Panel A: Deposit Spread

kernel = epanechnikov, degree = 0, bandwidth = .66, pwidth = 1

Panel B: Loan Spread

kernel = epanechnikov, degree = 0, bandwidth = .61, pwidth = .92

Figure RP 1: Deposit Spread, Loan Spread, and the Federal Funds Rate

In this figure, we plot kernel regressions of average deposit and loan spreads for U.S. banks on the federal funds rate. We use an Epanechnikov kernel with a bandwidth of 0.66 for deposits and 0.61 for loans. The sample period is 1985–2017. The data frequency is quarterly. The deposit and loan rates are constructed using the Call Reports, and the federal funds rate is from the FRED database.
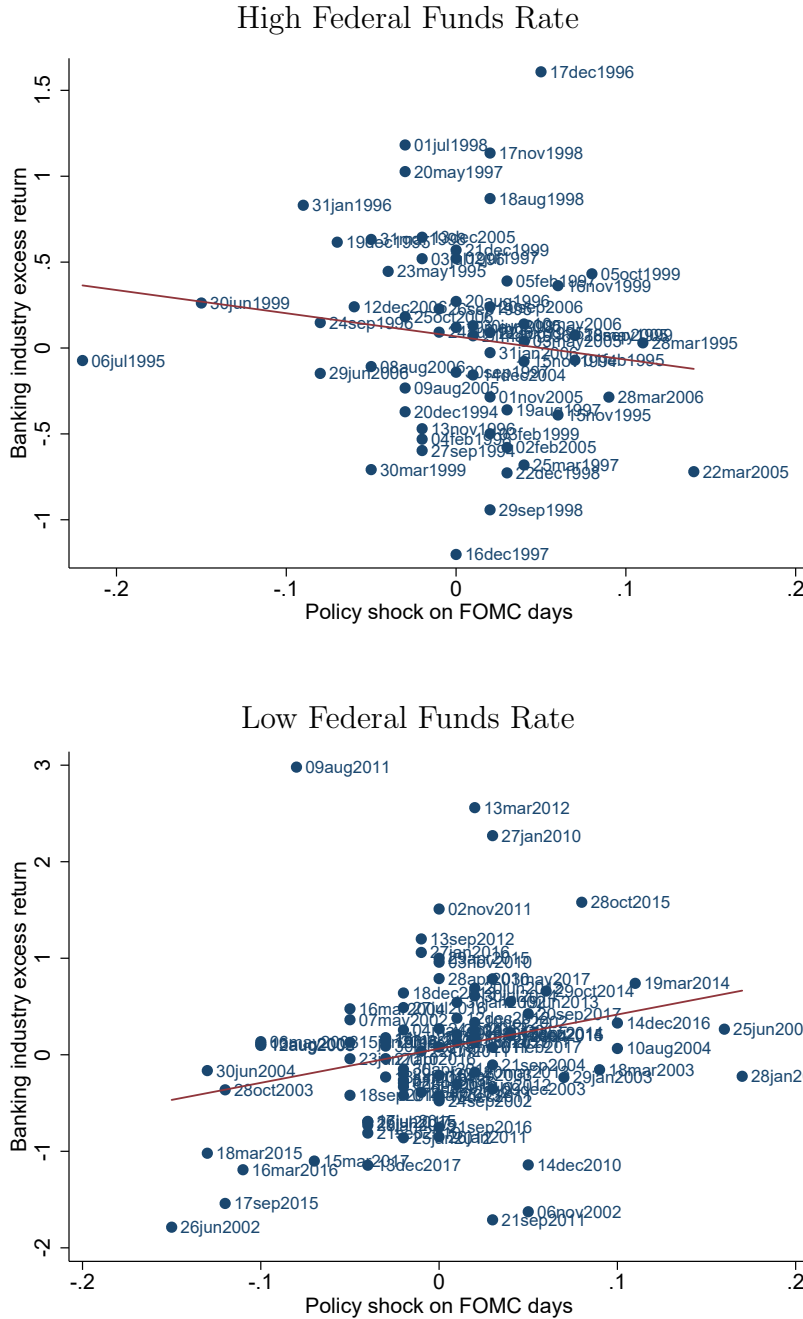
1

Figure RP 2: Monetary Policy Shocks and Bank Equity Returns

This figure provides scatter plots of bank industry excess returns against monetary policy shocks on FOMC days from 1994 to 2017. The excess returns are defined as the difference between bank industry index returns and market returns. Monetary policy shocks are measured by one-day changes in two-year Treasury yields on FOMC days. The sample for the upper panel constitutes observations in which the starting level of the federal funds rate is above 2%. The sample the lower panel constitutes observations in which the starting level of the federal funds rate is below 2%. We exclude observations during the collapse of the dot-com bubble (2000-2001) and the financial crisis (2007-2009). Bank industry stock returns are from Kenneth French's website, and the two-year Treasury yield is from the FRED database.
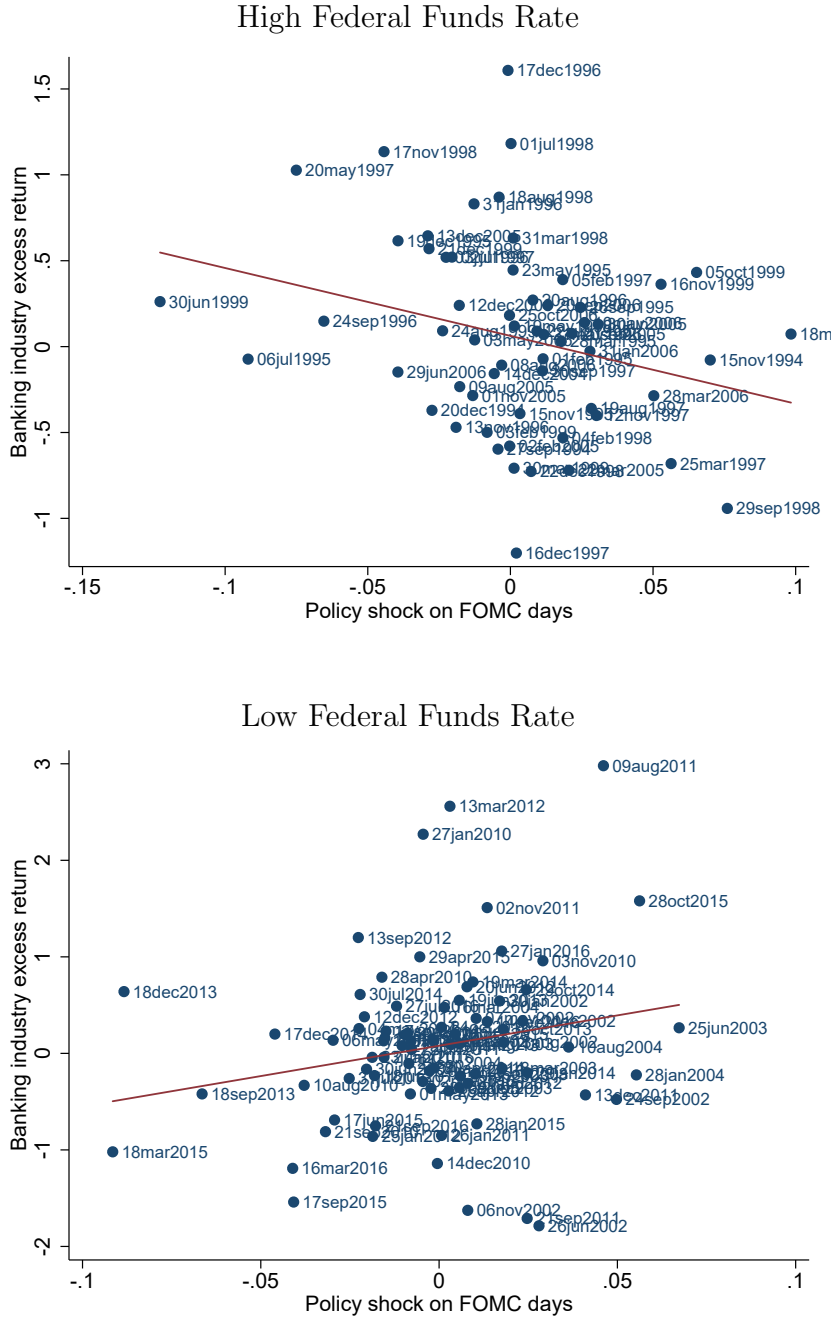
High Federal Funds Rate

Low Federal Funds Rate

Figure RP 3: Monetary Policy Shocks and Bank Equity Returns

This figure provides the scatter plot of bank industry excess returns against monetary policy shocks on FOMC days from 1994 to 2017. The excess returns are defined as the difference between bank industry index returns and the market returns. Monetary policy shocks are measured by the change in the 3-month federal funds future subtracting central bank information shocks (Jarocinski and Karadi 2018). The sample for the upper panel constitutes observations in which the starting level of the federal funds rate is above 2%. The sample for the lower panel constitutes observations in which the starting level of the federal funds rate is below 2%. We exclude observations during the collapse of the dot-com bubble (2000-2001) and the financial crisis (2007-2009). Bank industry stock returns are from Kenneth French's website and the monetary policy shocks are from the website of the *American Economic Journal: Macroeconomics*.
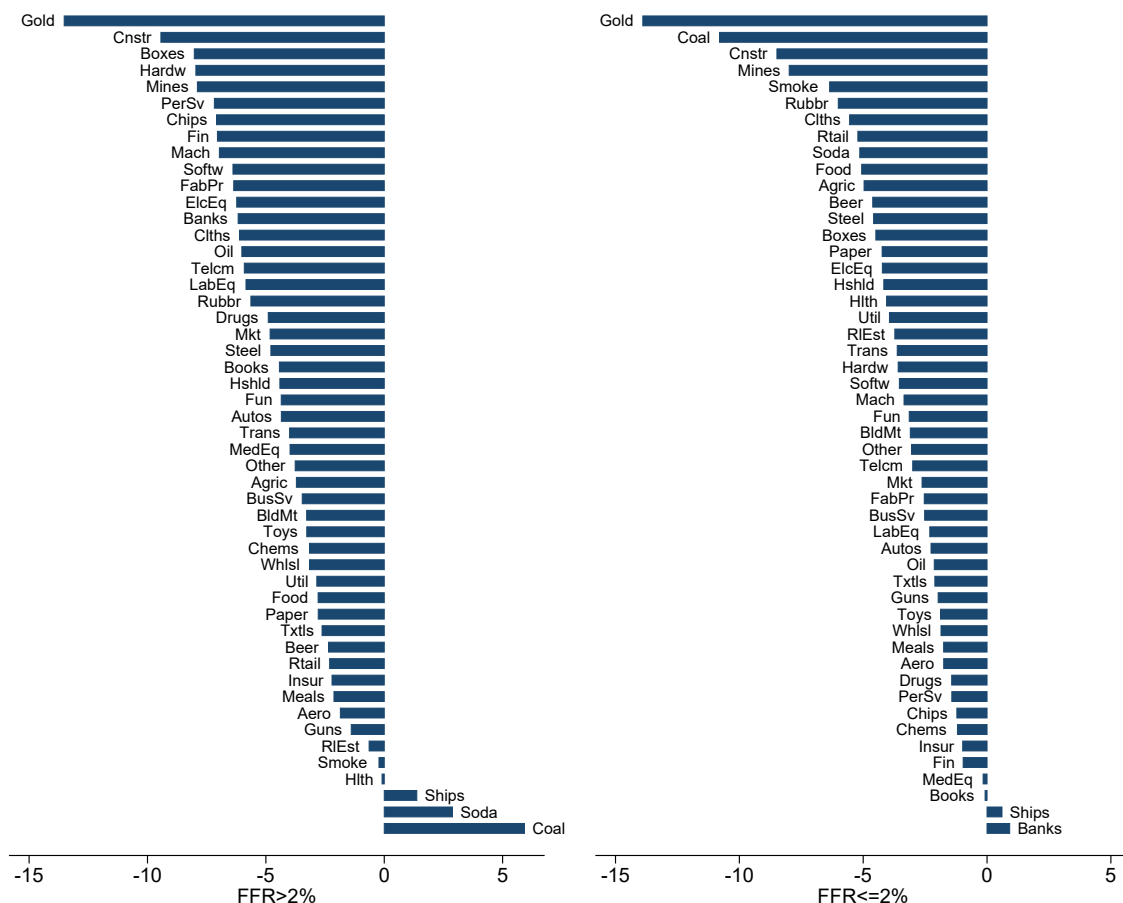
Figure RP 4: Monetary Policy Shocks and Bank Equity Returns

The figure shows the sensitivity of bank and other industry stock portfolios to monetary policy shocks on the FOMC days. The bars present the coefficients from regressions of Fama-French 49 industry returns on the change in the two-year Treasury rate over a two-day window around FOMC meetings, as in Hanson and Stein (2015). The sample includes all scheduled FOMC meetings from 1994 to 2017. The left panel uses a sample in which the federal funds rate (FFR) is above 2%. The right panel uses a sample in which the federal funds rate is below or equal to 2%. The industry returns are from Kenneth French's website. The two-year Treasury rate is obtained from the FRED database.

Table RP 1: Summary Statistics

	mean	sd	p10	p25	p50	p75	p90
Deposit shares	0.079	0.524	0.003	0.005	0.009	0.021	0.077
Loan shares	0.033	0.207	0.001	0.002	0.004	0.009	0.034
Deposit rates	2.032	1.292	0.166	0.873	2.085	3.150	3.714
Loan rates	6.921	1.725	4.540	5.599	6.959	8.286	9.061
No. of branches	69.753	315.678	7.000	11.000	17.000	34.000	94.000
No. of employees per branch	18.338	17.433	9.109	11.188	14.306	19.556	28.500
Expenses of fixed assets	0.480	0.165	0.270	0.347	0.448	0.584	0.798
Salaries	1.725	0.486	1.061	1.348	1.650	2.036	2.646
Net noninterest expenses	2.778	0.830	1.904	2.246	2.653	3.142	3.743
Loan-to-deposit ratio	0.815	0.170	0.598	0.710	0.821	0.925	1.022
Borrowing-to-deposit ratio	0.136	0.138	0.013	0.041	0.096	0.181	0.308
Deposit-to-asset ratio	0.805	0.082	0.691	0.763	0.822	0.866	0.895
Book leverage	11.114	2.577	7.947	9.408	10.990	12.656	14.390
Asset maturity	3.772	1.402	2.163	2.764	3.560	4.604	5.698

Table RP 2: Demand Estimation

In this table, we report the estimated deposit and loan demand parameters. The first column corresponds to the deposit demand parameter estimates. The second column contains the loan demand parameter estimates. Yield sensitivity (α) refers to the average sensitivity of depositors (borrowers) to deposit rates (loan rates). Log No. of Branches (β_1) refers to the sensitivity of depositors (borrowers) to the log number of branches that each bank operates. Log No. of Employees (β_1) refers to the sensitivity of depositors (borrowers) to the log number of employees per branch. Yield sensitivity (σ_α) refers to the dispersion in the sensitivity of depositors to deposit rates, with the dispersion set at 0 for firms. The sample includes all U.S. commercial banks from 1994 to 2017. The data sources are the Call Reports and the FDIC Summary of Deposits.

	Deposit	Loan
Yield Sensitivity (α)	0.967***	-1.462***
	[0.140]	[0.332]
Log No. of Branches (β_1)	0.804***	0.948***
	[0.012]	[0.000]
Log No. of Employees (β_2)	0.714***	0.631***
	[0.015]	[0.028]
Yield Sensitivity Dispersion (σ_α)	0.553***	
	[0.116]	
Sector F.E.	Y	Y
Time F.E.	Y	Y
Observations	18062	18062
Adj. Rsq	0.966	0.550

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Table RP 3: Demand Estimation: Local Deposit Market

	(1)
	Deposit
Yield sensitivity	0.903***
	[0.199]
Log number of branches	0.509***
	[0.048]
Log number of employees	0.322***
	[0.021]
Bank F.E.	Yes
Year-Sector F.E.	Yes
Year-County F.E.	Yes
Observations	377,309
Adj. R-squared	0.399

This table reports the estimated deposit demand parameters using county-level market shares. Yield sensitivity refers to the average sensitivity of the depositors to deposit rates. Log number of branches refers to the sensitivity of the depositors to the log number of each bank's branches. Log number of employees refers the sensitivity of the depositors to the log number of employees per branch. The sample includes all U.S. commercial banks from 1994 to 2017. The data is from the Call Reports and the Summary of Deposits.

Table RP 4: Yield Sensitivity in the Deposit Market: Robustness

	(1) Local wage	(2) Bank expenses	(3) All
Yield sensitivity	0.668**	0.687***	0.687***
	(0.282)	(0.028)	(0.028)
Log number of branches	0.769***	0.769***	0.769***
	(0.008)	(0.008)	(0.008)
Log number of employees	0.674***	0.674***	0.674***
	(0.013)	(0.013)	(0.013)
Bank F.E.	Yes	Yes	Yes
Year-Sector F.E.	Yes	Yes	Yes
Observations	11,394	11,394	11,394
Adj. R^2	0.970	0.969	0.969

This table reports the estimated deposit demand parameters using alternative instruments. Column (1) uses local bank-teller wage data from the Bureau of Labor Statistics as an instrument, following Dick (2008). The instrument is the weighted average of the local bank teller wages over the markets in which the bank operates, where the weight is the bank's deposit share in each market relative to its total deposits. Column (2) uses bank salary expenses and bank fixed assets expenses as instruments. Column (3) uses all three instruments at the same time. The sample period is from 1997 to 2017. The data are from the Call Reports, the Summary of Deposits, and the Bureau of Labor Statistics.

Table RP 5: Yield Sensitivity in the Loan Market: Robustness

	(1) Local wage	(2) Bank expenses	(3) All
Yield sensitivity	-0.950	-1.149***	-1.134***
	(2.208)	(0.311)	(0.304)
Log number of branches	0.913***	0.935***	0.933***
	(0.234)	(0.039)	(0.038)
Log number of employees	0.652***	0.637***	0.638***
	(0.175)	(0.045)	(0.044)
Bank F.E.	Yes	Yes	Yes
Year-Sector F.E.	Yes	Yes	Yes
Observations	11,394	11,394	11,394
Adj. R-squared	0.840	0.772	0.777

This table reports the estimated loan demand parameters using alternative instruments. Column (1) uses local wage data from the Bureau of Labor Statistics as an instrument, following Dick (2008). The instrument is the weighted average of the local bank teller wages over the markets in which the bank operates, where the weight is the bank's deposit share in each market relative to its total deposits. Column (2) uses bank salary expenses and bank fixed assets expenses as instruments. Column (3) uses all three instruments at the same time. The sample period is from 1997 to 2017. The data are from the Call Reports, the Summary of Deposits, and the Bureau of Labor Statistics.

Table RP 6: Monetary Policy Shocks and Bank Equity Returns on FOMC Days

In this table, we report the estimates of the relation between bank equity returns and monetary policy shocks on FOMC Days. Monetary policy shocks are measured by one-day changes in the two-year Treasury yield on FOMC days. HHI is the Herfindahl-Hirschman Index for the local deposit market in which a bank operates. Low is a dummy variable that equals one when the the starting level of the federal funds rate (FFR) is below 2%. The control variables include market returns and term spreads. The sample includes all publicly traded U.S. banks from 1994 to 2017. The sample for columns (1) and (4) constitutes observations in which the starting level of the federal funds rate (FFR) is above 2%. The sample for columns (2) and (5) constitutes observations in which the starting level of the federal funds rate is below 2%. The sample for columns (3) and (6) constitutes all observations. We exclude observations during the collapse of the dot-com bubble (2000–2001) and the subprime financial crisis (2007-2009). Standard errors are clustered by time.

	(1) High	(2) Low	(3) All	(4) High	(5) Low	(6) All
Policy shock	-1.292**	2.202**	-1.292**	-0.639	-1.393	-0.639
	(0.615)	(0.879)	(0.612)	(0.653)	(0.852)	(0.649)
Low*Policy shock			3.494***			-0.754
			(1.069)			(1.069)
HHI*Policy shock				-0.134	0.562***	-0.134
				(0.145)	(0.153)	(0.144)
Low*HHI*Policy shock						0.696***
						(0.210)
Control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	27,257	33,805	61,062	27,257	33,805	61,062
Adj. R^2	0.015	0.123	0.074	0.016	0.125	0.075

Table RP 7: Monetary Policy Shocks and Bank Equity Returns on FOMC Days

	(1) High FFR	(2) Low FFR	(3) High FFR	(4) Low FFR
Policy shock	-1.365**	1.290	-0.103	-2.623
	[0.597]	[1.326]	[1.019]	[2.108]
HHI*Policy shock			-0.303	0.740**
			[0.262]	[0.372]
Δ Term spread	-0.605	2.944***	-0.471	2.644**
	[0.688]	[1.103]	[0.696]	[1.070]
Market return	0.298***	0.727***	0.296***	0.730***
	[0.074]	[0.069]	[0.073]	[0.069]
Observations	27,257	33,805	27,257	33,805
Adj, R-squared	0.015	0.124	0.016	0.125

This table reports the estimates of the relation between bank equity returns and monetary policy shocks on FOMC days. Monetary policy shocks are measured by the one-day changes in the one-year Treasury yield on FOMC days. HHI is the Herfindahl-Hirschman Index of the local deposit market in which the bank operates. The sample for columns (1) and (3) constitutes observations in which the starting level of the federal funds rate is above 2%. The sample for columns (2) and (4) constitutes observations in which the starting level of the federal funds rate is below 2%. We exclude observations during the collapse of the dot-com bubble (2000-2001) and the financial crisis (2007-2009). The standard errors are clustered by time.

Table RP 8: Effects of Low Rates on Banks with Different Deposit Market Power

We report the estimates of the effect of low interest rates on banks with different deposit market power. HHI is the average Herfindahl-Hirschman Index of the local deposit markets in which a bank operates. Low is a dummy variable that equals one when the federal funds rate is below 2%. Each column is identified by the dependent variable. The control variables include lagged assets, lending, deposits, equity, deposit rate, loan rate, bank fixed effects, and time fixed effects. The sample includes all U.S. banks from 2000Q1 to 2004Q1. Standard errors are clustered by time.

	(1)	(2)	(3)	(4)
	Equity	Equity	Loan	Loan
HHI*Low	-0.232***	-0.083***	-0.252***	-0.055***
	(0.007)	(0.006)	(0.008)	(0.006)
Control	No	Yes	No	Yes
Bank F.E.	Yes	Yes	Yes	Yes
Time F.E.	Yes	Yes	Yes	Yes
Observations	129,950	127,912	129,339	127,885
Adj. R^2	0.984	0.990	0.981	0.990

Table RP 9: Data Moments: Full Sample

	Actual Moment
Dividend yield	0.034
MB	2.060
Leverage	11.197
Borrowing/Deposits	0.299
Borrowing/Deposits (sd)	0.204
Borrowing/Deposits (demeaned sd)	0.126
Deposits to Assets Ratio	0.699
Net noninterest expenses	0.012
Deposit Spreads	1.297
Loan Spreads	2.032
Deposit Spreads - FFR Sensitivity	0.441
Loan Spreads - FFR Sensitivity	-0.125
Total Credit - FFR Sensitivity	-0.995
Total Credit - FFR Sensitivity (se)	0.299
Bank Loan - FFR Sensitivity	-1.592
Bank Loan - FFR Sensitivity (se)	0.503
Repricing Duration	3.429
Repricing Duration (sd)	1.445
Reserve Ratio	2.495
Depositor Sensitivity to Deposit Rates	0.967
Depositor Sensitivity to Deposit Rates (se)	0.140
Dispersion of Depositor Sensitivity to Deposit Rates	0.553
Dispersion of Depositor Sensitivity to Deposit Rates (se)	0.116
Borrower Sensitivity to Loan Rates	-1.462
Borrower Sensitivity to Loan Rates (se)	0.332
Convenience of Holding Cash (q_c)	1.986
Convenience of Holding Cash (se)	0.242
Convenience of Holding Deposits (q_d)	3.441
Convenience of Holding Deposits (se)	0.251
Convenience of Borrowing Loans (q_l)	1.152
Convenience of Borrowing Loans (se)	1.232
Number of Banks	5.592

Table RP 10: Data Moments: Early Sample

	Actual Moment
Dividend yield	0.031
MB	2.767
Leverage	12.460
Borrowing/Deposits	0.342
Borrowing/Deposits (sd)	0.220
Borrowing/Deposits (demeaned sd)	0.103
Deposits to Assets Ratio	0.679
Net noninterest expenses	0.013
Deposit Spreads	1.951
Loan Spreads	1.827
Deposit Spreads - FFR Sensitivity	0.488
Loan Spreads - FFR Sensitivity	0.018
Total Credit - FFR Sensitivity	-0.995
Total Credit - FFR Sensitivity (se)	0.299
Bank Loan - FFR Sensitivity	-1.592
Bank Loan - FFR Sensitivity (se)	0.503
Repricing Duration	3.178
Repricing Duration (sd)	1.402
Reserve Ratio	2.767
Depositor Sensitivity to Deposit Rates	0.743
Depositor Sensitivity to Deposit Rates (se)	0.165
Dispersion of Depositor Sensitivity to Deposit Rates	0.423
Dispersion of Depositor Sensitivity to Deposit Rates (se)	0.144
Borrower Sensitivity to Loan Rates	-1.017
Borrower Sensitivity to Loan Rates (se)	0.054
Convenience of Holding Cash (q_c)	2.761
Convenience of Holding Cash (se)	0.387
Convenience of Holding Deposits (q_d)	3.463
Convenience of Holding Deposits (se)	0.357
Convenience of Borrowing Loans (q_l)	-0.015
Convenience of Borrowing Loans (se)	0.087
Number of Banks	7.056

Table RP 11: Data Moments: Late Sample

	Actual Moment
Dividend yield	0.036
MB	1.538
Leverage	9.933
Borrowing/Deposits	0.256
Borrowing/Deposits (sd)	0.173
Borrowing/Deposits (demeaned sd)	0.106
Deposits to Assets Ratio	0.719
Net noninterest expenses	0.012
Deposit Spreads	0.643
Loan Spreads	2.238
Deposit Spreads - FFR Sensitivity	0.489
Loan Spreads - FFR Sensitivity	-0.139
Total Credit - FFR Sensitivity	-0.995
Total Credit - FFR Sensitivity (se)	0.299
Bank Loan - FFR Sensitivity	-1.592
Bank Loan - FFR Sensitivity (se)	0.503
Repricing Duration	3.590
Repricing Duration (sd)	1.448
Reserve Ratio	2.224
Depositor Sensitivity to Deposit Rates	0.924
Depositor Sensitivity to Deposit Rates (se)	0.400
Dispersion of Depositor Sensitivity to Deposit Rates	0.528
Dispersion of Depositor Sensitivity to Deposit Rates (se)	0.279
Borrower Sensitivity to Loan Rates	-1.454
Borrower Sensitivity to Loan Rates (se)	0.079
Convenience of Holding Cash (q_c)	-0.444
Convenience of Holding Cash (se)	0.430
Convenience of Holding Deposits (q_d)	2.336
Convenience of Holding Deposits (se)	0.470
Convenience of Borrowing Loans (q_l)	1.804
Convenience of Borrowing Loans (se)	0.201
Number of Banks	5.105

Table RP 12: Data Moments: Big Banks

	Actual Moment
Dividend yield	0.036
Leverage	11.359
Borrowing/Deposits	0.355
Borrowing/Deposits (sd)	0.190
Borrowing/Deposits (demeaned sd)	0.133
Deposits to Assets Ratio	0.666
Net noninterest expenses	0.010
Deposit Spreads	1.317
Loan Spreads	1.770
Deposit Spreads - FFR Sensitivity	0.415
Loan Spreads - FFR Sensitivity	-0.143
Total Credit - FFR Sensitivity	-0.995
Total Credit - FFR Sensitivity (se)	0.299
Bank Loan - FFR Sensitivity	-1.592
Bank Loan - FFR Sensitivity (se)	0.503
Repricing Duration	3.341
Repricing Duration (sd)	1.337
Reserve Ratio	2.466
Depositor Sensitivity to Deposit Rates	1.127
Depositor Sensitivity to Deposit Rates (se)	0.276
Dispersion of Depositor Sensitivity to Deposit Rates	0.645
Dispersion of Depositor Sensitivity to Deposit Rates (se)	0.199
Borrower Sensitivity to Loan Rates	-1.679
Borrower Sensitivity to Loan Rates (se)	0.103
Convenience of Holding Cash (q_c)	1.986
Convenience of Holding Cash (se)	0.242
Convenience of Holding Deposits (q_d)	3.441
Convenience of Holding Deposits (se)	0.251
Convenience of Borrowing Loans (q_l)	1.152
Convenience of Borrowing Loans (se)	1.232
Number of Banks	5.592

Table RP 13: Data Moments: Small Banks

	Actual Moment
Dividend yield	0.036
Leverage	10.776
Borrowing/Deposits	0.153
Borrowing/Deposits (sd)	0.172
Borrowing/Deposits (demeaned sd)	0.087
Deposits to Assets Ratio	0.784
Net noninterest expenses	0.019
Deposit Spreads	1.245
Loan Spreads	2.716
Deposit Spreads - FFR Sensitivity	0.501
Loan Spreads - FFR Sensitivity	-0.113
Total Credit - FFR Sensitivity	-0.995
Total Credit - FFR Sensitivity (se)	0.299
Bank Loan - FFR Sensitivity	-1.592
Bank Loan - FFR Sensitivity (se)	0.503
Repricing Duration	3.685
Repricing Duration (sd)	1.697
Reserve Ratio	2.570
Depositor Sensitivity to Deposit Rates	1.153
Depositor Sensitivity to Deposit Rates (se)	0.094
Dispersion of Depositor Sensitivity to Deposit Rates	0.660
Dispersion of Depositor Sensitivity to Deposit Rates (se)	0.226
Borrower Sensitivity to Loan Rates	-0.628
Borrower Sensitivity to Loan Rates (se)	0.041
Convenience of Holding Cash (q_c)	1.986
Convenience of Holding Cash (se)	0.242
Convenience of Holding Deposits (q_d)	3.441
Convenience of Holding Deposits (se)	0.251
Convenience of Borrowing Loans (q_l)	1.152
Convenience of Borrowing Loans (se)	1.232
Number of Banks	5.592

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