

Online Appendix for Capital Requirements and Banks' Behavior: Evidence from Bank Stress Tests

Mehrnoush Shahhosseini

This online appendix contains supplemental material for the paper “Capital Requirements and Banks' Behavior: Evidence from Bank Stress Tests.” This appendix includes two sections. The first section shows the results of regression discontinuity design and the second section represents analysis of the medium-sized banks.

A. Online Appendix: Regression Discontinuity

As an alternative empirical strategy, I use a regression discontinuity design (RDD) to identify the impact of capital requirements on bank behavior around the \$100 billion asset threshold. This method enables me to address confounding selection bias by considering comparable banks around this asset size limit. In particular, banks close to \$100 billion asset threshold have similar characteristics other than being tested. Stress tests were unprecedented, and banks did not know in advance that they would be part of the test. I still examine the density of bank assets in the last quarter of 2008 before the beginning of stress tests (McCrary (2008) density test). In particular, I examine that assets are not manipulated by banks to avoid the tests.

Figure A.1 plots the distribution of assets in the last quarter of 2008 around the asset-size threshold of \$100 billion. The treated banks are the ones with assets above \$100 billion thresholds that appear on the right side of the asset threshold, and a control group of banks is the ones with assets below \$100 billion thresholds. The dots represent the observed density for each bin of assets. The horizontal axis is the asset size of banks in the last quarter of 2008, and the solid line is the fitted density around the cut-off point with a 95% confidence interval. The figure shows that asset density is generally smooth around \$100 billion thresholds. This test confirms that banks' asset size is not manipulated, and treatment status around the threshold is as good as random. The estimated coefficient of .0607 with a standard error of .1825, resulted in a z-statistic of .332, which is insignificant at 1% level, confirming the smoothness of asset density around the threshold.

I also verify that stress-tested banks have similar characteristics to the non-tested group before stress tests so that the only difference between the two groups can be attributed to being tested. In other words, there is no discrete jump at the asset threshold in other observable variables such as securities, loans, deposits, and equities of banks before the tests. Figure A.2 shows that the covariates are continuous around the asset threshold before the tests. In other words, stress-tested banks are similar to the control group in the absence of the test. Figure A.3 illustrates a discrete jump in outcome variables at the asset threshold. I find that stress-tested banks with assets above \$100 billion thresholds have higher capital ratios and loan ratios than those below the

asset-size threshold. Although there are fewer bank observations around the asset-size threshold, the difference between the stress-tested and non-tested group is salient.

The bank-level analysis does not provide much information, whether an increase in bank credit supply or borrower demand channel drives the results. Therefore, to disentangle credit supply from demand, I explore the loan-level data to examine the banks' lending channel. Figure A.4 illustrates the change in loan originations of banks around the asset-size threshold. The banks appear on the right side of the threshold are stress-tested and have higher loan originations than the non-tested group. Also, stress-tested banks charge a higher loan spread, while they set longer maturity and lower number of covenants than the non-tested banks.

To capture the magnitude of the effect, I specify a model using the following estimation to show the behavior of stress-tested banks on the right side of the asset threshold relative to the control group of banks on the left side of the threshold.

$$\Delta Y_b = \beta Treated_b + \gamma Asset Dist_b + \delta Treated_b * Asset Dist_b + \varepsilon_b \quad (1)$$

In equation (1), the outcome variable is the change in the natural logarithm of Y_b in periods before and after the stress test. The main outcome variables are the change in total capital ratio, Tier1 capital ratio, and Tier1 common equity capital ratio. The running variable is the asset size of banks in the last quarter of 2008. The asset distance denotes the distance of assets of banks from the asset threshold in the last quarter of 2008. The coefficients of interest are β and δ to capture the different behavior of stress-tested banks with assets above \$100 billion thresholds relative to the banks below this threshold. Table A.1 shows the results of this estimation using a regression discontinuity design. Stress-tested banks with assets above the threshold increase total capital ratio, Tier1 capital ratio, and Tier1 common equity capital ratio more than the non-tested group by 20, 30, and 24 percentage points, respectively.

To explore the lending behavior of banks while keeping the demand side constant, I estimate a similar specification of equation (1) using the loan-level data. I include firm fixed effects to capture the same firm borrowing behavior from two different types of banks, one being tested and the other not tested. I consider the change in the natural logarithm of new loan originations before and after the tests as an outcome variable. *Small Firms_f* is an indicator variable with a value of one if the

total borrowings of a firm across all banks are at the bottom 70% and zero otherwise. I use the following specification of equation (2) at the loan-level to explore the heterogeneity of lending to small borrowers around the asset-size threshold.

$$\Delta Y_{ibf} = \beta Treated_b + \gamma Asset\ Dist_b + \nu Small\ Firms_f + \delta Treated_b * Asset\ Dist_b + \xi Treated_b * Small\ Firms_f \quad (2)$$

$$+ \mu Small\ Firms_f * Asset\ Dist_b + \varepsilon_{ibf}$$

The results show that banks on the right side of the asset threshold increase lending by \$10 million after the tests relative to the non-tested group. Stress-tested banks increase lending to large borrowers by \$17 million while they decrease lending to small borrowers by \$11 million, as shown in columns 1 and 3 of Table A.2. Also, stress-tested banks charge higher loan prices compared to the non-tested group. They increase the spread for large borrowers while setting a lower price for small borrowers (columns 4 and 6). As for monitoring purposes, stress-tested banks reduce the number of covenants relative to the non-tested group while having a higher number of covenants for small firms to better monitor (columns 7 and 9). Stress-tested banks also set different loan maturity for riskier borrowers. Banks on the right side of the asset threshold set longer maturity by 65 months than the non-tested group. However, they set shorter maturity for small borrowers than large firms (columns 10 and 12).

B. Online Appendix: Medium-Sized Banks

In the Dodd-Frank Act (2014), the Federal Reserve’s focus changed towards medium-sized banks in addition to the large banks to include stress tests. I examine the impact of stress tests on medium-sized banks separately from the large banks’ previous analysis. To select a comparable group of banks to the stress-tested ones, I perform a bias-corrected nearest-neighborhood matching estimator similar to the earlier rounds of the tests. In the Dodd-Frank Act (2014), the treated banks are the ones with assets above \$50 billion in the last quarter of 2013. To only examine the medium-sized banks, I focus on stress-tested banks with assets between \$50 and \$100 billion in the last quarter of 2013, as shown in Table B.1. In the matching process, the potential control group of banks is the ones with assets between \$10 and \$50 billion in the last quarter of 2013.

To find the best match for the stress-tested banks, I use the median of primary bank variables during the one year pre-treatment periods between the last quarter of 2012 to the third quarter of 2013. I use the covariates of total assets, loan ratio, deposit ratio, and net interest income during the matching process. Therefore, the matching method specifies banks with similar characteristics to the treated group. Table B.2 shows the results of a median test between treated and a control group of banks before and after matching, before the test announcement. As expected, there are fewer differences between the treated and matched control group after the matching process. This matching ensures that banks in the treated group are very similar to the matched control group in many different observables, except in the Tier2 capital ratio and total assets. As shown in Table B.2, the asset size difference is related to bank fixed assets and not other asset components, such as cash, securities, or loans.

Using medium-sized banks as a newly treated group, I estimate equation (2) for the periods between the first quarter of 2012 to the last quarter of 2015. Medium-sized stress-tested banks increase total capital ratio, Tier1 capital ratio, and Tier1 common equity capital ratio more than the non-tested group by .74, .99, and .91 percentage points, respectively (Table B.3). Stress-tested banks reduce real estate lending after the test, as shown in Table B.5. It is challenging to rule-out a firm demand channel from bank credit supply using bank-level data. Therefore, I examine the lending behavior of medium-sized banks at the loan-level and estimate equations (3) and (4) using medium-sized stress-tested banks as the newly treated group.

At the intensive margin, there is no difference between loan originations of medium-sized stress-tested versus the non-tested group (Table B.6, column 1). Regarding the pricing of loan contracts, stress-tested banks set a lower spread compared to the non-tested group. At the extensive margin, medium-sized stress-tested banks are more likely than non-tested banks to stop lending to existing and new borrowers by 25 and 41 percentage points (Table B.7). The result is apparent by an increase in exit rate and the reduction of entry rate. There are no effects on small borrowers at intensive or extensive margins.

Table B.8 provides the borrowing channel results to examine whether firms compensate for the credit supply shock by borrowing from alternative lenders. I estimate equations (7) and (8)

using dependency of firms on borrowing from medium-sized stress-tested banks before the test announcement. The results show that firms with a higher borrowing share cannot compensate for the credit loss by borrowing from all available and existing lenders. Overall, the results show that financially constrained firms cannot compensate for the negative liquidity shock. Therefore stress tests may harm dependent borrowers.

It is crucial to learn how bank credit supply shock of medium-sized stress-tested banks transmits to the real economy. To this end, I use the nearest neighborhood matching method to match firms with a borrowing share above the median, borrowers with a higher dependency on medium-sized stress-tested banks, to the firms with a borrowing share below the median during the pre-treatment periods. In the matching process, I use the median of cash flow ratio, leverage, tangibility, and net worth of firms during one year before the tests announcement as well as the specific industry of a firm and country of location, named as a firm-cluster. The matched control group of firms are similar in all characteristics to the treated firms, except in the operating profitability variable.

I estimate equations (7) and (8) using assets, sales, fixed assets, and capital expenditures as firm outcome variables. Table B.9 shows the results of these estimations using borrowing share as a measure of firms' dependency. Treated firms with a higher reliance on borrowing from medium-sized stress-tested banks reduce assets after the test announcement (column 1). As for small dependent firms, there are no effects on their financial outcomes. The results are similar using sales, fixed assets, and capital expenditures as alternative outcome variables, as shown in columns 3, 5, and 7. Overall, firms with a higher dependency on borrowing from medium-sized stress-tested banks reduce firm financial outcomes after the tests relative to the less dependent borrowers.

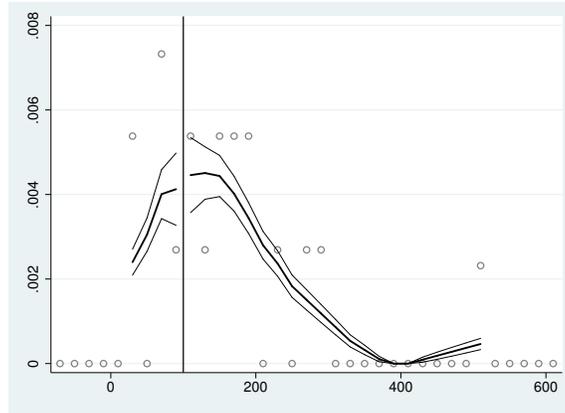


FIGURE A.1: Density of Bank Assets

This figure shows the density of bank assets in the last quarter of 2008 around the \$100 billion asset size threshold. The x-axis is the asset size in the last quarter of 2008, and the solid line is the fitted density with a 95% confidence interval.

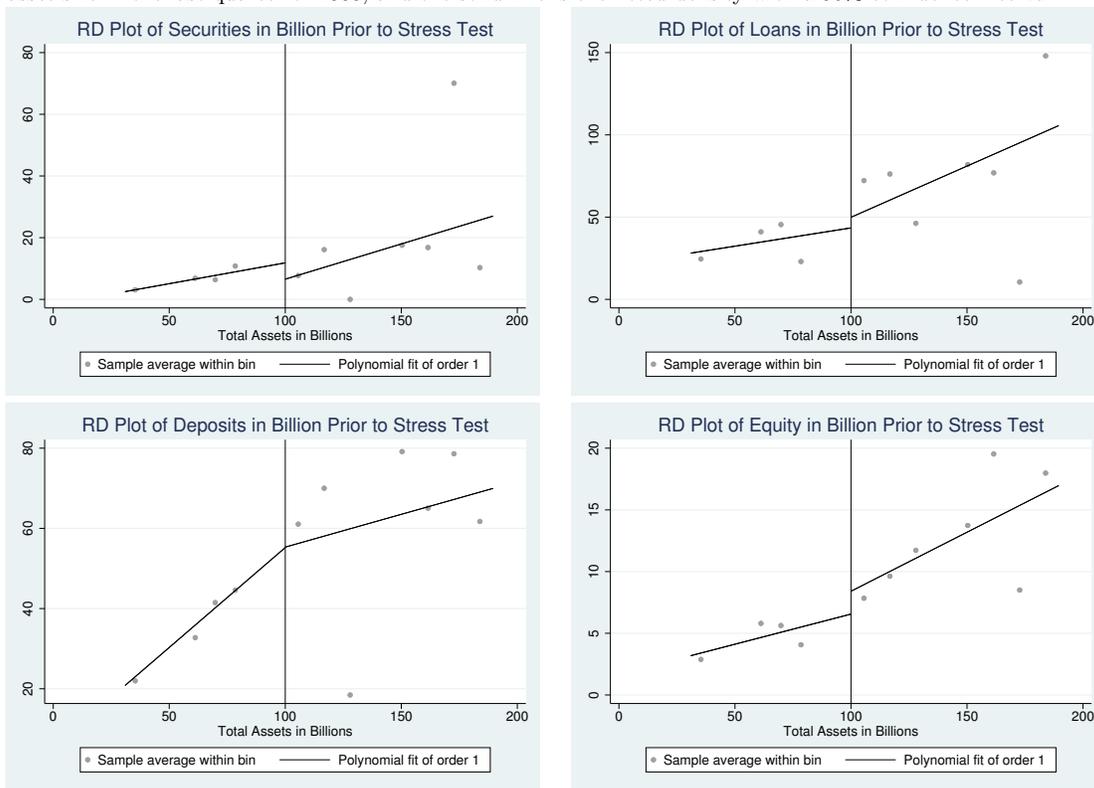


FIGURE A.2: The Continuity of Control Variables in the Pre-Treatment Periods

This figure illustrates average of the primary control characteristics of banks during the pre-treatment periods. The y-axis includes the average of security, loan, deposit, and equity variables before stress tests. The x-axis shows the asset size of banks in the last quarter of 2008. The banks on the right side of the \$100 billion assets threshold are stress-tested banks while the ones on the left of the threshold are the non-tested group.

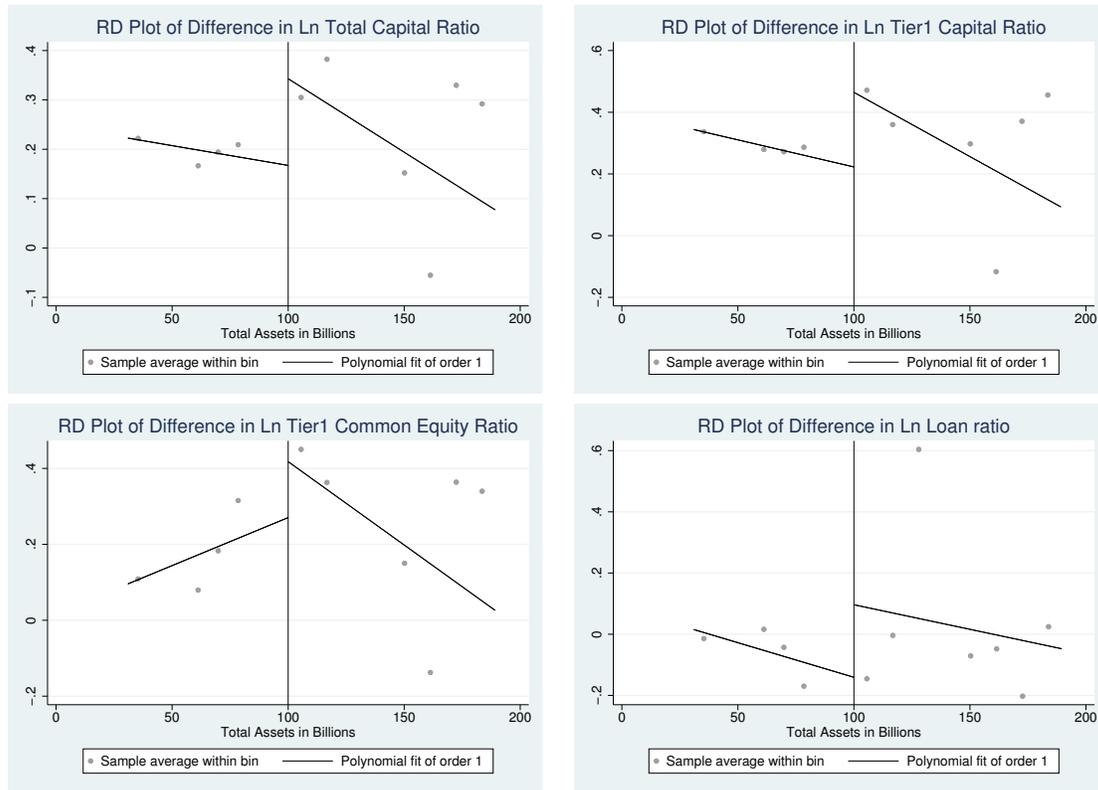


FIGURE A.3: The Discontinuity of Outcome Variables

This figure illustrates the change in the logarithm of the primary outcome variables before and after the first stress testing in 2008 at the bank-level. The y-axis includes total capital ratio, Tier1 capital ratio, Tier1 common equity capital ratio, and loan ratio. The x-axis shows the asset size of banks in the last quarter of 2008. The banks on the right side of the \$100 billion assets threshold are stress-tested banks while the ones on the left of the threshold are the non-tested group. The sample periods are from the first quarter of 2005 to the last quarter of 2013.

**TABLE A.1:
The Regression Discontinuity at the Bank-Level**

	$\Delta \text{Ln Total Capital Ratio}$	$\Delta \text{Ln Tier1 Capital Ratio}$	$\Delta \text{Ln Tier1 Common Equity Ratio}$
Treated	0.20*** (0.05)	0.30*** (0.06)	0.24*** (0.06)
Asset Distance	-0.00*** (0.00)	-0.01*** (0.00)	-0.00 (0.00)
Treated*Asset Distance	0.00*** (0.00)	0.01*** (0.00)	0.00 (0.00)
Dependent-mean	0.19	0.28	0.19
Dependent-sd	0.12	0.16	0.18
AdjR-squared	0.63	0.71	0.43
Observations	18	18	18

This table presents coefficient estimates of capital ratio specifications at the bank-level. The variables include pre-post change in the natural logarithm of the total capital ratio, Tier1 capital ratio, and Tier1 common equity capital ratio. The treated banks are stress-tested banks with at least \$100 billion assets in the last quarter of 2008. The asset distance measures the distance from \$100 billion thresholds in the last quarter of 2008. The sample periods are from the first quarter of 2005 to the last quarter of 2013. Standard errors in parentheses are clustered at the bank-level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

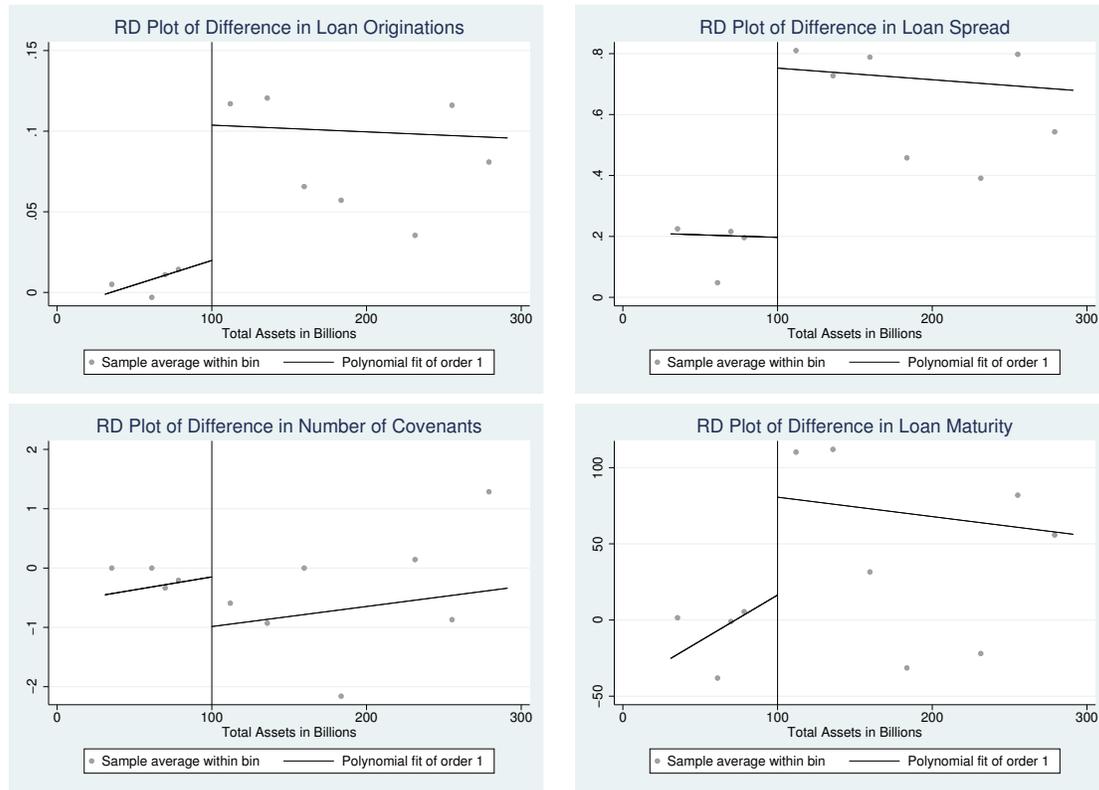


FIGURE A.4: The Discontinuity of Loan Variables

This figure illustrates the change in the primary loan variables before and after the first stress testing in 2008 using the intensive margin sample at the loan-level. I consider firms that borrow from two types of banks, one being tested and the other not tested, during the pre-treatment periods to show the bank lending channel. The y-axis includes loan originations, spread, maturity, and the number of covenants. The x-axis shows the asset size of banks in the last quarter of 2008. The banks on the right side of the \$100 billion assets threshold are stress-tested banks while the ones on the left of the threshold are the non-tested group. The sample periods are from the first quarter of 2005 to the last quarter of 2013.

**TABLE A.2:
The Regression Discontinuity at the Loan-Level**

	$\Delta(\text{Originations})$			$\Delta(\text{Spread})$			$\Delta(\text{Covenants})$			$\Delta(\text{Maturity})$		
Treated	0.10*** (0.01)	0.15*** (0.03)	0.17*** (0.03)	0.52*** (0.05)	0.36*** (0.08)	0.45*** (0.11)	-0.35*** (0.11)	-0.20* (0.10)	-0.14 (0.10)	65.14*** (5.69)	51.17** (20.86)	61.82** (24.90)
Treated*Asset Distance	0.00* (0.00)	0.00 (0.00)	0.00 (0.00)	-0.01** (0.00)	-0.01** (0.00)	-0.01** (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.44 (0.80)	-0.44 (0.98)	-0.65 (0.98)
Asset Distance	-0.00* (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.01** (0.00)	0.01** (0.00)	0.01** (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	0.44 (0.80)	0.44 (0.97)	0.65 (0.97)
Treated*Small Firms			-0.11*** (0.02)			-0.49*** (0.13)			0.24* (0.14)			-49.88** (21.72)
Small Firms*Asset Distance			0.00 (0.00)			0.00 (0.00)			0.00* (0.00)			0.00 (0.02)
Small Firms			0.02 (0.03)			-0.08 (0.10)			-0.94* (0.51)			-34.25** (15.43)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dependent-mean	0.06	0.06	0.06	0.46	0.46	0.46	-0.44	-0.44	-0.44	33.38	33.38	33.38
Dependent-sd	0.19	0.19	0.19	0.94	0.94	0.94	3.81	3.81	3.81	191.07	191.07	191.07
AdjR-squared	0.27	0.27	0.30	0.49	0.49	0.51	0.65	0.65	0.65	0.46	0.45	0.46
Observations	786	786	786	786	786	786	786	786	786	786	786	786

This table presents coefficient estimates of loan specifications using the intensive margin sample. I consider firms that borrow from two types of banks, one being tested and the other not tested, during the pre-treatment periods. The outcome variable is the pre-post change in new loan originations, spread, number of covenants, and maturity. The treated banks are stress-tested banks with at least \$100 billion assets in the last quarter of 2008. The asset distance measures the distance from \$100 billion thresholds in the last quarter of 2008. The small firms are the ones at the bottom of 70% of total borrowings across all banks. The sample periods are from the first quarter of 2005 to the last quarter of 2013. The regressions include firm fixed effects. Standard errors in parentheses are clustered at the bank-level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE B.1:
List of Medium-Sized Stress-Tested Banks in the
Dodd-Frank-Act (2014)

Rssd 9001	Bank-Holding Companies
3232316	HSBC NORTH AMERICA HOLDINGS INC.
1132449	CITIZENS FINANCIAL GROUP, INC.
1245415	BANKMONT FINANCIAL CORP.
1378434	UNIONBANCAL CORPORATION
1199611	NORTHERN TRUST CORPORATION
1037003	M&T BANK CORPORATION
1025608	BANCWEST CORPORATION
3846375	DISCOVER FINANCIAL SERVICES
3981856	SANTANDER HOLDINGS USA, INC.
1078529	COMPASS BANCSHARES, INC.
1199844	COMERICA INCORPORATED
1068191	HUNTINGTON BANCSHARES INCORPORATED

This table shows the list of stress-tested banks in the Dodd-Frank Act (2014) stress tests. The banks have at least \$50 to \$100 billion in assets in the last quarter of 2013.

TABLE B.2:
The Pre-Treatment Median Test of Banks in Lastest Round of
Stress Test

	Medians-Unmatched Sample			Medians-Matched Sample	
	Control	Treated	Difference	Control	Difference
Total Capital Ratio	14.59	14.95	-0.36	13.90	-1.05
Tier1 Capital Ratio	12.99	12.69	0.30	13.15	0.46
Tier2 Capital Ratio	1.33	2.33	-1.00***	1.42	-0.91***
Tier1 Common Equity Ratio	12.81	11.80	1.02	11.63	-0.17
Total Assets in Billion	18.00	82.91	-64.91***	23.59	-59.32***
Cash Ratio	3.90	6.30	-2.40***	5.43	-0.86
Securities Ratio	18.37	14.71	3.66***	12.86	-1.85
Fed Funds Sold Ratio	0.01	0.06	-0.05	0.11	0.05
Loan Ratio	62.89	68.30	-5.42	70.76	2.46
Fixed Assets Ratio	1.09	0.72	0.37***	1.12	0.40***
Deposit Ratio	75.06	75.96	-0.89	75.48	-0.47
Fed Funds Purchased Ratio	2.26	1.26	1.00	1.46	0.19
Leverage Ratio	88.85	87.78	1.07	87.32	-0.46
Common Ratio	0.01	0.01	-0.00	0.01	-0.00
Retained Earnings Ratio	3.72	3.52	0.21	1.34	-2.17
Equity Ratio	10.82	12.09	-1.27	12.65	0.56
Interest Income Ratio	0.74	0.66	0.08	0.73	0.07
Noninterest Income Ratio	-0.37	-0.35	-0.02	-0.39	-0.04
Return on Equity	2.13	1.56	0.57	1.88	0.33
LLR Ratio	1.31	1.67	-0.36***	1.02	-0.65

This table summarizes the median chi-squared test of bank variables to show the difference between stress-tested banks and non-tested group before and after the nearest neighborhood matching process. To find the best match, I use the median of primary bank characteristics during a one year period before the 2014 test announcement between the last quarter of 2012 to the third quarter of 2013.

TABLE B.3:
Adjustment of Capital ratios (2014)

	TCr	T1Cr	T1CEr	T1Lr	T2Cr	LnTC	LnRWA	LnT1C	LnT1CE	LnT2C	LnAT
Treated*Post	0.74** (0.32)	0.99*** (0.30)	0.91* (0.46)	0.46* (0.22)	-0.25 (0.29)	0.03 (0.04)	-0.03 (0.03)	0.05 (0.04)	0.05 (0.03)	-0.07 (0.12)	-0.01 (0.03)
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dependent-mean	15.10	12.60	11.80	9.99	2.50	15.72	17.63	15.55	15.48	13.80	17.92
Dependent-sd	2.95	1.89	1.92	1.70	1.65	0.80	0.71	0.76	0.78	1.08	0.72
AdjR-squared	0.25	0.22	0.20	0.05	0.06	0.47	0.66	0.46	0.49	0.14	0.54
Observations	304	304	304	217	304	304	304	304	304	304	304

This table presents coefficient estimates of the capital ratio specifications at the bank-level. The outcome variables include total capital ratio, Tier1 capital ratio, Tier1 common equity capital ratio, Tier2 capital ratio, total capital, risk-weighted assets, Tier1 capital, Tier1 common equity capital, Tier2 capital, and assets. The treated banks are the medium-sized stress-tested banks with at least \$50 to \$100 billion assets in the last quarter of 2013. The post is an indicator variable with a value of one for the last quarter of 2013 and after, and zero otherwise. The sample periods are from the first quarter of 2012 to the last quarter of 2015. The regressions include bank and year fixed effects. Standard errors in parentheses are clustered at the bank-level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE B.4:
Adjustment of Balance Sheet (2014)

	EQr	CSr	PRr	RETr	LEVr	DPr	LNr	CASHr	SECr	MBSr	TSr
Treated*Post	0.51 (0.36)	0.21 (0.21)	-0.00 (0.33)	0.38 (0.42)	-1.63 (0.98)	-2.60 (1.55)	-1.73 (1.09)	0.69 (0.60)	0.02 (0.91)	1.14 (1.00)	-0.32 (0.58)
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dependent-mean	12.20	0.66	0.60	2.50	87.40	70.76	63.93	8.05	16.66	9.67	3.21
Dependent-sd	2.18	1.82	0.78	4.07	2.94	12.90	15.08	7.48	9.30	6.06	4.15
AdjR-squared	0.15	0.05	-0.01	0.04	0.16	0.06	0.10	0.01	0.03	0.06	0.04
Observations	304	304	304	304	304	304	304	304	304	304	304

This table presents coefficient estimates of balance sheet specifications at the bank-level. The outcome variables include equity ratio, common shares ratio, preferred shares ratio, retained earnings ratio, leverage ratio, deposit ratio, loan ratio, cash ratio, securities ratio, mortgage-backed securities ratio, and Treasury securities ratio. The treated banks are the medium-sized stress-tested banks with at least \$50 to \$100 billion assets in the last quarter of 2013. The post is an indicator variable with a value of one for the last quarter of 2013 and after, and zero otherwise. The sample periods are from the first quarter of 2012 to the last quarter of 2015. The regressions include bank and year fixed effects. Standard errors in parentheses are clustered at the bank-level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE B.5:
Lending Behavior (2014)

	RELr	CRELr	CILr	CLr	FRELr	OREr	RENCOr	CINCOr	CNCOr
Treated*Post	-2.90* (1.54)	-0.61 (0.64)	0.70 (1.03)	1.30 (1.79)	0.02 (0.05)	0.02 (0.04)	-0.01 (0.03)	0.01** (0.01)	0.02 (0.03)
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dependent-mean	51.02	20.19	24.94	16.67	0.19	0.12	0.07	0.02	0.09
Dependent-sd	22.71	12.59	13.76	29.14	0.23	0.17	0.16	0.02	0.22
AdjR-squared	0.39	0.24	0.18	0.07	0.39	0.35	0.10	0.10	0.01
Observations	304	304	304	304	304	304	304	304	304

This table presents coefficient estimates of loan specifications at the bank-level. The outcome variables include real estate loan ratio, commercial real-estate loan ratio, commercial and industrial loan ratio, consumer loan ratio, foreclosed real estate loan ratio, restructured loan ratio, other real estate loan ratio, real estate net charge-offs ratio, commercial and industrial net charge-offs ratio, and consumer net charge-offs ratio. The treated banks are the medium-sized stress-tested banks with at least \$50 to \$100 billion assets in the last quarter of 2013. The post is an indicator variable with a value of one for the last quarter of 2013 and after, and zero otherwise. The sample periods are from the first quarter of 2012 to the last quarter of 2015. The regressions include bank and year fixed effects. Standard errors in parentheses are clustered at the bank-level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE B.6:
The Bank Lending Channel: Intensive Margin and Loan Prices (2014)

	Ln-Originations				Ln-Spread			
	Firms	Firms	Line-of-Credit	Term-Loan	Firms	Firms	Line-of-Credit	Term-Loan
Treated*Post	0.20 (0.16)	-0.18 (0.20)	0.13 (0.33)	-0.38 (0.41)	-0.12** (0.05)	0.06 (0.08)	0.03 (0.06)	0.08 (0.19)
Treated*Small Firms*Post		0.36 (0.21)				-0.16** (0.07)		
Treated*Small Firms		-0.41** (0.18)				0.01 (0.07)		
Small Firms*Post		-0.60*** (0.20)				0.10 (0.06)		
Small Firms		-0.23* (0.13)				-0.16 (0.09)		
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dependent-mean	16.18	16.65	16.42	15.89	5.73	5.61	5.44	6.09
Dependent-sd	0.85	0.99	0.63	0.98	0.66	0.73	0.67	0.63
AdjR-squared	0.50	0.56	0.34	0.83	0.84	0.72	0.77	0.57
Observations	242	2369	159	69	218	1962	1428	505

This table presents coefficient estimates of loan origination specifications using the intensive margin sample at the loan-level. I consider firms that borrow from two types of banks, one being tested and the other not tested, during the pre-treatment periods to show the bank lending channel in columns 1, 3 and 4. The outcome variable is the natural logarithm of the new loan originations. The treated banks are the medium-sized stress-tested banks with at least \$50 to \$100 billion assets in the last quarter of 2013. The post is an indicator variable with a value of one for the last quarter of 2013 and after, and zero otherwise. The small firms are the ones at the bottom of 70% of total borrowings across all banks. The sample periods are from the first quarter of 2012 to the last quarter of 2015. The regressions include bank, year-quarter, firm, firm-year-quarter, and loan-type fixed effects. Standard errors in parentheses are clustered at the bank-level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE B.7:
The Bank Lending Channel: Extensive Margin (2014)

	Exit				Entry			
	Firms	Firms	Line-of-Credit	Term-Loan	Firms	Firms	Line-of-Credit	Term-Loan
Treated	0.25** (0.11)	0.20 (0.12)	0.34* (0.17)	-0.07 (0.09)	-0.41** (0.14)	-0.40** (0.14)	-0.50** (0.17)	-0.81 (0.62)
Treated*Small Firms		0.07 (0.04)				0.02 (0.06)		
Small Firms		-0.04 (0.09)				-0.15* (0.08)		
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan-Type Fixed Effects	Yes	Yes	No	No	Yes	Yes	No	No
Dependent-mean	0.29	0.29	0.30	0.28	0.52	0.52	0.50	0.55
Dependent-sd	0.45	0.45	0.46	0.45	0.50	0.50	0.50	0.50
AdjR-squared	0.58	0.58	0.60	0.64	0.59	0.60	0.60	0.64
Observations	5304	5304	3586	1529	5304	5304	3586	1529

This table presents coefficient estimates of exit and entry specifications at the loan-level. The exit variable has a value of one if a bank has been lending to a particular firm before stress test announcement but stops lending to that firm after the event and zero otherwise. The entry variable has a value of one if a bank starts lending to a new borrower only after the announcement of test and zero otherwise. The treated banks are stress-tested banks with at least \$50 to \$100 billion assets in the last quarter of 2013. The small firms are the ones at the bottom of 70% of total borrowings across all banks. I collapse the data by time to keep each pair of the bank and firm relationship. The sample periods are from the first quarter of 2012 to the last quarter of 2015. The regressions include bank, firm, and loan-type fixed effects. Standard errors in parentheses are clustered at the bank-level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE B.8:
The Borrowing Channel: Loan-Level (2014)

	All-Banks		Existing-Banks		New-Banks	
	Ln Total Borrowing					
Borrowing Share*Post	0.85*** (0.14)	0.47*** (0.10)	-0.21*** (0.06)	-0.09 (0.08)	0.27 (0.18)	0.18 (0.12)
Borrowing Share	-0.61** (0.25)	-0.35*** (0.09)	-0.47 (0.37)	-0.26** (0.12)		
Borrowing Share*Small Firms*Post		-0.21 (0.19)		0.00 (0.16)		-0.10 (0.16)
Borrowing Share*Small Firms		0.15 (0.14)		0.08 (0.12)		
Small Firms*Post		-0.15*** (0.03)		-0.20*** (0.03)		-2.16*** (0.05)
Small Firms		-2.03*** (0.03)		-1.96*** (0.02)		
Bank Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Dependent-mean	18.53	18.53	18.81	18.81	18.39	18.39
Dependent-sd	1.34	1.34	1.28	1.28	1.37	1.37
AdjR-squared	0.01	0.65	0.02	0.63	0.01	0.64
Observations	68205	68205	30320	30320	23632	23632

This table presents coefficient estimates of total borrowing specifications at the loan-level. The outcome variable is the natural logarithm of total borrowing. The borrowing share variable measures the dependency of a firm in borrowing from stress-tested banks before the stress test in 2014. The stress-tested banks are the ones with at least \$50 to \$100 billion assets in the last quarter of 2013. The post is an indicator variable with a value of one for the last quarter of 2013 and after, and zero otherwise. The small asset firms are the ones with assets below the median in each quarter. The sample periods are from the first quarter of 2012 to the last quarter of 2015. The regressions include bank, and year-quarter fixed effects. Standard errors in parentheses are clustered at the bank-level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE B.9:
Firm Financial Outcomes (2014)

	Ln-Assets		Ln-Sales		Ln-Fixed-Assets		Ln-Capital-Exp.	
Treated Firms*Borrowing-Share*Post	-1.23*** (0.19)	-0.74* (0.41)	-0.99*** (0.18)	-0.54 (0.41)	-1.18*** (0.19)	-0.72* (0.42)	-1.05*** (0.19)	-0.42 (0.41)
Treated Firms*Borrowing-Share*Small Firms*Post		0.06 (0.42)		-0.01 (0.41)		0.06 (0.44)		-0.16 (0.41)
Small Firms		-0.95*** (0.05)		-0.79*** (0.05)		-0.91*** (0.05)		-0.89*** (0.05)
Bank Fixed Effects	Yes							
Firm-Level Controls	Yes							
Quarter Fixed Effects	Yes							
Firm-Cluster Fixed Effects	Yes							
Dependent-mean	3.53	3.53	2.81	2.81	2.87	2.87	1.88	1.88
Dependent-sd	0.66	0.66	0.64	0.64	0.84	0.84	0.82	0.82
AdjR-squared	0.32	0.68	0.33	0.60	0.56	0.77	0.46	0.67
Observations	7084	7084	7081	7081	7081	7081	7075	7075

This table presents coefficient estimates of firm financial specifications at the firm-level. The outcome variable is the natural logarithm of total assets, sales, fixed assets, and capital expenditures. The borrowing share variable measures the dependency of a firm in borrowing from stress-tested banks before the test. Stress-tested banks are the ones with at least \$50 to \$100 billion assets in the last quarter of 2013. The treated firms have a borrowing share above the median, and highly dependent on borrowing from stress-tested banks before the test. The post is an indicator variable with a value of one for the last quarter of 2013 and after, and zero otherwise. The small asset firms are the ones with assets below the median in each quarter. The sample periods are from the first quarter of 2012 to the last quarter of 2015. The regressions include firm controls, bank, year-quarter, and firm-cluster fixed effects. Standard errors in parentheses are clustered at the bank-level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.