Online Appendix

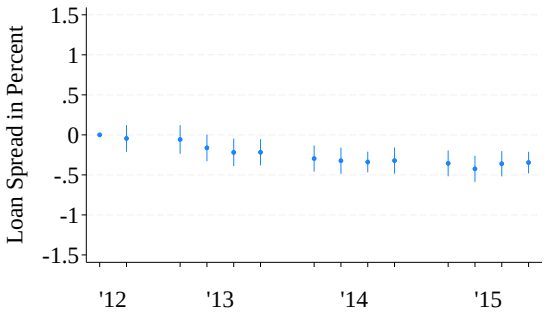
A Additional Results

Table A.1: Summary Statistics

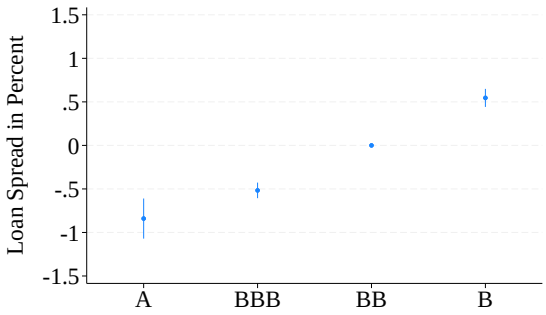
	Mean	Std. Dev.	p5	p25	Median	p75	p95	N. Obs.
Interest Rate	3.95	1.92	1.55	2.56	3.51	4.83	7.91	160,627
Spread	2.48	1.14	0.97	1.67	2.36	3.12	4.48	160,627
Relationship Length (quarters)	5.42	9.28	0.00	0.00	0.00	7.00	27.00	160,627
Normalized Relationship Length	0.82	1.17	0.00	0.00	0.00	1.68	3.06	160,627
Leverage	0.61	69.47	0.00	0.18	0.34	0.51	0.81	130,495
Short-Term Debt (millions)	205.53	24,119.96	0.00	0.00	0.04	3.12	72.93	136,117
Current Maturities of LT Debt (millions)	132.47	11,601.18	0.00	0.00	0.21	3.00	81.09	137,055
Long-Term Debt (billions)	1.29	62.34	0.00	0.00	0.00	0.11	2.76	138,073
Total Assets, Current (billions)	5.95	489.46	0.00	0.01	0.04	0.48	7.26	138,682
Log Sales	18.44	2.34	15.13	16.82	18.12	20.04	22.54	131,212
Net Sales, Current (millions)	2,786.91	93,817.84	0.05	16.14	62.65	438.19	5,765.00	138,855
Expected Loss	0.35	0.74	0.02	0.08	0.18	0.39	1.16	90,221
Interest Coverage	-311.61	278701.17	-3.17	2.20	6.10	17.48	124.41	111,887
Operating Income (millions)	383.44	22,539.35	-1.93	0.56	3.35	35.27	603.00	118,457
Interest Expense (millions)	61.81	2,670.03	0.00	0.06	0.38	6.07	130.31	137,642
Ticker (=1 if present)	0.13	0.34	0.00	0.00	0.00	0.00	1.00	160,627
Cusip (=1 if present)	0.14	0.34	0.00	0.00	0.00	0.00	1.00	160,627

Notes: The table presents summary statistics for variables used throughout the analysis. Spreads equal the difference between the interest rate of a newly originated loan and the reference rate. Relationship Length equals the difference in the number of quarters between the current loan origination and the earliest observed loan in that bank-firm pair. The variable is then normalized by dividing by the mean relationship length in each quarter. Leverage is equal to (Short Term Debt + Current Maturities of Long-Term (LT) Debt + Long-Term Debt)/Total Assets. Log Sales equals the log of Current Net Sales. Expected Loss equals the product of Probability of Default, Loss Given Default, and Exposure at Default, divided by the committed loan amount. Interest Coverage equals Operating Income divided by Interest Expense.

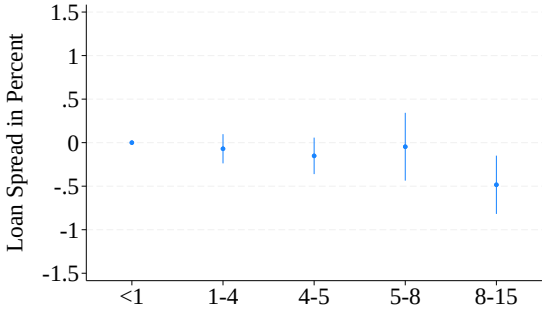
Figure A.1: Impact of Loans Characteristics on Loan Spreads (Regime 1)



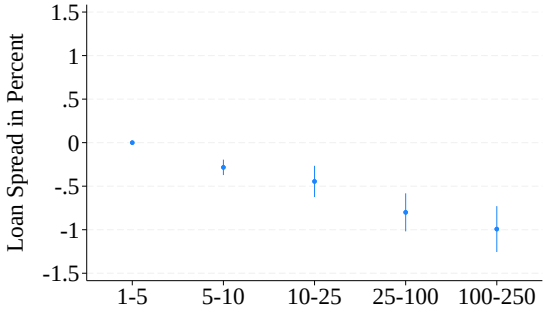
(A) Loan Origination Date Fixed Effect



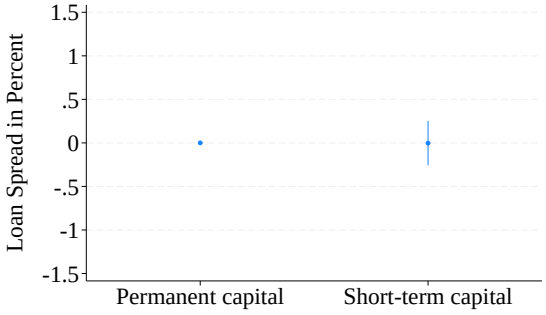
(B) Loan Rating Fixed Effects



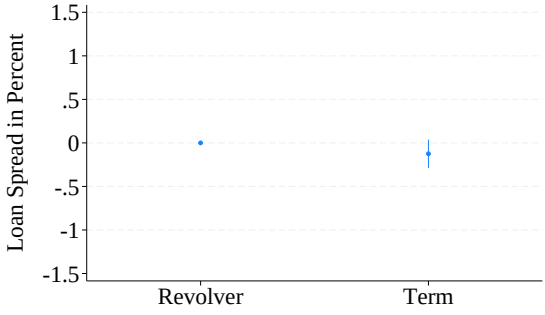
(C) Maturity Fixed Effect (years)



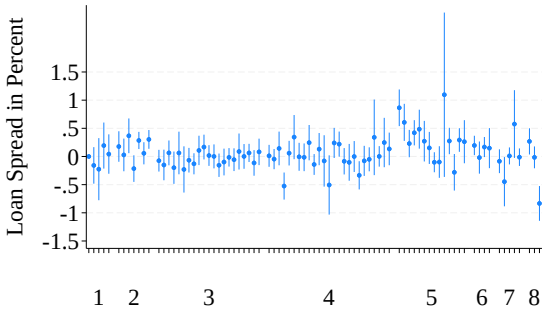
(D) Committed Loan Size Fixed Effect (millions)



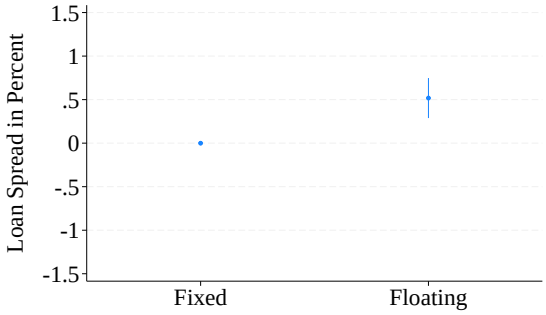
(E) Loan Purpose Fixed Effects



(F) Term Loan vs. Revolver Fixed Effects



(G) 3-Digit NAICS Fixed Effect



(H) Loan Rate Type Fixed Effect

Note: Notes: These graphs show the coefficients and 95 percent confidence intervals of a regression of the loan spread at the origination date of the loan on various fixed effects. The sample covers the 66,829 originations (the same sample as Table 1) from 2012:Q4 to 2015:Q4. Figure (G)'s x-axis displays 1-digit NAICS categories, but fixed effects are estimated at the 3-digit level.

Table A.2: Average Loan Characteristics By Maturity

	All Bins	0-1	1-4	4-5	5-8	8-15
Number of Banks	13.00	12.35	13.43	13.43	12.37	11.30
	(4.88)	(4.32)	(4.88)	(5.32)	(4.53)	(4.35)
Number of Loans	222.48	339.01	231.66	196.86	99.69	109.30
	(379.65)	(665.19)	(284.63)	(240.83)	(113.90)	(90.15)
Maturity (years)	3.72	0.75	2.70	4.91	6.39	10.54
	(2.33)	(0.12)	(0.31)	(0.07)	(0.42)	(0.50)
Loan Size (millions)	22.36	13.61	26.69	29.36	13.71	2.03
	(34.24)	(16.34)	(36.59)	(43.18)	(19.83)	(0.23)
Mean (spread)	2.33	2.41	2.35	2.26	2.37	2.21
	(0.71)	(0.67)	(0.68)	(0.76)	(0.77)	(0.57)
Median (spread)	2.19	2.31	2.21	2.08	2.23	2.06
	(0.70)	(0.66)	(0.68)	(0.73)	(0.72)	(0.53)
p90–p10 Range (spread)	2.41	2.38	2.38	2.42	2.48	2.41
	(0.93)	(1.02)	(0.74)	(1.00)	(1.03)	(0.94)
Interquartile Range (spread)	1.21	1.18	1.24	1.20	1.20	1.14
	(0.49)	(0.40)	(0.42)	(0.57)	(0.54)	(0.53)
Number of Bins	722	153	224	230	94	20

Note: This table presents summary statistics for the sample of 160,627 loan originations divided into 722 bins. Each number is calculated by first computing the average of a variable within a bin, then averaging the means across bins for a given characteristic. Columns 2-6 present averages for different maturity buckets. Standard deviations of the averages within bins are reported in parentheses.

Table A.3: Number of Search Costs and Average Search Costs Across Bins By Maturity

Number of Searches	Share (q_{iK})						Search Cost (Δ_{iK})					
	All	0-1	1-4	4-5	5-8	8-15	All	0-1	1-4	4-5	5-8	8-15
1	0.37	0.40	0.36	0.34	0.38	0.42	0.75	0.77	0.76	0.74	0.74	0.64
	(0.16)	(0.18)	(0.14)	(0.15)	(0.17)	(0.12)	(0.29)	(0.32)	(0.30)	(0.26)	(0.29)	(0.14)
2	0.48	0.45	0.49	0.50	0.46	0.43	0.32	0.33	0.32	0.31	0.32	0.29
	(0.13)	(0.14)	(0.11)	(0.13)	(0.15)	(0.12)	(0.13)	(0.15)	(0.14)	(0.12)	(0.14)	(0.07)
3	0.00	0.00	0.00	0.00	0.01	0.02	0.18	0.20	0.19	0.18	0.19	0.17
	(0.04)	(0.03)	(0.04)	(0.03)	(0.05)	(0.07)	(0.08)	(0.09)	(0.09)	(0.08)	(0.09)	(0.05)
4	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.13	0.12	0.13	0.12
	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.04)
N–1	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.03	0.03	0.04	0.04
	(0.01)	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.02)
N	0.14	0.15	0.14	0.14	0.15	0.13	0.00	0.00	0.00	0.00	0.00	0.00
	(0.07)	(0.08)	(0.06)	(0.08)	(0.08)	(0.05)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Note: This table presents the average estimates of q_{ik} and Δ_{ik} across bins containing loans of identical maturity for the sample of 160,627 loan originations grouped into 722 bins of loans of otherwise nearly identical characteristics. Maturity buckets are expressed in years (e.g., 1-4 refers to 1-4 years). The units for Δ_{iK} are percentage points, so numbers to the right of the decimal point are basis points. Standard deviations of the point estimates across bins within a category are in parentheses.

Table A.4: Average Loan Characteristics By Regime

	All Bins	R1	R2	R3	R4
Number of Banks	13.00	12.65	14.47	12.03	12.29
	(4.88)	(4.70)	(5.73)	(3.71)	(4.24)
Number of Loans	222.48	277.30	236.53	124.69	193.60
	(379.65)	(494.91)	(373.33)	(152.39)	(273.85)
Maturity (years)	3.72	3.73	3.95	3.56	3.50
	(2.33)	(2.26)	(2.59)	(2.16)	(2.17)
Loan Size (millions)	22.36	16.65	20.48	24.15	32.72
	(34.24)	(22.91)	(30.03)	(34.80)	(49.19)
Mean (spread)	2.33	2.39	2.15	2.47	2.38
	(0.71)	(0.80)	(0.62)	(0.69)	(0.65)
Median (spread)	2.19	2.24	2.01	2.31	2.26
	(0.70)	(0.76)	(0.62)	(0.70)	(0.65)
p90–p10 Range (spread)	2.41	2.62	2.24	2.44	2.28
	(0.93)	(1.07)	(0.83)	(0.81)	(0.86)
Interquartile Range (spread)	1.21	1.32	1.11	1.23	1.14
	(0.49)	(0.54)	(0.44)	(0.46)	(0.43)
Number of Bins	722	241	210	121	150

Notes: This table presents summary statistics for the sample of 160,627 loan originations divided into 722 bins. Each number is calculated by first computing the average of a variable within a bin, then averaging the means across bins for a given characteristic. Columns 2-5 present averages for different monetary policy regimes. R1 stands for Regime 1, R2 for Regime 2, R3 for Regime 3, and R4 for Regime 4. Standard deviations of the averages within bins are reported in parentheses.

Table A.5: Number of Search Costs and Average Search Costs Across Bins By Regime

Number of Searches	Share (q_{iK})					Search Cost (Δ_{iK})				
	All	R1	R2	R3	R4	All	R1	R2	R3	R4
1	0.37	0.37	0.35	0.36	0.39	0.75	0.86	0.69	0.65	0.73
	(0.16)	(0.17)	(0.15)	(0.15)	(0.16)	(0.29)	(0.33)	(0.24)	(0.22)	(0.26)
2	0.48	0.48	0.50	0.48	0.46	0.32	0.36	0.29	0.27	0.32
	(0.13)	(0.14)	(0.12)	(0.13)	(0.12)	(0.13)	(0.15)	(0.11)	(0.10)	(0.13)
3	0.00	0.00	0.00	0.01	0.00	0.18	0.21	0.17	0.16	0.19
	(0.04)	(0.05)	(0.03)	(0.06)	(0.01)	(0.08)	(0.10)	(0.07)	(0.06)	(0.08)
4	0.00	0.00	0.00	0.00	0.00	0.13	0.14	0.11	0.10	0.13
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.06)	(0.07)	(0.05)	(0.04)	(0.06)
N–1	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.03	0.03	0.04
	(0.01)	(0.00)	(0.00)	(0.03)	(0.00)	(0.03)	(0.04)	(0.03)	(0.02)	(0.03)
N	0.14	0.15	0.14	0.13	0.14	0.00	0.00	0.00	0.00	0.00
	(0.07)	(0.07)	(0.07)	(0.09)	(0.07)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Note: This table presents the average estimates of q_{ik} and Δ_{ik} across bins containing loans of identical monetary policy regimes for the sample of 160,627 loan originations grouped into 722 bins of loans of otherwise nearly identical characteristics. The units for Δ_{iK} are percentage points, so numbers to the right of the decimal point are basis points. R1 stands for Regime 1, R2 for Regime 2, R3 for Regime 3, and R4 for Regime 4. Standard deviations of the point estimates across bins within a category are in parentheses.

Table A.6: Loan Characteristics (Regime 1)

	Percent of obs	Percent of committed	Mean spread	Median spread	Mean interest rate	Median interest rate	Mean utilization	SD spread	Mean Expected Loss
Rating:									
A	1.7	3.0	1.78	1.67	2.07	1.95	63.91	0.90	0.04
BBB	28.1	42.4	2.05	1.90	2.42	2.20	65.98	0.99	0.10
BB	55.9	45.3	2.68	2.54	3.09	2.99	70.36	1.14	0.28
B	14.4	9.4	3.32	3.13	3.69	3.50	73.48	1.39	0.96
Committed (millions):									
1-5	55.8	9.4	2.82	2.74	3.28	3.25	73.10	1.17	0.38
5-10	12.7	7.1	2.59	2.42	2.92	2.70	70.89	1.24	0.31
10-25	15.4	19.5	2.40	2.17	2.72	2.45	68.15	1.23	0.30
25-100	15.2	54.8	1.92	1.70	2.24	2.00	57.69	1.03	0.20
100-250	0.9	9.2	1.54	1.42	1.80	1.68	46.04	0.64	0.11
Maturity (years):									
0-1	34.7	13.6	2.90	2.93	3.18	3.20	63.96	1.09	0.39
1-4	32.6	40.3	2.52	2.39	2.85	2.69	67.53	1.21	0.34
4-5	25.1	42.6	2.27	1.97	2.73	2.44	73.59	1.25	0.27
5-8	6.4	3.3	2.46	2.19	3.26	3.15	87.81	1.33	0.29
8-15	1.3	0.2	2.14	1.95	3.84	3.99	96.26	1.06	0.39
>15									
Loan type:									
Revolver, short-term capital	23.5	13.5	2.89	2.90	3.18	3.17	60.55	1.07	0.34
Revolver, general working capital	49.2	71.6	2.51	2.40	2.86	2.71	60.04	1.19	0.28
Term, short-term capital	8.0	2.6	2.34	2.08	2.82	2.65	95.78	1.32	0.26
Term, general working capital	19.4	12.2	2.47	2.27	3.09	2.92	93.42	1.31	0.41
Loan Rate type:									
Fixed	14.3	7.7	2.19	2.10	3.34	3.25	88.66	1.41	0.35
Floating	85.7	92.3	2.64	2.47	2.91	2.75	66.28	1.16	0.32

Note: This table reports summary statistics for the sample that only encompasses the first regime (from 2012Q4 until December 16, 2015). This sample includes 66,829 loan originations. We drop originations of revolver loans that were never drawn over the life of the loan, loans in bins with fewer than six unique banks, or bins with fewer than 20 loans. All values are calculated as of the origination date. Floating-rate loan spreads are calculated based on spreads to 3-month LIBOR or SOFR, depending on the period, and fixed-rate loan spreads are based on spreads to maturity-matched U.S. Treasury yield curves at origination. The mean utilization is the mean loan value in the category, defined as utilized divided by committed, calculated for each loan over its lifespan in the dataset.

Table A.7: Loan Spreads and Expected Loss (Regime 1)

	Loan Spread		
	(1)	(2)	(3)
Expected Loss Ratio			0.245**
			(0.078)
Observations	66,829	13,739	13,739
Bin FE	Y	Y	Y
R^2	0.25	0.26	0.27
RMSE	1.05	1.02	1.01

Note: Column 1 regresses the loan spread over a set of bin fixed effects, using the sample that only encompasses the first regime (from 2012Q4 until December 16, 2015). This sample includes 66,829 loan originations. Column 2 restricts the sample to observations for which expected loss data are available. Column 3 introduces the Expected Loss Ratio as a control variable; this ratio is calculated as the product of Probability of Default, Loss Given Default, and Exposure at Default, divided by the committed loan amount. RMSE stands for "Root Mean Squared Error". Robust standard errors in parentheses. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$