Internet Appendix for
"The Rise of Shadow Banking: Evidence from Capital Regulation"

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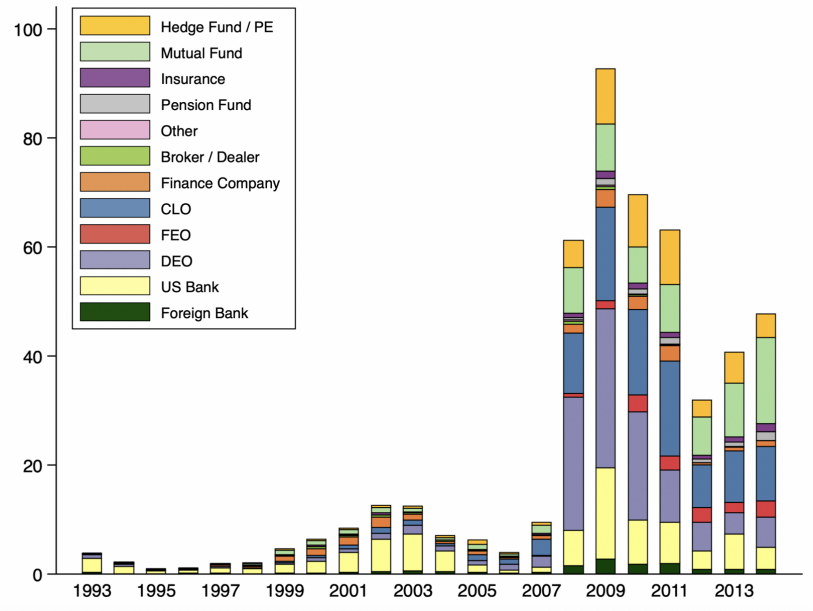
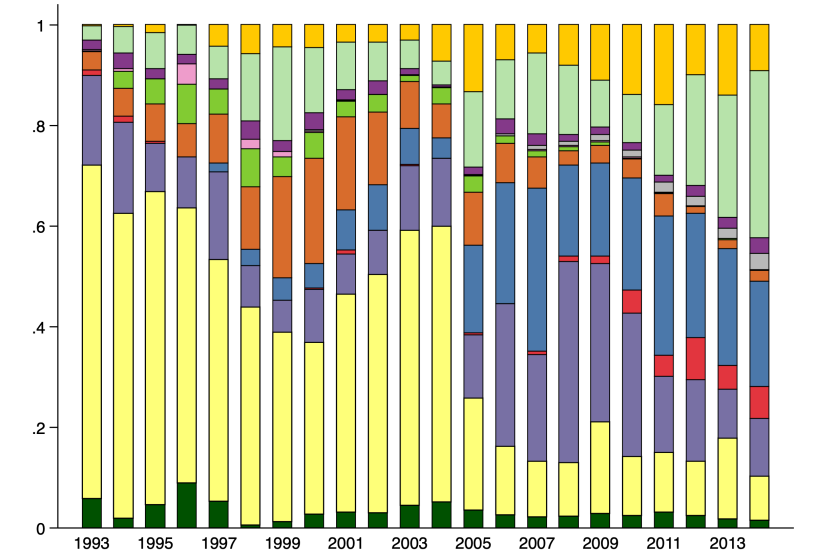


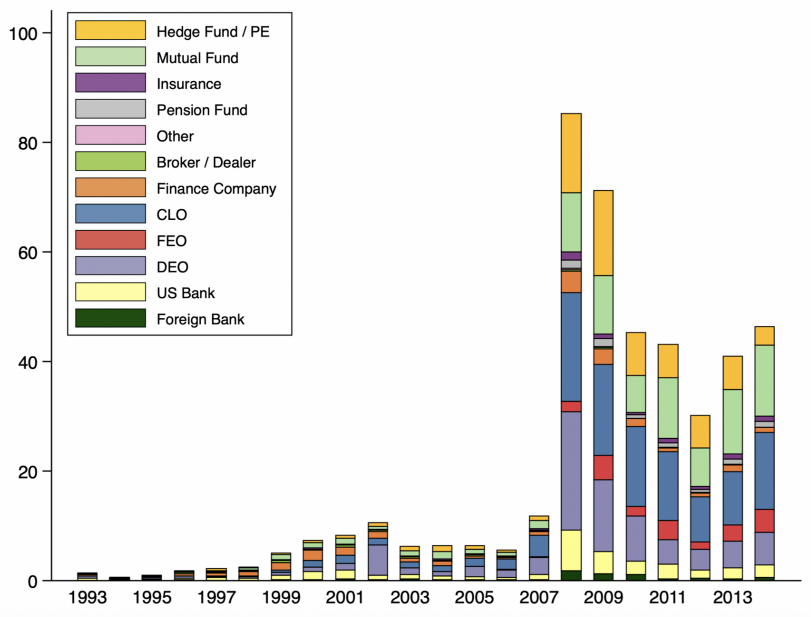
(a) Level ($ billions)



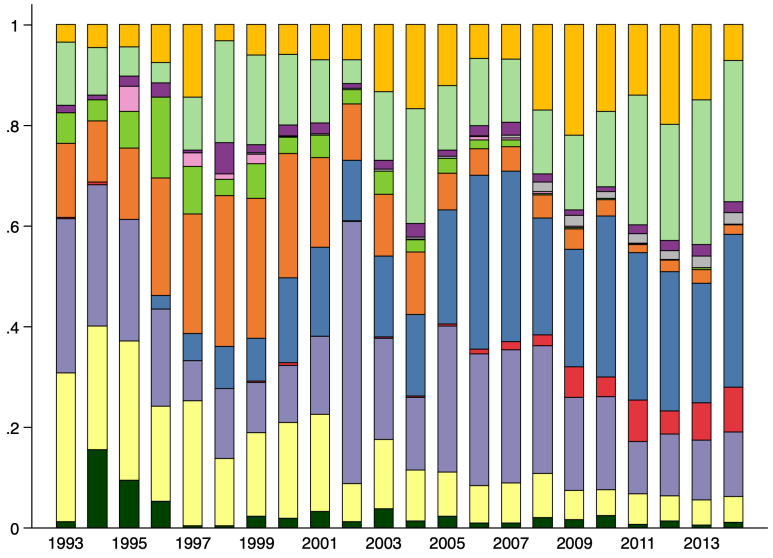
(b) Market share

Appendix IA.I. Secondary market sells of U.S. syndicated non-performing term loan shares (1993–2014)

Loan share sells in levels ($ billions, top panel) and by market share (bottom panel). A non-performing loan has a supervisory rating of "special mention," "substandard," "doubtful," or "loss." A loan share is a fraction of a syndicated loan commitment. A loan share sale occurs when a lender decreases its ownership stake in a loan share relative to the previous year. The categories in the figure refer to groups of financial firms and, to ensure confidentiality, data for no individual firm is disclosed. "DEO," "FEO," and "Other" denote nonbank entities with a domestic, foreign, and unknown origin, respectively. These nonbank lenders could not be classified (into any of the other categories) based on our lender lists.



(c) Level ($ billions)



(d) Market share

Appendix IA.II. Secondary market buys of U.S. syndicated non-performing term loan shares (1993–2014)

Loan share buys in levels ($ billions, top panel) and by market share (bottom panel). A non-performing loan has a supervisory rating of "special mention," "substandard," "doubtful," or "loss." A loan share is a fraction of a syndicated loan commitment. A loan share buy occurs when a lender increases its ownership stake in a loan share relative to the previous year. The categories in the figure refer to groups of financial firms and, to ensure confidentiality, data for no individual firm is disclosed. "DEO," "FEO," and "Other" denote nonbank entities with a domestic, foreign, and unknown origin, respectively. These nonbank lenders could not be classified (into any of the other categories) based on our lender lists.

Appendix IA.III. No matching between weak firms and weak banks

This table analyzes the relation between borrower characteristics and bank capital. The sample includes SNC borrowers that are matched with Compustat during the period from 1993 to 2014. Borrowers are partitioned according to whether the *Tier 1 Capital/RWA* among the banks funding the loan—calculated as the simple average across banks in the syndicate—is above or below the median for the full sample. Raw and normalized differences are reported in Column [13]. We indicate normalized differences in excess of 0.25 with a "+" as per the Imbens and Rubin (2007) rule of thumb. All variables are defined in Appendix A.

	Below-median capital						Above-median capital						
	N	Mean	Std.	p25	Med.	p75	*N*	Mean	Std.	p25	Med.	p75	Raw diff. [Norm. diff.]
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
Log(Assets)	1,589	7.55	1.36	6.70	7.50	8.64	1,639	7.58	1.47	6.63	7.45	8.67	–0.03 [–0.02]
Sales Level	1589	1.01	0.71	0.53	0.86	1.32	1,639	0.98	0.66	0.56	0.85	1.237	0.029 [0.04]
Tangibility	1,589	0.29	0.23	0.10	0.25	0.42	1,639	0.32	0.23	0.13	0.28	0.46	–0.03 [–0.12]
Leverage	1,589	0.47	0.57	0.27	0.37	0.52	1,639	0.47	0.53	0.27	0.38	0.56	0.00 [0.07]
Sales Growth	1,035	–0.03	0.24	–0.08	–0.01	0.05	1,338	–0.02	0.23	–0.07	–0.01	0.06	–0.01 [–0.04]
Cash Flow	1,589	0.15	0.11	0.10	0.13	0.18	1,639	0.15	0.11	0.09	0.13	0.18	0.00 [0.02]
Liquid Assets	1,589	0.06	0.07	0.01	0.04	0.07	1,639	0.05	0.06	0.01	0.04	0.07	0.00 [0.04]
Current Ratio	1,518	1.69	0.90	1.13	1.53	1.95	1,531	1.65	0.85	1.14	1.54	1.89	0.04 [0.04]
Dividend Payer	1,589	0.44	0.50	0.00	0.00	1.00	1,639	0.45	0.50	0.00	0.00	1.00	–0.01 [–0.01]
Market-to-Book	1,518	1.52	0.93	1.00	1.25	1.72	1,551	1.58	0.92	1.03	1.30	1.78	–0.05 [–0.06]

Appendix IA.IV. Excluding potential "pre-arranged" sales

This table shows the effects of bank regulatory capital for loan sales excluding potential pre-arranged sales to other financial institutions. In particular, we restrict the sample to exclude loans within the first year of the loan's life. The unit of observation in each regression is a loan share-bank-year triple. The dependent variable is an indicator variable equal to one if a lender reduces its ownership stake in a loan that it funded in the previous year. Column [1] includes the sample of loan sales from 2002 to 2014. Column [2] interacts capital with the TED spread (TED_t), defined as the yearly average of the daily difference between the three-month London Interbank Offered Rate (LIBOR) and the three-month U.S. Treasury rate. Note that TED_t is demeaned. Columns [3] and [4] classify a loan as "Pass" by the examining agency if it has not been criticized in any way and "Fail" otherwise (i.e., the loan is rated special mention, substandard, doubtful, or loss). All columns include controls for bank and loan-year fixed effects, and an indicator variable for whether the bank has undergone a merger in the past year. All variables are defined in Appendix A. Standard errors (in parentheses) are clustered at the loan level. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable: *Loan Sale*$_{ijt}$			Regulatory rating	
	Baseline	Dynamic	Pass	Fail
	[1]	[2]	[3]	[4]
Tier 1 Capital/RWA$_{t-1}$	–0.178***	–0.011	–0.114*	–0.596**
	(0.058)	(0.070)	(0.061)	(0.176)
Tier 1 Capital/RWA$_{t-1}$ × *TED*$_t$		–0.393***		
		(0.087)		
Bank controls	Y	Y	Y	Y
Bank controls × *TED*$_t$	N	Y	N	N
Bank fixed effects	Y	Y	Y	Y
Loan-year fixed effects	Y	Y	Y	Y
Observations	57,332	57,332	47,548	9,668
R^2	0.871	0.873	0.875	0.858

Appendix IA.V. Alternative measurement of bank capital

This table shows the effects of bank regulatory capital for loan sales under an alternative measurement of regulatory capital. In particular, we use the Tier 1 leverage ration which is defined as the ratio of Tier 1 capital to total bank assets. The unit of observation in each regression is a loan share-bank-year triple. The dependent variable is an indicator variable equal to one if a lender reduces its ownership stake in a loan that it funded in the previous year. Column [1] includes the sample of loan sales from 2002 to 2014. Column [2] interacts capital with the TED spread (TED_t), defined as the yearly average of the daily difference between the three-month London Interbank Offered Rate (LIBOR) and the three-month U.S. Treasury rate. Note that TED_t is demeaned. Columns [3] and [4] classify a loan as "Pass" by the examining agency if it has not been criticized in any way and "Fail" otherwise (i.e., the loan is rated special mention, substandard, doubtful, or loss). All columns include controls for bank and loan-year fixed effects, and an indicator variable for whether the bank has undergone a merger in the past year. All variables are defined in Appendix A. Standard errors (in parentheses) are clustered at the loan level. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable: *Loan Sale*$_{ijt}$			Regulatory rating	
	Baseline	Dynamic	Pass	Fail
	[1]	[2]	[3]	[4]
Tier 1 Leverage$_{t-1}$	–0.132	–0.192**	–0.080	–0.506*
	(0.083)	(0.098)	(0.086)	(0.269)
Tier 1 Leverage$_{t-1}$ × TED_t		–0.011		
		(0.115)		
Bank controls	Y	Y	Y	Y
Bank controls × TED_t	N	Y	N	N
Bank fixed effects	Y	Y	Y	Y
Loan-year fixed effects	Y	Y	Y	Y
Observations	97,238	97,238	83,759	13,479
R^2	0.872	0.873	0.876	0.855

Appendix IA.VI. Alternative measurement of loan ratings

This table shows the effects of bank regulatory capital for loan sales under alternative measurement of whether a loan is non-performing or not. The unit of observation in each regression is a loan share-bank-year triple. The dependent variable is an indicator variable equal to one if a lender reduces its ownership stake in a loan that it funded in the previous year. The sample includes loan sales from 2002 to 2014 for which the (publicly-traded) borrower could be matched to external data sources. Columns [1] and [2] match the SNC to data on covenant violations made available by Amir Sufi. We classify loans as "Fail" if the borrower reports a debt covenant violation in the current year in its filings with the SEC. Columns [3] and [4] match the SNC to Compustat. We classify loans as "Fail" if the borrower experiences a downgrade in its long-term credit rating. All columns include controls for bank and loan-year fixed effects, and an indicator variable for whether the bank has undergone a merger in the past year. All variables are defined in Appendix A. Standard errors (in parentheses) are clustered at the loan level. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable: *Loan Sale*$_{ijt}$	Covenant violation		Credit downgrade	
	No	Yes	No	Yes
	[1]	[2]	[3]	[4]
Tier 1 Capital/RWA$_{t-1}$	–1.313**	–5.889***	–0.344**	–0.616***
	(0.525)	(1.944)	(0.161)	(0.224)
Bank controls	Y	Y	Y	Y
Bank fixed effects	Y	Y	Y	Y
Loan-year fixed effects	Y	Y	Y	Y
Observations	2,689	402	11,188	7,073
R^2	0.787	0.869	0.842	0.878

Appendix IA.VII. CDS trading activity and loan sales

This table shows the how the effects of bank regulatory capital for loan sales interacts with whether the bank is an active buyer in the credit default swaps (CDS) market. The unit of observation in each regression is a loan share-bank-year triple. The dependent variable is an indicator variable equal to one if a lender reduces its ownership stake in a loan that it funded in the previous year. In each column, we interact the regression model with a dummy variable for whether the bank is a net buyer of CDS protection in a given year or not. Column [1] includes the sample of loan sales from 2002 to 2014. Column [2] interacts capital with the TED spread (TED_t), defined as the yearly average of the daily difference between the three-month London Interbank Offered Rate (LIBOR) and the three-month U.S. Treasury rate. Note that TED_t is demeaned. Columns [3] and [4] classify a loan as "Pass" by the examining agency if it has not been criticized in any way and "Fail" otherwise (i.e., the loan is rated special mention, substandard, doubtful, or loss). All columns include controls for bank and loan-year fixed effects, and an indicator variable for whether the bank has undergone a merger in the past year. All variables are defined in Appendix A. Standard errors (in parentheses) are clustered at the loan level. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable: *Loan Sale*$_{ijt}$			Regulatory rating	
	Baseline	Dynamic	Pass	Fail
	[1]	[2]	[3]	[4]
Tier 1 Capital/RWA$_{t-1}$	–0.151***	–0.053	–0.117**	–0.504***
	(0.050)	(0.062)	(0.052)	(0.157)
Tier 1 Capital/RWA$_{t-1}$ × *CDS Net Buyer*	–0.075	0.166	–0.019	–0.032
	(0.061)	(0.185)	(0.023)	(0.067)
Tier 1 Capital/RWA$_{t-1}$ × TED_t		–0.288***		
		(0.070)		
Tier 1 Capital/RWA$_{t-1}$ × TED_t × *CDS Net Buyer*		–0.586		
		(0.550)		
Bank controls	Y	Y	Y	Y
Bank controls × TED_t	N	Y	N	N
Bank fixed effects	Y	Y	Y	Y
Loan-year fixed effects	Y	Y	Y	Y
Observations	97,238	97,238	83,759	13,479
R^2	0.872	0.873	0.876	0.854

Appendix IA.VIII. Exploring bank size effects

This table examines heterogeneity across the bank size dimension in the effects of bank regulatory capital for loan sales. The unit of observation in each regression is a loan share-bank-year triple. The dependent variable is an indicator variable equal to one if a lender reduces its ownership stake in a loan that it funded in the previous year. The set of banks are partitioned according to whether they have (lagged) book assets below $1 billion or not (Columns [1] and [2]) and according to whether the bank is publicly-traded or not (Columns [3] and [4]). The sample of loan sales is from 2002 to 2014. All columns include controls for bank and loan-year fixed effects, and an indicator variable for whether the bank has undergone a merger in the past year. All variables are defined in Appendix A. Standard errors (in parentheses) are clustered at the loan level. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable: *Loan Sale*$_{ijt}$				
Size split:	Bank assets > $1bn		Bank is public	
	No	Yes	No	Yes
	[1]	[2]	[3]	[4]
Tier 1 Capital/RWA$_{t-1}$	0.111	–0.249***	–0.174**	–0.160**
	(0.010)	(0.073)	(0.079)	(0.079)
Bank controls	Y	Y	Y	Y
Bank fixed effects	Y	Y	Y	Y
Loan-year fixed effects	Y	Y	Y	Y
Observations	9,319	77,616	15,990	67,630
R^2	0.919	0.874	0.918	0.872

Appendix IA.IX. Relationships matter

This table examines heterogeneity across the bank-borrower relationship dimension in the effects of bank regulatory capital for loan sales. The unit of observation in each regression is a loan share-bank-year triple. The dependent variable is an indicator variable equal to one if a lender reduces its ownership stake in a loan that it funded in the previous year. We identify observations as having strong prior bank-borrower relationships according to whether the bank has: provided a prior loan to the borrower (Columns [1] and [2]); provided an above-median number of prior loans (scaled by the number of prior loans extended) to the borrower (Columns [3] and [4]); or provided an above-median dollar value of loans (scaled by the dollar value of prior loans extended) to the borrower (Columns [5] and [6]). We use a five year look back period for each bank-borrower pair. The sample of loan sales is from 2002 to 2014. All columns include controls for bank and loan-year fixed effects, and an indicator variable for whether the bank has undergone a merger in the past year. All variables are defined in Appendix A. Standard errors (in parentheses) are clustered at the loan level. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable: *Loan Sale*$_{ijt}$						
Relationship variable:	Any prior loan		Prior lender (count)		Prior lender (dollars)	
	No	Yes	Low	High	Low	High
	[1]	[2]	[3]	[4]	[5]	[6]
Tier 1 Capital/RWA$_{t-1}$	–0.130***	–0.164	–0.137***	–0.184	–0.124**	–0.018
	(0.055)	(0.114)	(0.051)	(0.114)	(0.052)	(0.153)
Bank controls	Y	Y	Y	Y	Y	Y
Bank fixed effects	Y	Y	Y	Y	Y	Y
Loan-year fixed effects	Y	Y	Y	Y	Y	Y
Observations	56,032	32,433	69,640	32,302	67,219	21,554
R^2	0.888	0.875	0.881	0.875	0.884	0.881

Appendix IA.X. Nonbank entry by loan type

This table shows the effects of bank regulatory capital for loan acquisition by nonbanks across loan types. The unit of observation in each regression is a loan-year. The dependent variable is the fraction of the loan held by nonbanks. Columns [1] and [2] partition the sample of term loans by maturity, whereby short maturity loans have a remaining maturity of three years or less. Columns [3] and [4] separately examine term loans and credit lines. Bank controls are coded at the loan syndicate level by taking the simple (equally-weighted) average across syndicate member banks. The sample period is from 1993 to 2014. Where indicated, the columns include controls for bank, loan, and year fixed effects, and loan controls (a regulatory pass/fail dummy and the natural logarithm of loan maturity). All variables are defined in Appendix A. Standard errors (in parentheses) are clustered at the year level. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable: *Nonbank Share*$_{it}$				
Syndicate aggregation: Mean (EW)				
Loan type:	Loan maturity		Facility type	
	Short	Long	Term loan	Credit line
	[1]	[2]	[3]	[4]
Tier 1 Capital/RWA$_{t-1}$	–0.247	–2.221***	–1.582***	–0.233
	(0.709)	(0.637)	(0.640)	(0.252)
Bank controls	Y	Y	Y	Y
Loan controls	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
Observations	15,822	13,299	29,121	89,341
R^2	0.138	0.219	0.203	0.052

Appendix IA.XI. More loan controls in nonbank entry tests

This table shows the effects of bank regulatory capital for loan acquisition by nonbanks on the inclusion of additional loan controls. These additional loan controls include loan size both in terms of loan amount and loan syndicate size, as well as dummy variables for the loan's purpose. The unit of observation in each regression is a loan-year. The dependent variable is the fraction of the loan held by nonbanks. Bank controls are coded at the loan syndicate level by taking the simple (equally-weighted) average across syndicate member banks. The sample period is from 1993 to 2014. Where indicated, the columns include controls for bank, loan, and year fixed effects, and loan controls (a regulatory pass/fail dummy and the natural logarithm of loan maturity). All variables are defined in Appendix A. Standard errors (in parentheses) are clustered at the year level. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable: *Nonbank Share*$_{it}$		
Syndicate aggregation: Mean (EW)		
	[1]	[2]
Tier 1 Capital/RWA$_{t-1}$	–1.582**	–1.636***
	(0.640)	(0.478)
Bank controls	Y	Y
Loan controls	Y	Y
Additional loan controls	N	Y
Year fixed effects	Y	Y
Observations	29,121	29,121
R^2	0.203	0.544

Appendix IA.XII. Affiliated nonbank entry

This table shows the effects of bank regulatory capital for loan acquisition by affiliated nonbanks across various measures of bank regulatory capital. The unit of observation in each regression is a loan-year. The dependent variable is the fraction of the loan held by affiliated nonbanks. Affiliated nonbanks are classified by the SNC as nonbanks entities that belong to the same BHC as the lender holding the loan share. Bank controls are coded at the loan syndicate level by taking the simple (equally-weighted) average across syndicate member banks. The sample period is from 1993 to 2014. Where indicated, the columns include controls for bank, loan, and year fixed effects, and loan controls (a regulatory pass/fail dummy and the natural logarithm of loan maturity). All variables are defined in Appendix A. Standard errors (in parentheses) are clustered at the year level. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable: *Affiliated Nonbank Share*$_{it}$				
Syndicate aggregation: Mean (EW)				
	[1]	[2]	[3]	[4]
Tier 1 Capital/RWA$_{t-1}$	0.028*			
	(0.015)			
Tier 1 Gap$_{t-1}$		0.019*		
		(0.011)		
Total Capital/RWA$_{t-1}$			0.023	
			(0.014)	
Tier 1 Leverage$_{t-1}$				0.033
				(0.024)
Bank controls	Y	Y	Y	Y
Loan controls	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
Observations	29,121	29,107	29,121	29,121
R^2	0.090	0.095	0.090	0.090

Appendix IA.XIII. Basel III quasi-experiment: Further robustness checks

This table further examines the effects of the 2012:Q2 proposed changes in bank capital regulation under Basel III for loan sales. Panel A re-estimates the baseline regression models (see Table 3) for the subsample of Expanded Reporter banks. Panel B uses an alternative measure of bank exposure to the capital shock, *Basel III Total Capital Shortfall*, which measures the bank-level difference between the current (under Basel I) and proposed level of total regulatory capital under Basel III. Panel C falsely assigns the change in capital regulation to 2012:Q2. Panel D examines the loan syndicate-level change in the nonbank share as the dependent variable and aggregates the independent variables to the syndicate level under various alternative methods. The nature and timing of the control variables included in Panel A (Panels B, C, and D) are described in Table 3 (Table 8). Standard errors (in parentheses) are clustered at the loan and year levels whenever *Loan Sale* and Δ*Nonbank Share* are put as dependent variables, respectively. Where "N/A" is shown, this indicates that the controls in question cannot be included. All variables are defined in Appendix A. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Panel A: Expanded reporters only

Dependent variable: *Loan Sale*$_{ijt}$			Regulatory rating	
	Baseline	Dynamic	Pass	Fail
	[1]	[2]	[3]	[4]
Tier 1 Capital/RWA$_{t-1}$	–0.311**	–0.316**	–0.297**	–0.624
	(0.104)	(0.155)	(0.147)	(0.412)
Tier 1 Capital/RWA$_{t-1}$ × *TED*$_t$		–0.317***		
		(0.114)		
Bank controls	Y	Y	Y	Y
Bank controls × *TED*$_t$	N	Y	N	N
Bank fixed effects	Y	Y	Y	Y
Loan-year fixed effects	Y	Y	Y	Y
Observations	29,279	29,279	24,664	4,615
R^2	0.874	0.875	0.888	0.801

Panel B: Alternative bank capital definition

Dependent variable: *Loan Sale*$_{ij}$	All shares	Exclude FIRE	No amend
	[1]	[2]	[3]
Basel III Total Capital Shortfall	–0.332***	–0.429***	–0.393***
	(0.118)	(0.127)	(0.133)
Bank controls	Y	Y	Y
Loan fixed effects	Y	Y	Y
Observations	218,252	188,932	143,345
R^2	0.136	0.134	0.125

Panel C: Placebo event (2012:Q2)

Dependent variable:	$Loan\ Sale_{ij}$		$\Delta Nonbank\ Share_i$	
	[1]	[2]	[3]	[4]
Basel III Tier 1 Shortfall	0.224		–0.043	
	(0.165)		(0.160)	
Basel III Total Capital Shortfall		0.206		–0.269
		(0.151)		(0.422)
Bank controls	Y	Y	Y	Y
Loan fixed effects	Y	Y	N/A	N/A
Loan controls	N/A	N/A	Y	Y
Observations	212,855	212,855	2,001	2,122
R^2	0.154	0.074	0.020	0.010

Panel D: Alternative syndicate aggregation

Dependent variable: $\Delta Nonbank\ Share_i$

Syndicate aggregation:	EW	VW	Median	Dominant	Lead
	[1]	[2]	[3]	[4]	[5]
Basel III Tier 1 Shortfall	–0.173**	–0.121	–0.130*	–0.201*	–0.008
	(0.076)	(0.192)	(0.073)	(0.104)	(0.071)
Bank controls	Y	Y	Y	Y	Y
Loan controls	Y	Y	Y	Y	Y
Observations	2,121	2,121	2,121	2,121	2,121
R^2	0.017	0.014	0.016	0.018	0.014

Appendix IA.XIV. Selection: Unstable and stable nonbank entry by loan type

This table shows the effects of bank regulatory capital for loan acquisition by nonbanks across nonbank types. The unit of observation in each regression is a loan-year. The dependent variable is either the fraction of the loan held by stable or unstable nonbanks. Nonbanks with unstable liabilities include broker-dealers, hedge funds, and other investment funds, and nonbanks with stable liabilities include insurance companies and pension funds. Columns [2] and [4] restrict the sample to loans classified as "Fail" by the examining agency. These are loans rated special mention, substandard, doubtful, or loss. Independent variables—bank controls shown in Table 3—are coded at the loan syndicate level by taking the simple (equally-weighted) average across syndicate member banks. The sample period is from 1993 to 2014. Where indicated, the columns include controls for bank, loan, and year fixed effects, and loan controls (a regulatory pass/fail dummy and the natural logarithm of loan maturity). All variables are defined in Appendix A. Standard errors (in parentheses) are clustered at the year level. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable:	*Stable Nonbank Share*$_{it}$		*Unstable Nonbank Share*$_{it}$	
	All	Fail	All	Fail
	[1]	[2]	[3]	[4]
Tier 1 Capital/RWA$_{t-1}$	–0.166***	–0.109**	–0.693**	–0.617
	(0.033)	(0.049)	(0.270)	(0.427)
Bank controls	Y	Y	Y	Y
Loan controls	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
Observations	29,121	5,380	29,121	5,380
R^2	0.028	0.039	0.119	0.138

Appendix IA.XV. Selection: Ex-ante observable borrower-level differences by nonbank share

This table analyzes the relation between borrower characteristics and nonbank, stable nonbank, and unstable nonbank share prior to the crisis (i.e., as of 2006:Q4). The sample includes SNC borrowers that are matched with Compustat. Nonbanks with unstable liabilities include broker-dealers, hedge funds, and other investment funds, and nonbanks with stable liabilities include insurance companies and pension funds. Panel A examines univariate differences between borrower groups that differ in terms of above-median loan funding coming from nonbanks (Columns [4] and [5]), stable nonbanks ([6] and [7]), and unstable nonbanks ([8] and [9]). Raw and normalized differences are reported in Columns [10] and [11]. We indicate normalized differences in excess of 0.25 with a "+" as per the Imbens and Rubin (2007) rule of thumb. In Panel B, these relations are examined within the corresponding multivariate regression framework. Nonbank share is continuously measured as a dependent variable. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively. All variables are defined in Appendix A.

Panel A: Univariate comparison of borrower characteristics (all measured 2006:Q4)

		All borrowers		High non-bank share		High stable share		High un-stable share		All vs. high nonbank	Stable vs. unstable
	N	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	Raw diff. [Norm. diff.]	Raw diff. [Norm. diff.]
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Log(Assets)	887	7.73	1.16	7.92	1.58	7.81	1.31	7.55	1.12	–0.20 [–0.12]	0.26 [0.21]
Sales Level	887	1.08	0.81	1.06	0.82	1.04	0.82	0.94	0.67	0.02 [0.03]	0.10 [0.13]
Tangibility	887	0.33	0.24	0.34	0.23	0.33	0.22	0.28	0.21	–0.00 [–0.02]	0.05 [0.23]
Leverage	887	0.33	0.44	0.42	0.59	0.54	0.89	0.56	0.76	–0.09 [–0.17]	–0.01 [–0.01]
Sales Growth	887	–0.06	0.15	–0.06	0.16	–0.08	0.16	–0.09	0.16	–0.01 [–0.04]	0.01 [0.04]
Cash Flow	887	0.15	0.17	0.14	0.23	0.15	0.14	0.14	0.12	0.01 [0.05]	0.01 [0.10]
Liquid Assets	887	0.07	0.09	0.06	0.09	0.06	0.07	0.06	0.06	–0.01 [–0.05]	0.01 [0.12]
Current Ratio	887	1.67	0.99	1.63	0.89	1.63	0.85	1.72	0.84	0.05 [0.05]	–0.09 [–0.11]
Dividend Payer	887	0.59	0.49	0.57	0.50	0.48	0.50	0.38	0.50	0.03 [0.06]	0.10 [0.21]
Market-to-Book	887	1.73	1.03	1.66	1.15	1.69	1.34	1.64	1.16	0.07 [0.06]	0.05 [0.04]

Panel B: Determinants of nonbank share (2006:Q4)

Dependent variable:	Loan share$_{2006:Q4}$		
	Nonbank	Unstable	Stable
	[1]	[2]	[3]
Log(Assets)$_{2006:Q4}$	–0.028***	–0.005**	–0.001*
	(0.009)	(0.002)	(0.001)
Sales Level$_{2006:Q4}$	–0.005	0.001	0.001
	(0.013)	(0.004)	(0.002)
Tangibility$_{2006:Q4}$	0.058	0.014	0.010**
	(0.080)	(0.021)	(0.005)
Leverage$_{2006:Q4}$	0.052*	0.002	0.004
	(0.030)	(0.005)	(0.003)
Sales Growth$_{2006:Q4}$	–0.039	–0.014	–0.002
	(0.052)	(0.016)	(0.003)
Cash Flow$_{2006:Q4}$	–0.022	0.003	–0.000
	(0.040)	(0.009)	(0.002)
Liquid Assets$_{2006:Q4}$	0.138	0.031	0.012*
	(0.153)	(0.040)	(0.007)
Current Ratio$_{2006:Q4}$	0.016	0.005	0.001
	(0.017)	(0.005)	(0.001)
Dividend Payer$_{2006:Q4}$	–0.004	–0.005	–0.003
	(0.026)	(0.006)	(0.002)
Market-to-Book$_{2006:Q4}$	–0.017	–0.003	–0.002
	(0.011)	(0.003)	(0.001)
Industry fixed effects	Y	Y	Y
Observations	891	891	891
R^2	0.654	0.574	0.396

Appendix IA.XVI. Selection: Ex-post performance by nonbank share

This table analyzes the relation between borrower performance during the crisis (i.e., 2008) and nonbank, stable nonbank, and unstable nonbank share prior to the crisis (i.e., as of 2006:Q4). Nonbanks with unstable liabilities include broker-dealers, hedge funds, and other investment funds, and nonbanks with stable liabilities include insurance companies and pension funds. The relations between ex-post borrower performance and nonbank funding (measured continuously) are examined within an OLS regression framework. In Panel A, the sample is restricted to the set of SNC borrowers that can be matched to data on covenant violations made available by Amir Sufi. The dependent variable is a dummy variable for whether a firm reports a covenant violation in its SEC filings during any quarter of the year 2008. In Panel B, the sample is restricted to the set of SNC borrowers that can be matched to Compustat. The dependent variables are a dummy variable for whether the borrower experiences a credit rating downgrade in any quarter in 2008 (Columns [1] to [4]), and its operating cash flow ([5] to [8]) and market-to-book ratio ([9] to [12]) measured as of 2008:Q4. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively. All variables are defined in Appendix A.

Panel A: Ex-post debt covenant violations

Dependent variable: *Covenant Violation*$_{2008}$

	[1]	[2]	[3]	[4]
Nonbank Share$_{2006:Q4}$	–0.025			
	(0.188)			
Unstable Nonbank Share$_{2006:Q4}$		0.024		–0.072
		(0.482)		(0.451)
Stable Nonbank Share$_{2006:Q4}$			1.714	1.824
			(4.756)	(4.825)
Log(Assets)$_{2006:Q4}$	–0.017	–0.017	–0.017	–0.016
	(0.033)	(0.033)	(0.033)	(0.033)
Sales Level$_{2006:Q4}$	0.107*	0.108*	0.109*	0.109*
	(0.062)	(0.063)	(0.063)	(0.063)
Tangibility$_{2006:Q4}$	0.077	0.077	0.073	0.074
	(0.198)	(0.197)	(0.199)	(0.199)
Leverage$_{2006:Q4}$	0.164**	0.162**	0.157**	0.158**
	(0.071)	(0.073)	(0.073)	(0.074)
Sales Growth$_{2006:Q4}$	–0.229	–0.229	–0.227	–0.227
	(0.193)	(0.193)	(0.192)	(0.193)
Cash Flow$_{2006:Q4}$	–0.920*	–0.927*	–0.933*	–0.934*
	(0.507)	(0.500)	(0.501)	(0.501)
Liquid Assets$_{2006:Q4}$	0.389	0.386	0.381	0.380
	(0.367)	(0.367)	(0.366)	(0.367)
Current Ratio$_{2006:Q4}$	–0.071**	–0.071**	–0.072**	–0.072**
	(0.028)	(0.029)	(0.028)	(0.029)
Dividend Payer$_{2006:Q4}$	0.016	0.015	0.016	0.016
	(0.064)	(0.064)	(0.063)	(0.063)
Market-to-Book$_{2006:Q4}$	0.038	0.039	0.039	0.039
	(0.055)	(0.055)	(0.055)	(0.055)
Industry fixed effects	Y	Y	Y	Y
Observations	467	467	467	467
R^2	0.432	0.432	0.433	0.433

Panel B: Additional measures of ex-post performance

Dependent variable:	*Credit Rating Downgrade*$_{2008}$				*Cash Flow*$_{2008:Q4}$				*Market-to-Book*$_{2008:Q4}$			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Nonbank Share$_{2006:Q4}$	0.210				–0.041				–0.151			
	(0.212)				(0.039)				(0.188)			
Unstable Nonbank Share$_{2006:Q4}$		0.222		0.045		–0.086		–0.087		–0.740		–0.812
		(0.730)		(0.789)		(0.087)		(0.077)		(0.638)		(0.638)
Stable Nonbank Share$_{2006:Q4}$			2.807	2.767			–0.145	0.129			–0.542	0.919
			(2.684)	(2.852)			(0.451)	(0.408)			(2.550)	(2.557)
Borrower controls (2006:Q4)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	391	391	391	391	325	325	325	325	318	318	318	318
R^2	0.451	0.447	0.451	0.451	0.860	0.859	0.859	0.859	0.922	0.922	0.923	0.923

Appendix IA.XVII. Firm-level real effects of nonbank lending during crisis

This table examines the effects of nonbank loan funding for firm-level outcomes during the crisis. The unit of observation in each regression is a firm. The sample is restricted to the set of firms receiving term loans matched from the SNC to Compustat. In Column [1], the dependent variable is the the symmetric growth rate of total firm-level debt liabilities defined as the difference between debt in year 2010 (t) and 2006 ($t-1$, pre-crisis) divided by the average on the debt in 2010 and 2006. The symmetric growth rate in the number of employees (Column [2]) and total firm assets (Column [3]) are defined analogously. Firm-level control variables include the pre-crisis natural logarithm of assets, cash-to-assets, intangibles-to-assets, market-to-book ratio, return-on-asses (i.e., income-to-assets), and the level of capex-to-assets, all winsorized at the 1% level. Each regression also includes industry fixed effects. All variables are defined in Appendix A. Heteroskedasticity-robust standard errors clustered at the industry-level are reported in parentheses. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable: Growth rate in...	$Total\ Debt_{f,t}$	$Employment_{f,t}$	$Total\ Assets_{f,t}$
	[1]	[2]	[3]
$Nonbank\ Share_{f,t-1}$	–0.121*	–0.126*	–0.175**
	(0.068)	(0.069)	(0.081)
Firm controls	Y	Y	Y
Industry fixed effects	Y	Y	Y
Observations	669	648	669
R^2	0.391	0.326	0.355

Appendix IA.XVIII. Primary market reallocations between banks and nonbanks

This table examines the time-series dynamics of lead share and nonbank share at the time of origination for the full sample of SNC loans. The unit of observation in each regression is a loan, i.e., each loan appears in the sample only once. The dependent variables are the lead share (Column [1]) and nonbank share (Column [2]) of a given loan at the time of origination in the primary market. The table displays coefficients on dummy variables capturing the year of origination, where the year 2006 is the omitted group. Each column includes borrower industry fixed effects and the full set of loan-level control variables shown in Table 10. All variables are defined in Appendix A. Heteroskedasticity-robust standard errors clustered at the industry-level are reported in parentheses. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable:	*Lead Share*$_i$	*Nonbank Share*$_i$
	[1]	[2]
$Year_{2002}$	0.013	0.003
	(0.012)	(0.022)
$Year_{2003}$	0.020*	–0.011
	(0.011)	(0.014)
$Year_{2004}$	0.009	–0.014
	(0.007)	(0.017)
$Year_{2005}$	0.013	–0.012
	(0.014)	(0.021)
$Year_{2007}$	0.016**	–0.041**
	(0.007)	(0.016)
$Year_{2008}$	0.020**	–0.069***
	(0.009)	(0.020)
$Year_{2009}$	0.016	–0.038
	(0.021)	(0.030)
Loan controls	Y	Y
Industry fixed effects	Y	Y
Observations	5,603	5,603
R^2	0.387	0.431

Appendix IA.XIX. Selection: Ex-ante observable loan-level differences by nonbank share

This table analyzes the relation between loan characteristics and nonbank, stable nonbank, and unstable nonbank share prior to the crisis (i.e., as of 2006:Q4). The sample includes SNC loans that are matched with the LSTA data. Nonbanks with unstable liabilities include broker-dealers, hedge funds, and other investment funds, and nonbanks with stable liabilities include insurance companies and pension funds. Panel A examines univariate differences between borrower groups that differ in terms of above-median loan funding coming from nonbanks (Columns [4] and [5]), stable nonbanks ([6] and [7]), and unstable nonbanks ([8] and [9]). Raw and normalized differences are reported in Columns [10] and [11]. We indicate normalized differences in excess of 0.25 with a "+" as per the Imbens and Rubin (2007) rule of thumb. In Panel B, the relation between the loan price level as of 2006:Q4 ($Loan\ Price_{2006:Q4}$) and nonbank funding is examined within the corresponding multivariate regression framework. Nonbank share is continuously measured as an independent variable. Columns include the bank controls shown in Table 3 (equal-weighted average across syndicate members). Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively. All variables are defined in Appendix A.

Panel A: Univariate comparison of loan characteristics (2006:Q4)

		All loans		High non-bank share		High stable share		High un-stable share		All vs. high nonbank	Stable vs. unstable
	N	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	Raw diff. [Norm. diff.]	Raw diff. [Norm. diff.]
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
$Non\text{-}Pass_{2006:Q4}$	116	0.18	0.39	0.24	0.43	0.25	0.43	0.25	0.43	–0.06 [–0.15]	–0.01 [–0.01]
$Remaining\ Maturity_{2006:Q4}$	116	3.66	1.16	4.16	1.02	4.09	1.02	4.09	0.99	–0.49^{+} [–0.45]	–0.05 [–0.05]
$Loan\ Size_{2006:Q4}$	116	300	790	452	557	476	455	459	480	–152 [–0.16]	17 [0.04]
$Syndicate\ Size_{2006:Q4}$	116	6.96	5.30	4.60	3.41	5.51	5.62	4.52	3.05	2.37^{+} [0.53]	0.99 [0.22]
$Loan\ Price_{2006:Q4}$	116	0.98	0.02	0.98	0.03	0.98	0.03	0.98	0.03	–0.00 [–0.00]	0.01 [0.18]

Panel B: Determinants of loan price level (2006:Q4)

Dependent variable: *Loan Price*$_{2006:Q4}$

	[1]	[2]	[3]	[4]
Nonbank Share$_{2006:Q4}$	–0.026			
	(0.367)			
Unstable Nonbank Share$_{2006:Q4}$		–2.110		–2.087
		(1.619)		(1.650)
Stable Nonbank Share$_{2006:Q4}$			–1.561	–0.430
			(3.565	(3.567)
Non-Pass$_{2006:Q4}$	–1.225***	–1.178***	–1.203***	–1.172***
	(0.420)	(0.418)	(0.437)	(0.442)
Log(Remaining Maturity)$_{2006:Q4}$	–0.189**	–0.146**	–0.195**	–0.148**
	(0.081)	(0.071)	(0.078)	(0.073)
Log(Loan Size)$_{2006:Q4}$	0.127	0.133	0.132	0.135
	(0.139)	(0.131)	(0.139)	(0.136)
Syndicate Size$_{2006:Q4}$	–0.024	–0.032*	–0.024	–0.032*
	(0.018)	(0.018)	(0.017)	(0.019)
Bank controls (synd. avg.)	Y	Y	Y	Y
Observations	116	116	116	116
R^2	0.436	0.453	0.437	0.453

Appendix IA.XX. Effects of banks' unstable liabilities on trading and prices

This table examines the effects of banks' unstable liabilities for loan sales and the change in the secondary market loan price during the crisis. In Columns [1] and [2] the unit of observation in the regression is a loan share-bank-year triple. The dependent variable is an indicator variable equal to one if a lender—classified as either bank or nonbank—reduced its ownership stake in a loan that it funded in the previous year. In Columns [3] to [4] the unit of observation in each regression is a loan. The dependent variable is the 2007 to 2008 change in the price level. The price level is measured as the average bid-ask midpoint. Bank-level wholesale funding dependence is measured as the sum of large time deposits, foreign deposits, repo sold, other borrowed money, subordinated debt, and federal funds purchased (scaled by total assets). Bank-level variables are averaged across all bank syndicated members (equally-weighted) as of 2006:Q4. Loan-level variables are measured as of 2006:Q4, except for *Non-Pass*, which is measured over 2007 and 2008. Where indicated, columns include the bank controls shown in Table 3 (equal-weighted average across syndicate members), as well as loan-year fixed effects. All variables are defined in Appendix A. Where "N/A" is shown, this indicates that the controls in question cannot be included in the regression. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Dependent variable:	$Loan\ Sale_{ij}$		$\Delta Loan\ Price_{ij}$	
Syndicate aggregation:	None	None	EW	EW
	[1]	[2]	[3]	[4]
$Wholesale\ Funding_{2006:Q4}$	0.043*	0.060**	–0.527**	–0.412***
	(0.025)	(0.025)	(0.248)	(0.156)
Bank controls	Y	Y	Y	Y
Loan controls	N	Y	N	Y
Loan-year fixed effects	Y	Y	N/A	N/A
Observations	15,717	15,717	251	251
R^2	0.808	0.808	0.048	0.447

Appendix IA.XXI. Credit availability during good times

This table examines the effects of nonbank loan funding for the credit availability during the period from 2003 until 2006. The unit of observation in each regression is a loan. In Panel A, the dependent variable is the symmetric credit growth rate defined as the difference between credit in year t and $t-1$ divided by the average of credit in t and $t-1$. In Panel B, the dependent variable is a loan exit dummy, which is equal to one if the loan (present in $t-1$) has exited the SNC sample by t. Bank-level variables (see Table 3) are averaged across all bank syndicate members (equally-weighted) as of $t-1$. Loan-level control variables (see Table 11) are measured as of year $t-1$. All variables are defined in Appendix A. Heteroskedasticity-robust standard errors clustered at the industry-level are reported in parentheses. ***, **, * denote 1%, 5%, and 10% statistical significance, respectively.

Panel A: Annual credit growth rate				
Dependent variable: *Credit Growth*$_t$				
Year:	2003	2004	2005	2006
	[1]	[2]	[3]	[4]
Nonbank Share$_{t-1}$	–0.046	–0.059	–0.030	–0.004
	(0.038)	(0.100)	(0.109)	(0.078)
Loan controls	Y	Y	Y	Y
Bank controls (synd. avg.)	Y	Y	Y	Y
Observations	4,862	4,875	5,204	5,754
R^2	0.124	0.188	0.165	0.186

Panel B: Annual loan exit rate				
Dependent variable: *Exit*$_t$				
Year:	2003	2004	2005	2006
	[1]	[2]	[3]	[4]
Nonbank Share$_{t-1}$	–0.034	–0.017	–0.000	–0.076
	(0.051)	(0.054)	(0.039)	(0.047)
Loan controls	Y	Y	Y	Y
Bank controls (synd. avg.)	Y	Y	Y	Y
Observations	4,862	4,875	5,204	5,754
R^2	0.172	0.157	0.186	0.156