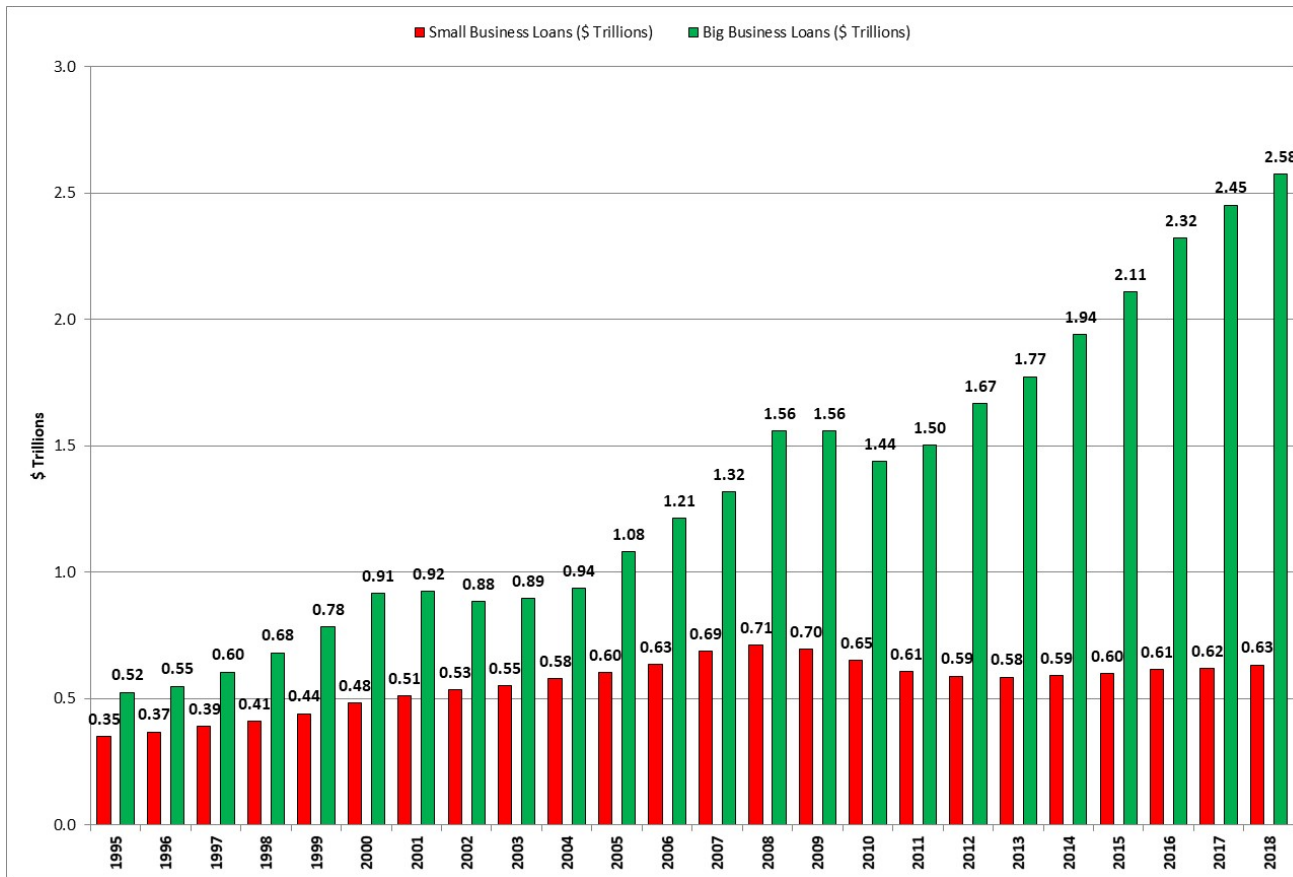
- I split the industry into large and small using a threshold of \$1 billion in 2000 inflation-adjusted dollars.
- I split the industry into healthy and unhealthy an adjusted capital ratio (NACR) of 4.0%.

$$\text{NACR} = (\text{Equity} + \text{ALLL} - \text{NPLs} - \text{OREO}) / \text{Assets}$$





## Dollar Amounts of Big and Small Business Lending 1995 - 2018



Stunning.

Lending to big businesses recovered quickly after the crisis, almost doubling from pre-crisis levels.

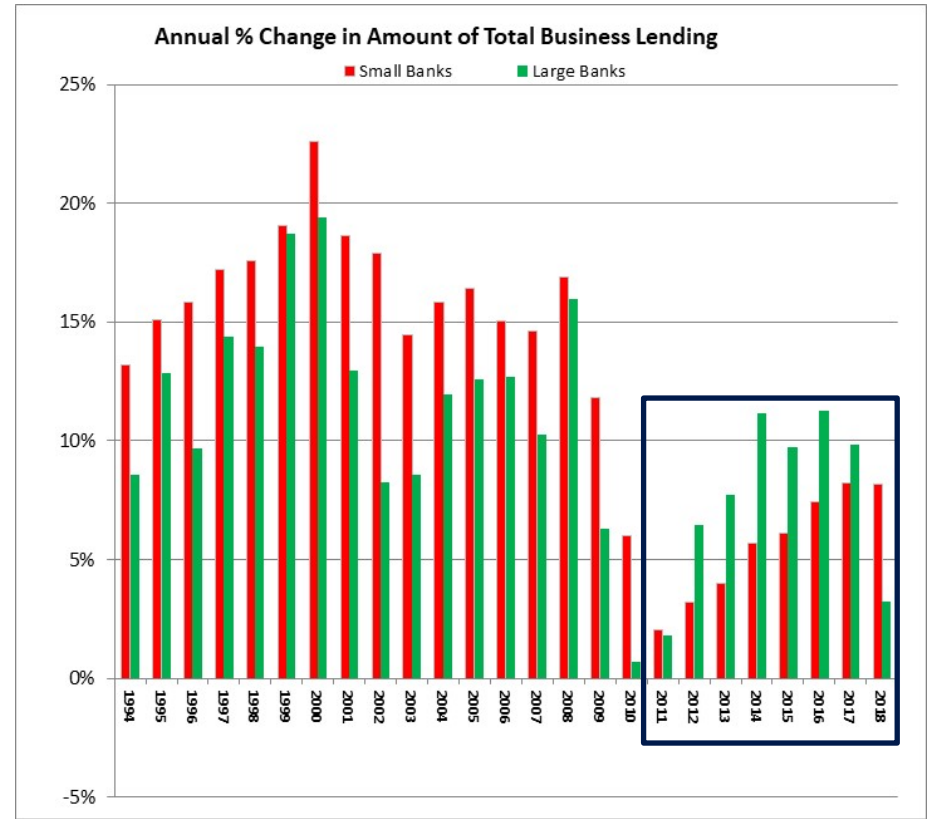
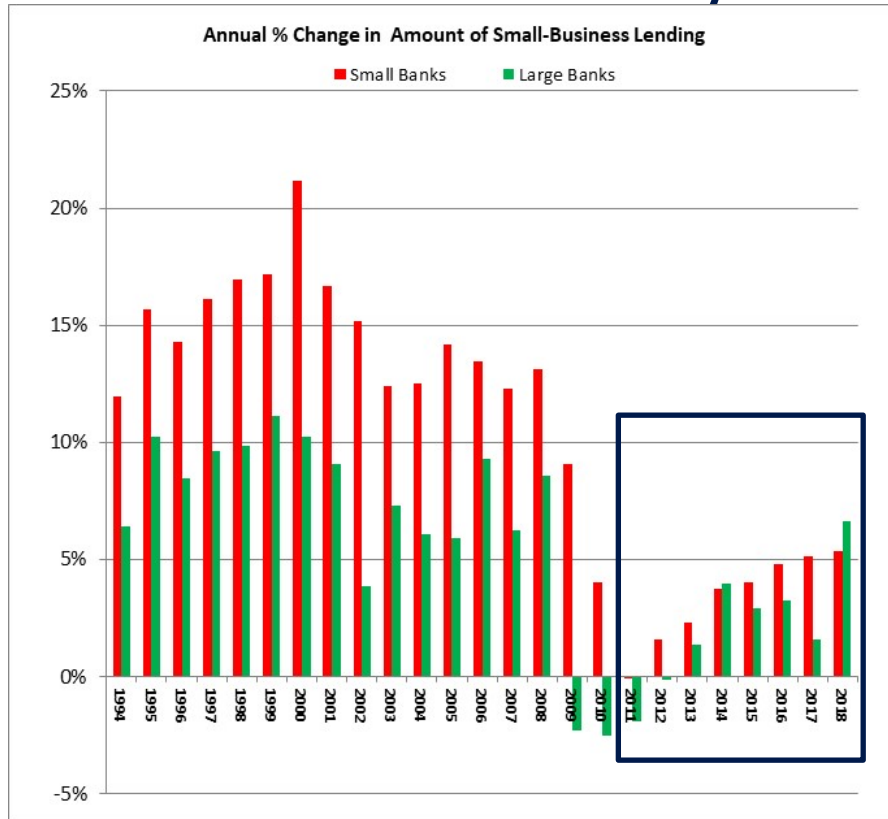
Not so for lending to small businesses, which remains well below pre-crisis levels.







## Average Change in Dollar Amounts of Small and Total Business Lending By Year and Bank Size



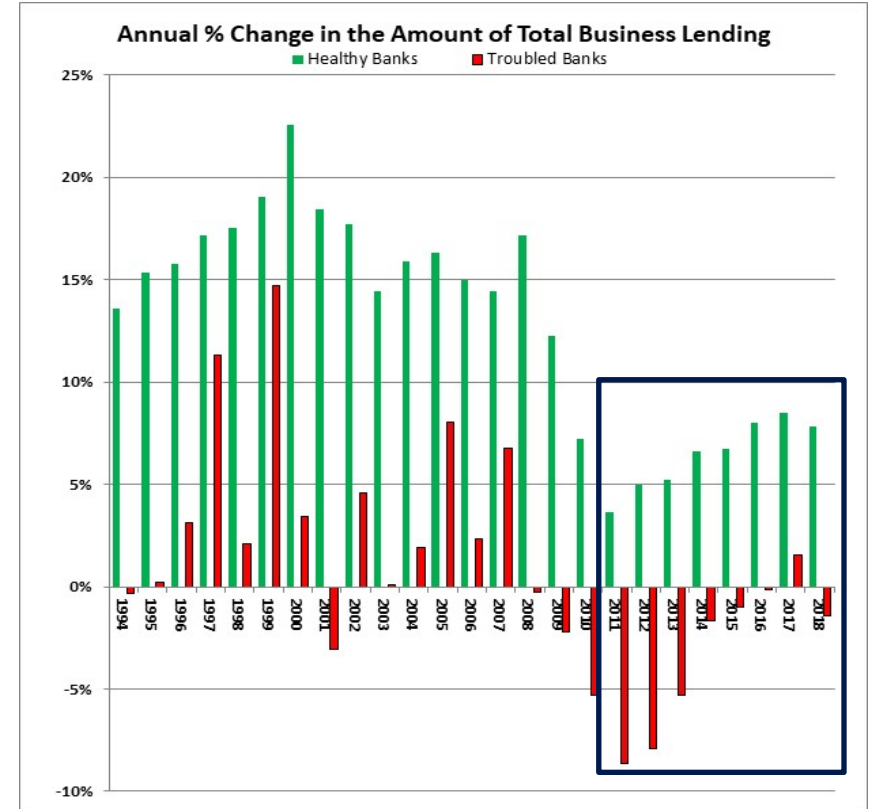
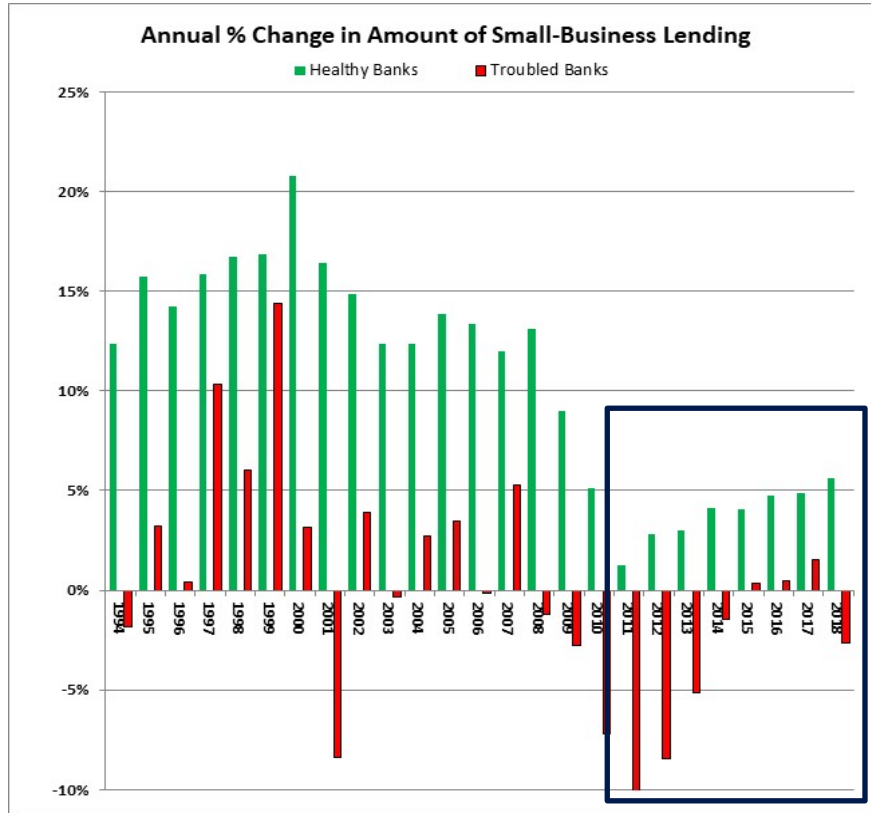
Small-business lending on the left, total business lending on the right.  
The recovery has been much stronger for total business loans, especially at large banks.







## Average Change in Dollar Amounts of Small and Total Business Lending By Year and Bank Health



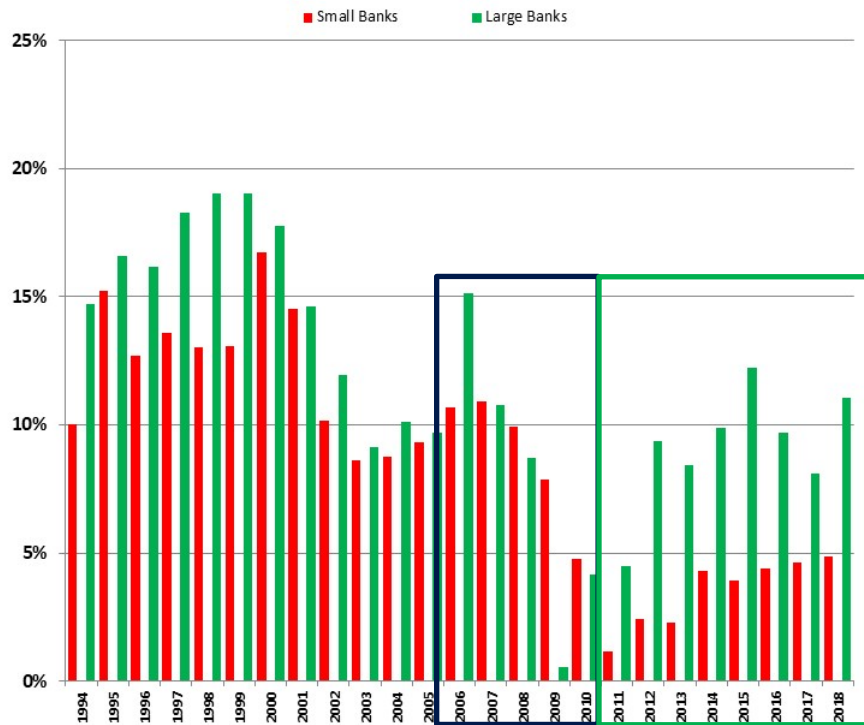
There were large post-crisis declines in all types of business lending by troubled banks.



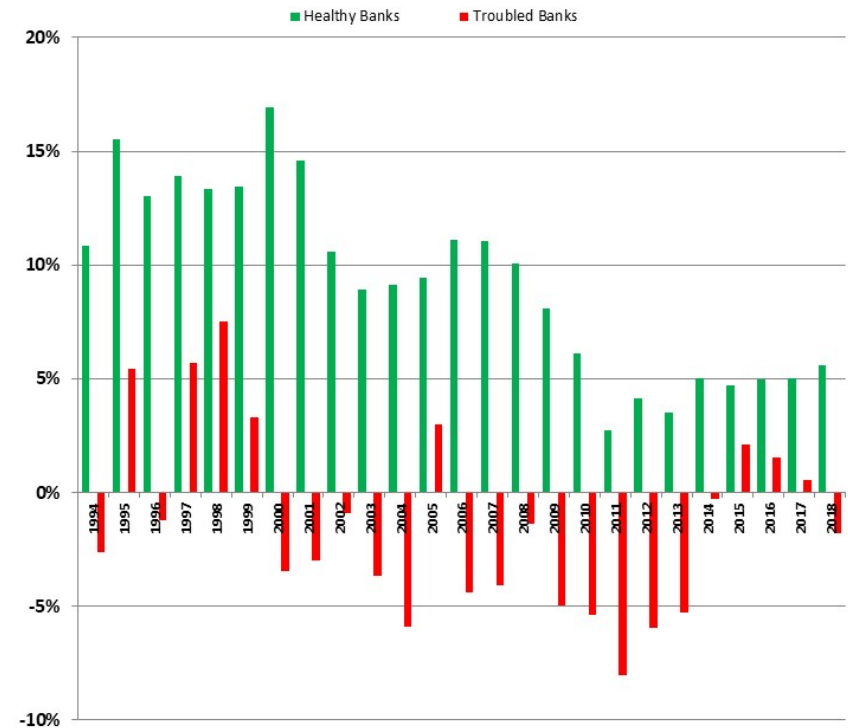


## Average Change in Numbers of Business Loans Outstanding By Year and Bank Size

Average % Change in Numbers of Small Business Loans



Annual % Change in Number of Small-Business Loans



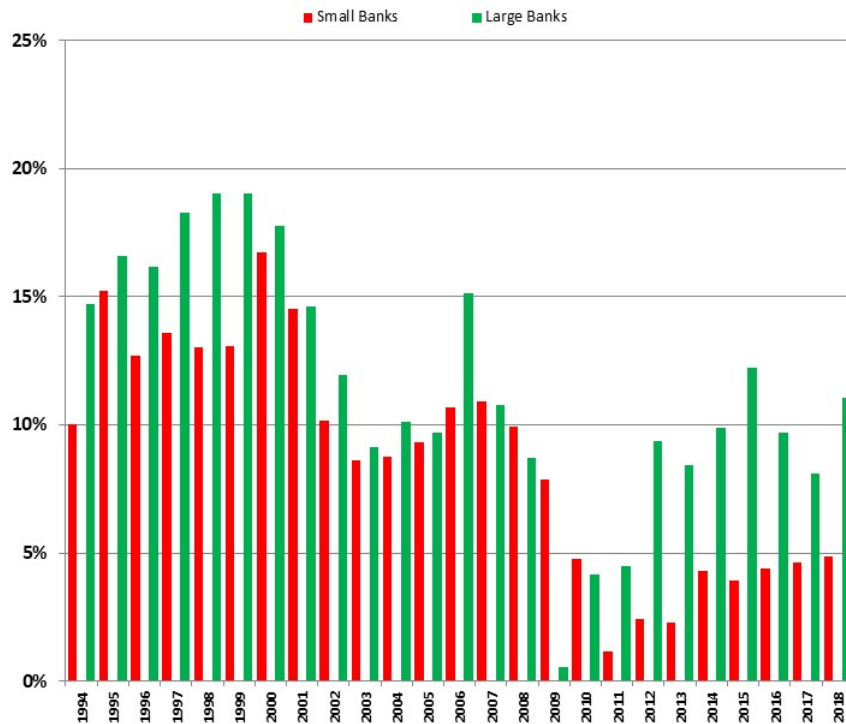
Small banks in red, big banks in green. From 2006-2009, the number of small-business loans declined by much more at large banks than at small banks, but rebounded more quickly during 2011-2018.



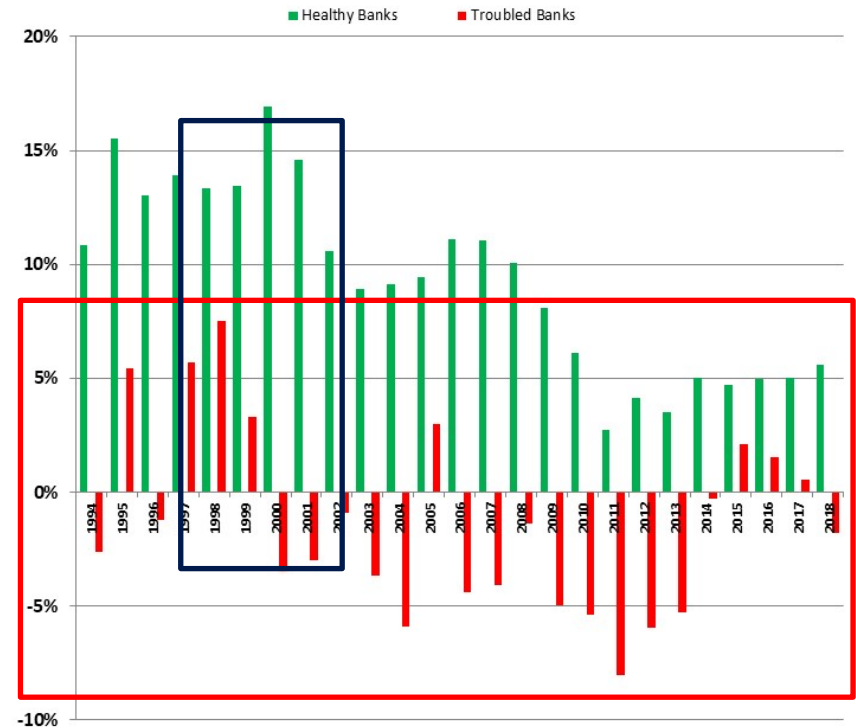


## Average Change in Numbers of Business Loans Outstanding By Year and Bank Size

Average % Change in Numbers of Small Business Loans



Annual % Change in Number of Small-Business Loans



**At troubled banks (in red), the average percentage change in the number of small-business loans was negative in most years.**





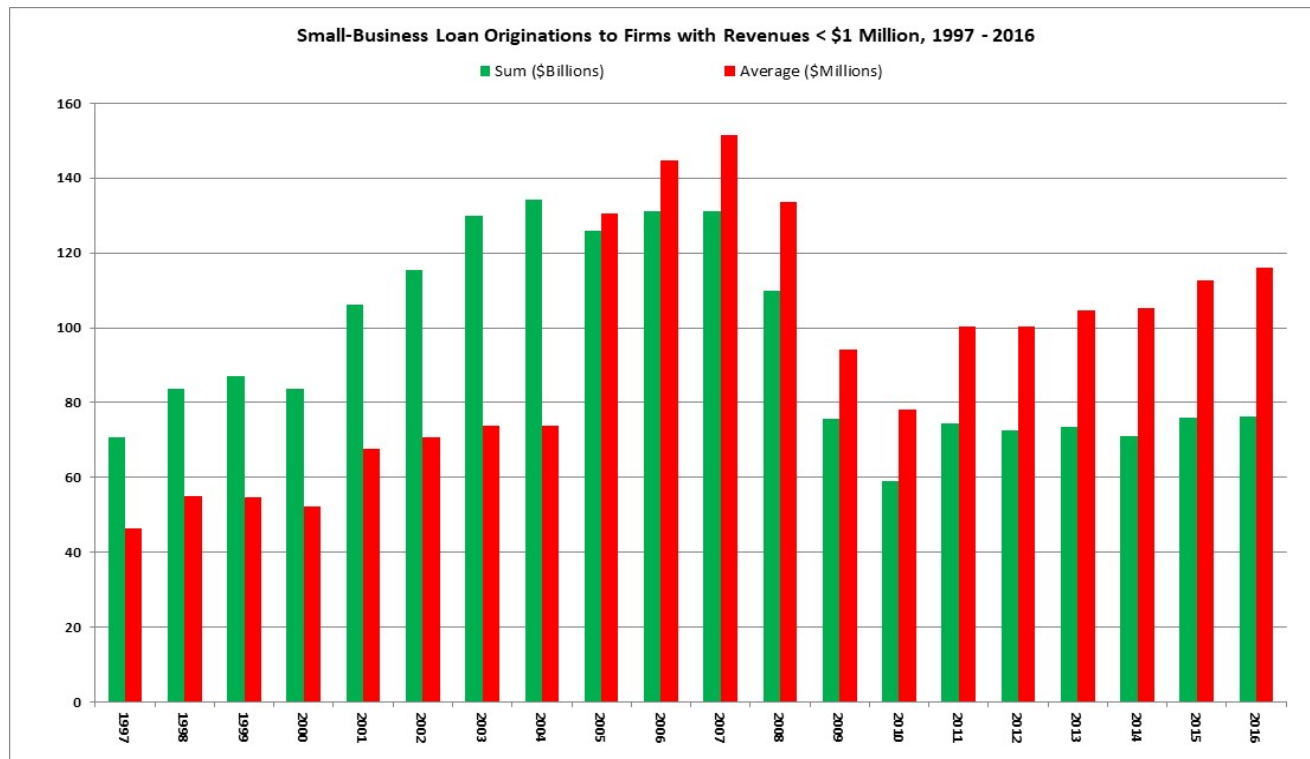
**In the next slides, I will turn from  
Call Report data on outstanding loan amounts to  
CRA data on loan originations.**

**The FFIEC has yet to release the 2017 CRA data so I can  
only present information through 2016.**





# Total and Average Amounts of Small-Business Loan Originations Firms with Revenues of less than \$1 Million 1997 - 2016

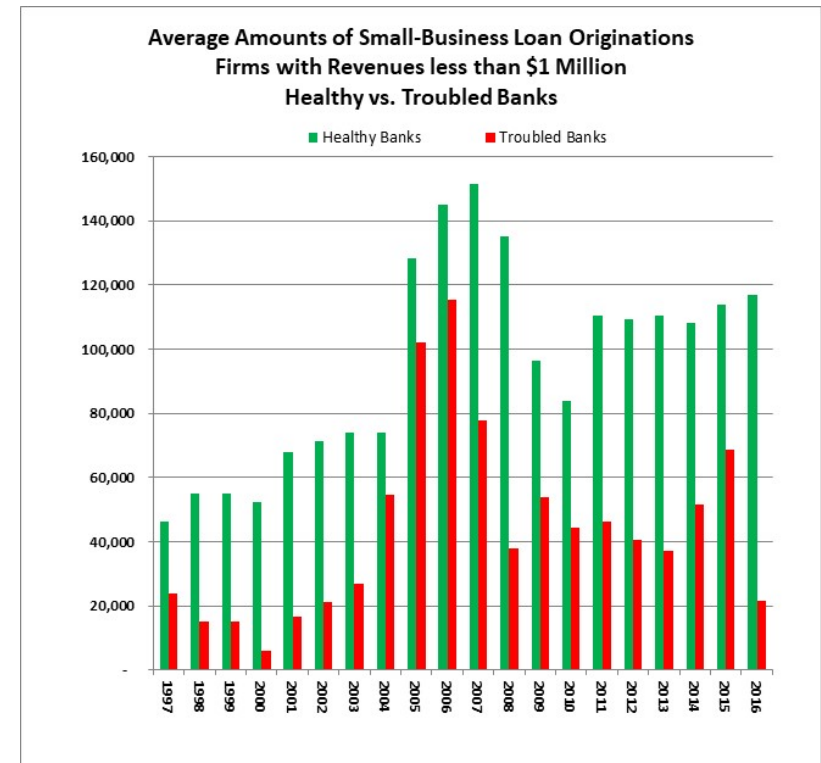
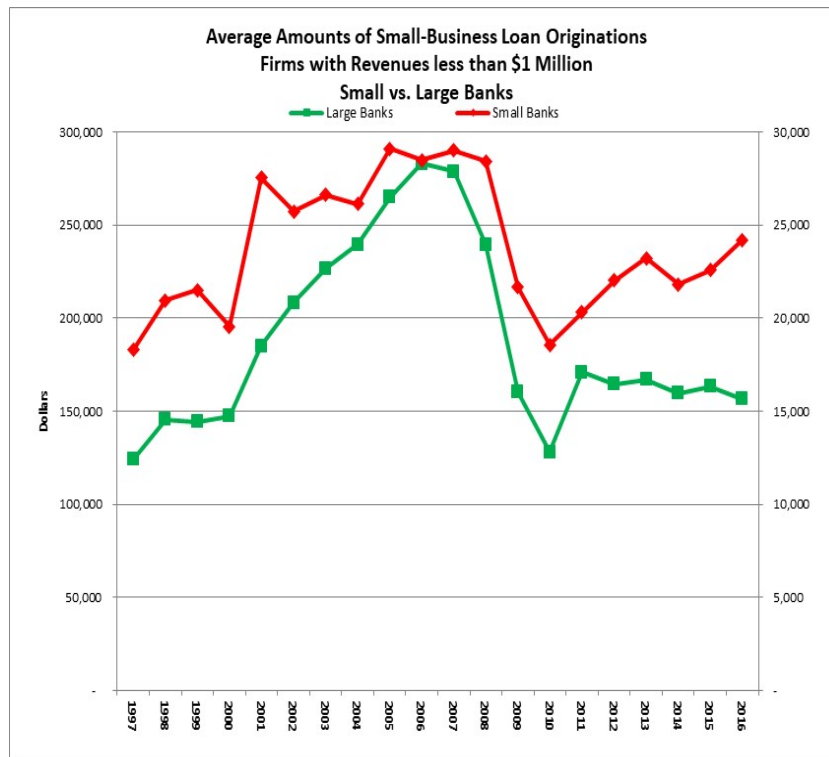


Aggregate amounts of originations in green (\$Billion) , average amounts in red (\$ Millions).  
There was a huge decline in originations from 2007 peak through 2010, followed by meager rebound 2011-2016.





# Average Amounts of Small-Business Loan Originations Firms with Revenues less than \$1 Million By Bank Size and Health



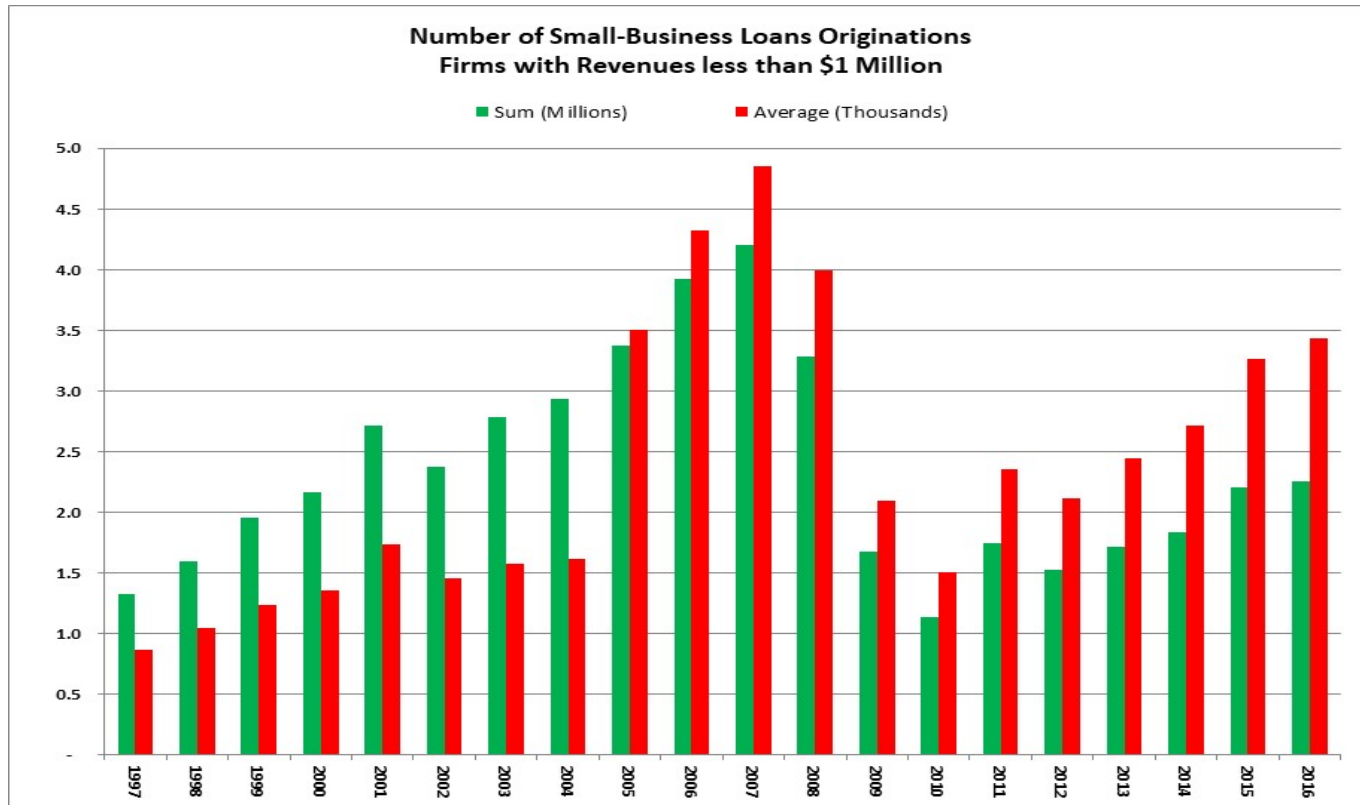
The decline in originations was much greater at large banks and at troubled banks.  
There was little in the way of rebound during 2011-2016.







## Total and Average Numbers of Small-Business Loan Originations Firms with Revenues less than \$1 Million 1997 - 2016

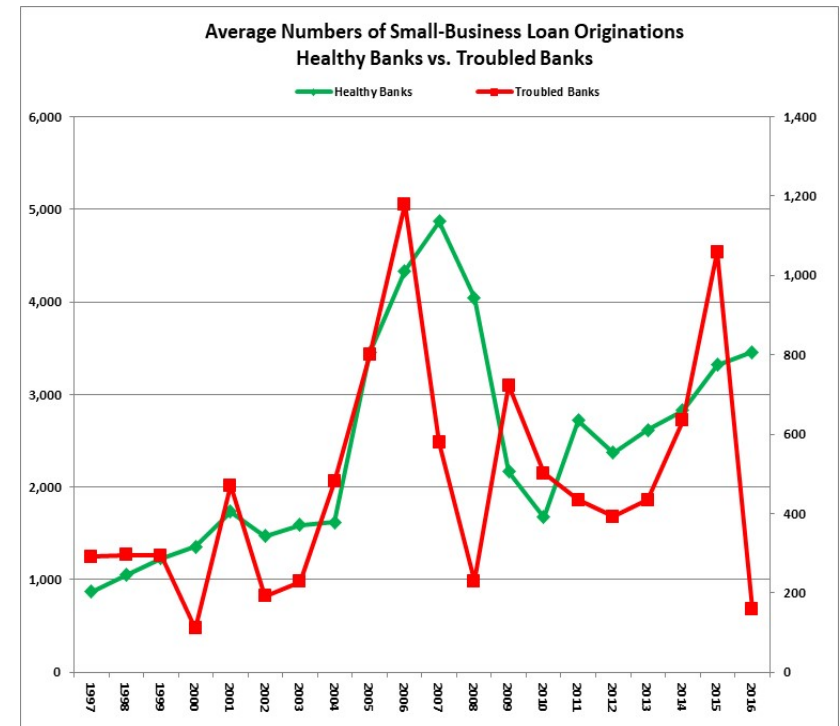
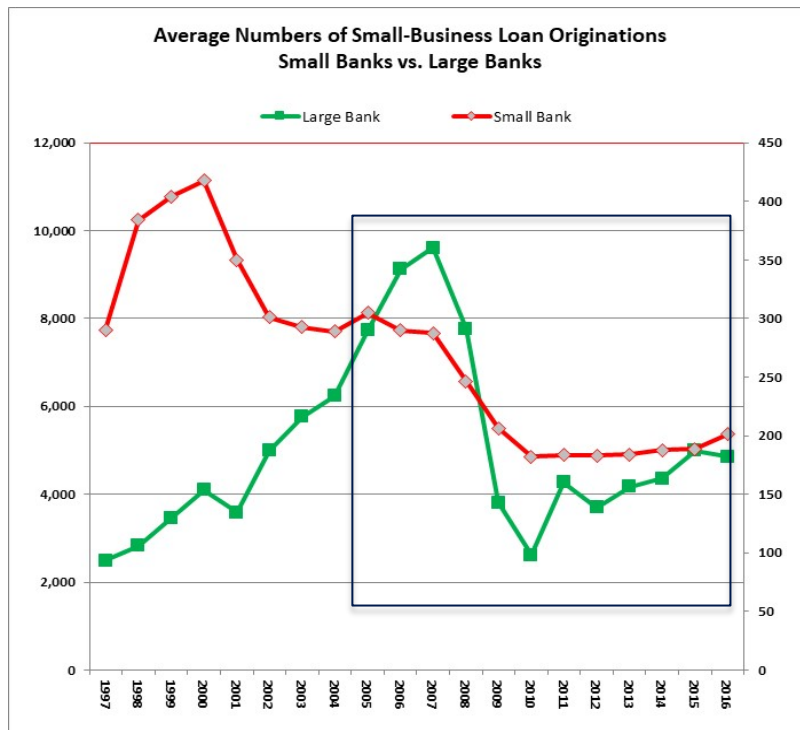


There was a huge decline in the number of originations from 2007 through 2010.  
By 2016, the rebound was only back to 2005 levels.





# Average Numbers of Small-Business Loan Originations Firms with Revenues less than \$1 Million By Bank Size and Health



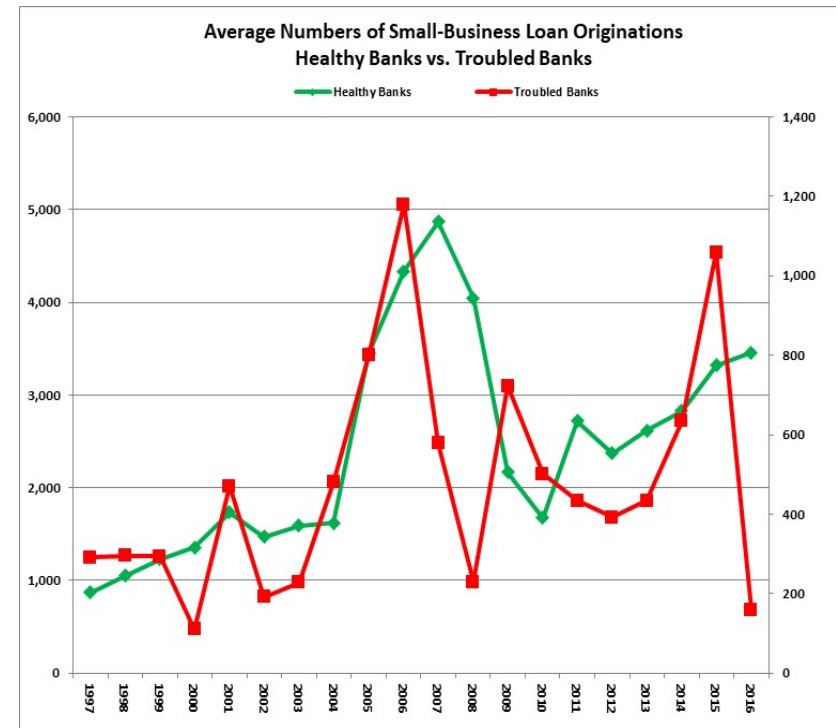
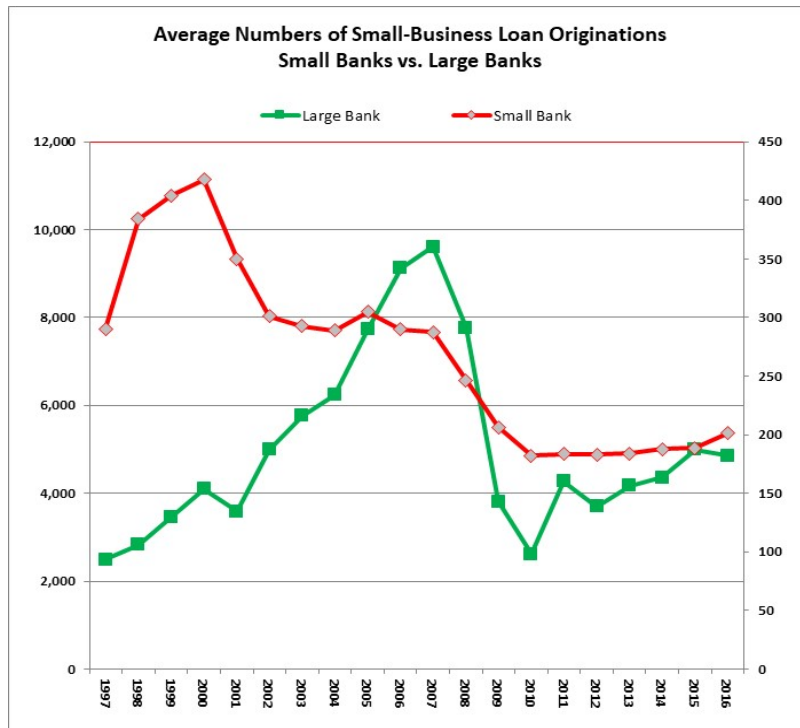
There was a much greater decline in the number of originations by large banks during the crisis, but also more of a rebound.







# Average Numbers of Small-Business Loan Originations Firms with Revenues less than \$1 Million By Bank Size and Health



At troubled banks, it is difficult to see much of a pattern.





## Multivariate Regression Methodology

- I also use a multivariate “difference-in-differences” regression methodology using panel data with bank and year fixed-effects.
- I will spare you the details, which are available in the manuscript.
- In general, they confirm what we have seen in the previous charts.





## Multivariate Regression Methodology

- Bank Size:
  - Did larger banks disproportionately reduce lending during the crisis?
    - YES.
  - Did larger banks disproportionately increase lending after the crisis?
    - NO.





## Multivariate Regression Methodology

- Health (Financial Condition)
  - Did troubled banks disproportionately reduce lending during the crisis?
    - YES.
  - Did troubled banks disproportionately increase lending after the crisis?
    - YES.





## Multivariate Regression Methodology

- Control Variables:
  - Capital ratio
  - Asset quality
  - Earnings
  - Liquidity
  - Pre-existing loan commitments
  - Bank fixed effects
  - Year fixed effects



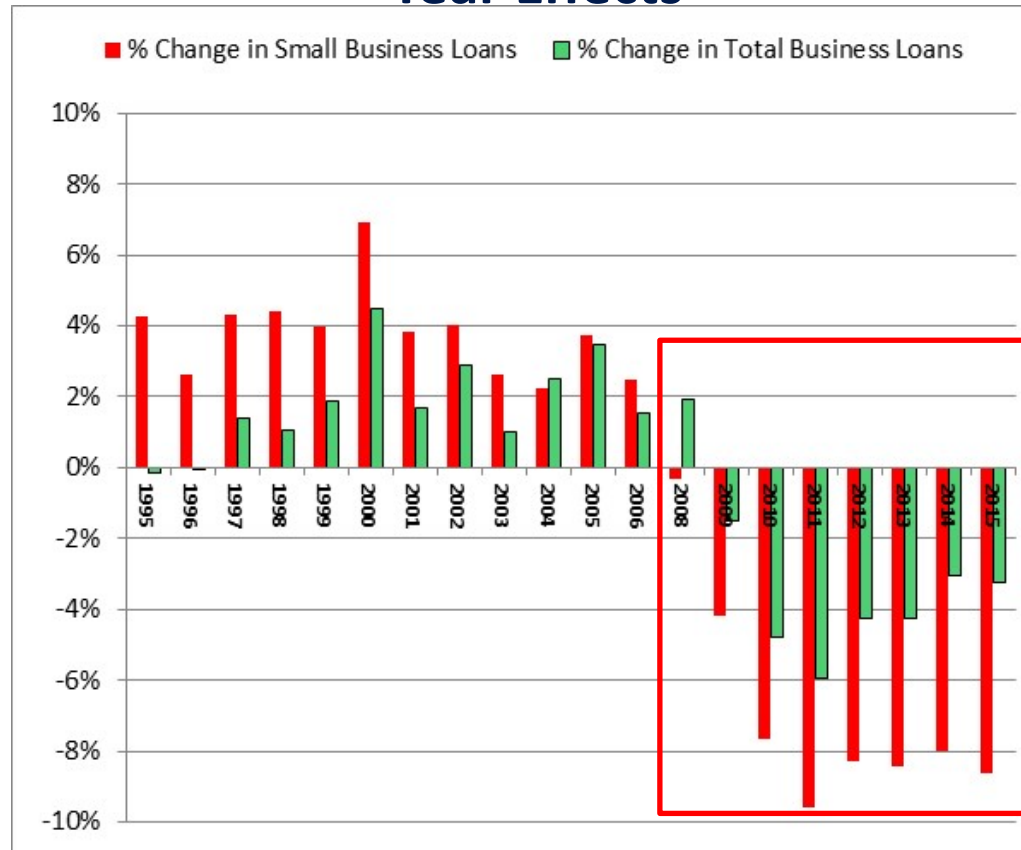


**First, we look at the multivariate evidence on  
small-business loans outstanding.**





## Change in Amount of Total / Small-Business Loans Outstanding: Year Effects



Small-business lending in red, total business lending in green.

Much larger crisis-year declines for small-business lending than for total business lending, and a much weaker recovery.





## Change in Amount of Small-Business Loans Outstanding: Large vs. Small Banks

T4:	Amount of Small Business Loans Outstanding							
	Panel A				Panel B			
	% Change in Small Business Loans				% Change in Total Business Loans			
Variable	Coefficient	S.E.	t-Statistic		Coefficient	S.E.	t-Statistic	
Large Bank	-0.078	0.011	-7.06	a	-0.010	0.010	-1.00	
Large Bank x Fin'l Crisis	-0.062	0.009	-7.02	a	-0.037	0.008	-4.83	a
Large Bank x Post Crisis	0.012	0.009	1.27	b	0.026	0.009	2.96	a
Loans	-1.560	0.030	-52.02	a	-1.194	0.026	-45.49	a
Total Equity	1.400	0.051	27.57	a	1.420	0.050	28.26	a
ROA	-5.743	0.215	-26.71	a	-5.564	0.205	-27.16	a
NPLs	-2.092	0.093	-22.58	a	-2.175	0.082	-26.58	a
Liquid Assets	0.097	0.018	5.42	a	0.069	0.019	3.63	a
Core Deposits	0.084	0.016	5.20	c	-0.049	0.015	-3.23	a
Commitments	0.497	0.052	9.61	a	0.709	0.045	15.73	a
De Novo Indicator	0.235	0.007	32.58	a	0.189	0.006	29.34	a
Year Fixed Effects	Yes				Yes			
Constant	0.181	0.015	11.77	a	0.263	0.017	15.61	a
Observations	167,515				167,515			
R-squared	0.24				0.27			
Number of Banks	13,473				13,473			

At large banks, during the crisis, there was a much larger decline in small, relative to total, business lending;  
And there was a post-crisis rebound in total business lending , but not in small business lending.







## Change in Amount of Small-Business Loans Outstanding: Healthy vs. Troubled Banks

T5:	Amount of Small Business Loans Outstanding							
	Panel A				Panel B			
	% Change in Small Business Loans				% Change in Total Business Loans			
Variable	Coefficient	S.E.	t-Statistic		Coefficient	S.E.	t-Statistic	
Troubled Bank	-0.015	0.012	-1.32		-0.039	0.010	-3.89	a
Troubled Bank x Fin'l Crisis	-0.049	0.013	-3.71	a	-0.004	0.011	-0.33	
Troubled Bank x Post Crisis	0.026	0.014	1.91	c	0.059	0.012	4.92	a
Loans	-1.541	0.030	-51.70	a	-1.195	0.026	-45.50	a
Total Equity	1.408	0.051	27.74	a	1.418	0.050	28.16	a
ROA	-5.742	0.215	-26.74	a	-5.588	0.205	-27.25	a
NPLs	-2.065	0.097	-21.35	a	-2.103	0.084	-25.03	a
Liquid Assets	0.104	0.018	5.80	a	0.070	0.019	3.67	a
Core Deposits	0.099	0.016	6.10	a	-0.047	0.015	-3.14	a
Commitments	0.495	0.052	9.54	a	0.711	0.045	15.76	a
De Novo Indicator	0.236	0.007	32.72	a	0.190	0.006	29.39	a
Year Fixed Effects	Yes				Yes			
Constant	0.163	0.015	10.57	a	0.261	0.017	15.45	a
Observations	167,515				167,515			
R-squared	0.237				0.27			
Number of Banks	13,473				13,473			

**At troubled banks, a big decline in small, but not total business lending;  
and a much stronger recovery in total business lending than in small-business lending.**





## Change in Number of Small-Business Loans Outstanding: Large vs. Small Banks

T7:	Number of Small Business Loans Outstanding			
	% Change in Number of Small Business Loans			
Variable	Coefficient	S.E.	t-Statistic	
Large Bank	-0.053	0.013	-4.07	a
Large Bank x Fin'l Crisis	-0.038	0.009	-4.25	a
Large Bank x Post Crisis	0.040	0.010	4.11	a
Loans	-0.820	0.028	-29.51	a
Total Equity	1.645	0.055	29.75	a
ROA	-5.628	0.231	-24.35	a
NPLs	-1.829	0.103	-17.74	a
Liquid Assets	0.085	0.020	4.27	a
Core Deposits	-0.046	0.019	-2.51	a
Commitments	0.263	0.052	5.03	a
De Novo Indicator	0.257	0.007	34.96	a
Year Fixed Effects	Yes			
Constant	0.094	0.017	5.59	a
Observations	167,515			
R-squared	0.17			
Number of Banks	13,473			

At large banks, there was a greater crisis-era decline in small-business lending than at small banks;  
But post-crisis, there was a strong large bank lending rebound relative to small banks.





## Change in Number of Small-Business Loans Outstanding: Healthy vs. Troubled Banks

T8:	Number of Small Business Loans Outstanding			
	% Change in Number of Small Business Loans			
Variable	Coefficient	S.E.	t-Stat	
Troubled Bank	-0.016	0.013	-1.31	
Troubled Bank x Fin'l Crisis	-0.024	0.013	-1.76	c
Troubled Bank x Post Crisis	0.055	0.014	3.98	a
Loans	-0.807	0.028	-29.08	a
Total Equity	1.649	0.055	29.82	a
ROA	-5.631	0.231	-24.37	a
NPLs	-1.800	0.109	-16.49	a
Liquid Assets	0.090	0.020	4.49	a
Core Deposits	-0.036	0.018	-2.00	b
Commitments	0.261	0.052	5.00	a
De Novo Indicator	0.258	0.007	35.00	a
Year Fixed Effects	Yes			
Constant	0.081	0.017	4.85	a
Observations	167,515			
R-squared	0.17			
Number of Banks	13,473			

At troubled banks, there was a slight decline in lending relative to healthy banks;  
But post-crisis, there was a strong rebound relative to healthy banks, as worst banks were closed.



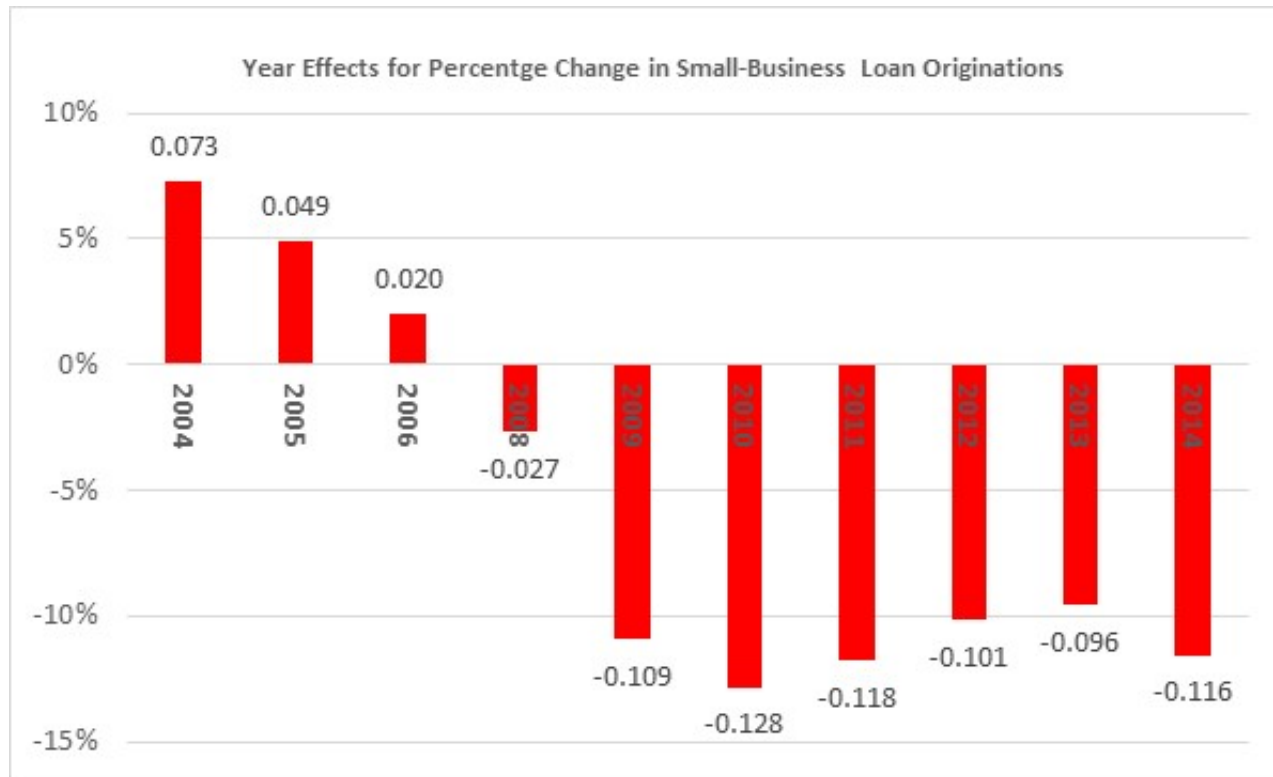


**Next, we look at the multivariate evidence on  
small-business loan originations.**





## Change in Amount of Small-Business Loan Originations: Year Effects



Large declines in originations started in 2008. No real recovery through 2014.





## Change in Amount of Small-Business Loan Originations: Large vs. Small Banks

T9:		Amount of Small Business Loan Originations					
Variable	Coef.	t-stat		Coef.	t-stat		
Large Bank	-0.002	-0.20		-0.002	-0.21		
Large Bank x Fin'l Crisis	-0.025	-3.08	a	-0.019	-2.07	b	
Large Bank x Post Crisis	-0.028	-2.07	b	-0.023	-1.62		
Loans	-0.755	-6.83	a	-0.763	-6.47	a	
Total Equity							0.734 4.37 a
ROA				0.363	1.17		-0.137 -0.41
NPLs							-0.725 -4.42 a
Liquid Assets				0.007	0.16		-0.003 -0.07
Core Deposits				0.026	0.53		0.069 1.78
Commitments				0.126	1.37		0.095 1.17
De Novo Indicator				0.048	1.71	c	0.029 1.08
Year Fixed Effects	Yes						
Constant	0.415	17.64	a	0.386	15.08	a	0.323 9.56 a
Observations	9,404			9,404			9,404
R-squared	0.253			0.255			0.27
Number of Banks	1,993			1,993			1,993

Here, we see that large banks increased amounts of originations by more than small banks both during, and after, the crisis, once we control for leverage and NPLs.







## Change in Number of Small-Business Loan Originations: Large vs. Small Banks

T10: Number of Small Business Loan Originations

Variable	Coef.	t-stat		Coef.	t-stat		Coef.	t-stat	
Large Bank	-0.002	-0.19		-0.002	-0.14		-0.001	-0.09	
Large Bank x Fin'l Crisis	-0.040	-3.43	a	-0.035	-2.78	a	0.013	0.96	
Large Bank x Post Crisis	-0.025	-1.19		-0.019	-0.92		0.041	1.89	c
Loans	-0.570	-5.53	a	-0.575	-5.40	a	-0.602	-5.87	a
Total Equity							0.496	3.10	a
ROA				0.153	0.41		-0.520	-1.26	
NPLs							-0.984	-4.57	a
Liquid Assets				0.048	0.87		0.023	0.41	
Core Deposits				-0.018	-0.40		0.016	0.38	
Commitments				0.133	1.19		0.060	0.56	
De Novo Indicator				0.130	3.48	a	0.116	3.17	a
Year Fixed Effects	Yes								
Constant	0.466	26.22	a	0.440	13.82	a	0.415	10.94	a
Observations	9,404			9,404			9,404		
R-squared	0.140			0.145			0.154		
Number of Banks	1,993			1,993			1,993		

At large banks, we see similar post-crisis results for the number of originations. Recovery only when we control for leverage and NPLs.





## **Change in Amount of Small-Business Loan Originations: Troubled vs. Healthy Banks**

- The vast majority of troubled banks were small (less than \$1 billion in assets).
- These banks are not required to file data on small-business loan originations.
- Consequently, there are not enough observations on originations at troubled banks to perform a meaningful analysis.







## Summary and Conclusions

- Both total business lending and small-business lending contracted significantly during the financial crisis years.
- Total business lending has rebounded post-crisis, but this rebound has been driven by new loans to big businesses, not small businesses.
- Post-crisis, small-business lending grew much faster at small banks than at large banks while total-business lending grew much faster at large banks than at small banks.
- Throughout the sample period, small business lending at troubled banks averaged only 3% as compared with 15% at healthy banks.





## Summary and Conclusions

- By four different measures (number and amount of both small-business loans outstanding and origination), small-business lending has yet return to pre-crisis levels.
- This helps to explain the anemic post-crisis recovery in terms of both employment and output.
- Policies to more quickly close troubled banks and to incentivize large banks to make more small-business loans would help to boost the economy.





**THANK YOU.**

