Liquidity Dependence:

Why Shrinking Central Bank Balance Sheets is an Uphill Task

ONLINE APPENDIX

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Figure A1: CD spread with Savings, Interest Checking and Money Market Rates

This figure plots the aggregate spread of average bank-level Certificate of Deposit (CD) rates w.r.t. money market account rate, savings account rate and checking account rate respectively at the bank level weighted by bank-quarter level deposits. Bank-quarter level CD rates, money market rates, checking and savings rates are sourced from S&P Global's *RateWatch* deposits dataset. The Effective Federal Funds Rate (EFFR), Target Federal Funds Rate (TFFR) and Interest on Reserves (IOR) are sourced from FRED. The vertical lines correspond to the beginning of the different Federal Reserve QE / QT phases: (1) Nov 2008 (QE I), (2) Nov 2010 (QE II), (3) Nov 2012 (QE III), (4) Oct 2014 (Post-QE III), (5) QT period, (6) Sept 2019 (Pandemic QE).
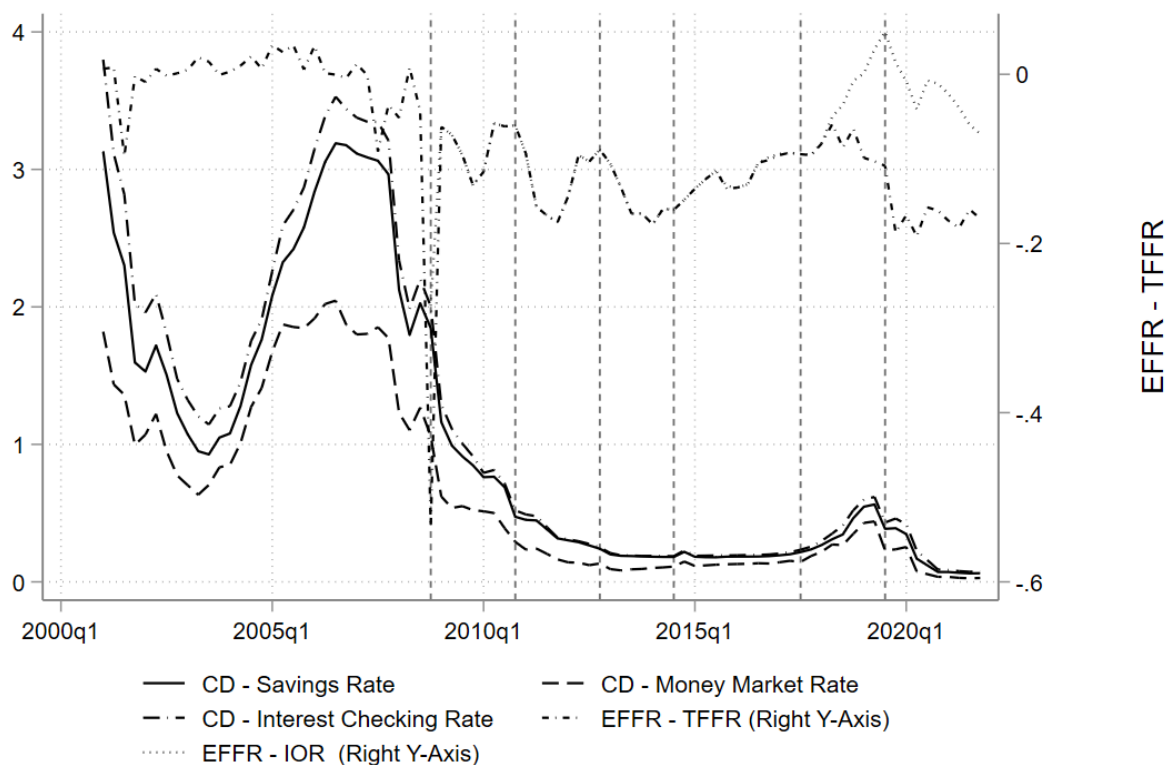
Table A1: OLS Regressions for Table 9

The table shows OLS tegressions of *3, 12, 18 and 24-month CD – savings rate spread* against bank-level *Ln(Total Deposits)* and *Ln(Reserves)*. CD and savings rates are sourced from *S&P Global's RateWatch* deposit data. Bank-level variables are sourced from *FDIC's Call Reports* data. *Reserves* are cash and balances due from Federal Reserve Banks at the consolidated bank level (RCFD0090). *Total Deposits* are the sum total of deposits held in domestic and foreign offices (RCON2200 + RCFN2200. Panel A shows the results for the QE I-III+ Pandemic QE periods. Panel B shows results for QE I-III and Post-QE-III+QT periods. All specifications control for bank and time fixed effects. Standard errors are two-way clustered at the bank and time level. The sample period is 2001 Q1 – 2021 Q4. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Panel A	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.0231	0.0416**	0.0299	0.0206
	(0.0152)	(0.0183)	(0.0201)	(0.0185)
Ln(Reserves)	-0.00242	-0.00268	-0.00149	-0.00141
	(0.00163)	(0.00174)	(0.00183)	(0.00182)
Constant	-0.0967	0.0189	0.265	0.548**
	(0.203)	(0.242)	(0.271)	(0.248)
N	42069	45093	37404	44360
R-sq	0.772	0.856	0.860	0.872
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	2008Q4 - 2014Q3 & 2019Q4 - 2021Q4			
Panel B	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.0448**	0.104***	0.0898***	0.0728***
	(0.0201)	(0.0227)	(0.0256)	(0.0237)
Ln(Reserves)	-0.00233	-0.00299*	-0.00215	-0.00129
	(0.00164)	(0.00163)	(0.00187)	(0.00179)
Constant	-0.372	-0.768**	-0.487	-0.0936
	(0.266)	(0.299)	(0.342)	(0.315)
N	37158	39642	32783	38955
R-sq	0.793	0.876	0.876	0.883
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	2008Q4 - 2014Q3			

Panel C	(1)	(2)	(3)	(4)
	3 month CD Rate - Savings Rate	12 month CD Rate - Savings Rate	18 month CD Rate - Savings Rate	24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.00768	0.0102	0.00423	-0.0395
	(0.0278)	(0.0410)	(0.0478)	(0.0462)
Ln(Reserves)	0.000937	0.00548**	0.00487*	0.00327
	(0.00148)	(0.00246)	(0.00269)	(0.00252)
Constant	-0.0333	0.186	0.363	1.096*
	(0.378)	(0.554)	(0.649)	(0.625)
N	23896	26078	21687	25704
R-sq	0.626	0.712	0.719	0.736
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	2014Q4 - 2019Q3	2014Q4 - 2019Q3	2014Q4 - 2019Q3	2014Q4 - 2019Q3

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Table A2: Summary Statistics

Panel A: Time Series

This table shows descriptive statistics for our time-series variables. Demand deposits is the sum of demand and other liquid deposits from the H.6 release. Time deposits is the sum of small and large time deposits (H6 and H8 release). All changes are calculated over a 12-month period. Change in Ln(Reserves) is the 12-month change in the natural logarithm of reserves, Ln(Reserves)t-12 is the 12-month lag of Ln(Reserves). Change in Reserves is the 12-month change in the level of reserves and Reservest-12 is the corresponding 12-month lagged variable. EFFR-IOR is the Effective Federal Fund Rate (EFFR) minus Interest on Reserves (IOR) on reserve, deposits and credit lines. Ln(Reserves) is the natural logarithm of reserves from the H.6 release, Ln(Demand Deposits) is the natural logarithm of the sum of demand and other liquid deposits from the H.6 release. Ln(Time Deposits) is the sum of small and large time deposits (H6 and H8 release). Ln(Credit Lines) is the natural logarithm of unused (other) loan commitments from FDIC insured banks (including corporate credit lines but not credit card commitments). Ln(Usage) is the natural logarithm of quarterly drawn credit lines of U.S. publicly listed firms sourced from Capital IQ.

	Mean	Median	SD	Min	Max	N
Change in Ln(Deposits)	.0693	.06	.0416	.0224	.203	147
Change in Ln(Demand Deposits)	.0999	.0811	.0616	.0121	.288	147
Change in Ln(Time Deposits)	-.058	-.059	.114	-.337	.162	147
Change in Ln(Credit Lines)	.0563	.0716	.0623	-.118	.214	147
Change in Ln(Reserves)	.135	.0433	.277	-.297	1.21	147
Ln(Reserves)$_{t-12}$	7.5	7.59	.4	5.75	8.08	147
Change in Deposits	803	570	677	170	3023	147
Change in Demand Deposits	995	684	906	136	4050	147
Change in Time Deposits	-136	-127	251	-700	358	147
Change in Credit Lines	159	182	170	-238	731	147
Change in Reserves	254	85.2	564	-592	1641	147
EFFR-IOR	-.0882	-.0943	.0575	-.183	.0725	155
Ln(Reserves)	7.58	7.65	.394	6.55	8.34	155
Ln(Deposits)	9.27	9.28	.241	8.89	9.79	155
Ln(Demand Deposits)	9.14	9.17	.324	8.51	9.81	155
Ln(Time Deposits)	7.71	7.69	.167	7.34	8.12	155
Ln(Credit Lines	7.86	7.9	.227	7.53	8.29	155
Ln(Usage)	20.6	20.5	.464	19.6	21.5	155

Panel B: Bank-level Variables

The table shows summary statistics of bank-level variables constructed from Call Reports and S&P Global's *RateWatch* database. Total Deposits is the sum of Total Domestic and Foreign Deposits held at the depository level (RCON2200+RCFN2200 of Call Reports). Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 of Call Reports). ΔLn(Reserves) and ΔLn(Deposits) are the year-on-year change of quarterly-levels. 3, 12 18 and 24 month Certificate of Deposits (CD) spreads w.r.t Savings Deposit Rates is calculated at the bank-quarter level from S&P Global's *RateWatch data*. The reserve instrument i.e. Growth in Aggregate Reserves is the quarter-on-quarter growth in the Reserve Balances of the Federal Reserve Bank. Reserve Share is the ratio of bank-level Reserves to Aggregate Reserves. The County Deposit Growth Instrument is the log of the ratio of contemporary to one-quarter lagged level of total county deposits summed across all the counties the bank has a presence. $\Delta Y_{it} = Y_{it} - Y_{it-4}$.

	Mean	Median	SD	Min	Max	N
Ln(Total Deposits)	13.5	13.2	1.35	0	21.7	138492
Ln(Reserves)	8.83	9.05	2.66	0	20.1	138691
ΔLn(Reserves)	.214	.0898	1.57	-10.5	13.3	121831
ΔLn(Deposits)	.0814	.0551	.231	-10.4	9.84	132449
Ln(Demand+Savings Deposits)	12.9	12.6	1.52	0	21.4	138322
Ln(Time Deposits)	12.3	12.2	1.27	2.94	19.4	137383
ΔLn(Demand + Savings Deposits)	.112	.083	.28	-11.4	10.7	132259
ΔLn(Time Deposits)	.0246	-.00461	.308	-10.1	8.71	131319
Equity Capital/Assets	.107	.0994	.0524	-2.15	.996	138691
Total Assets (1000s)	7617230	657089	7.41e+07	107	3.31e+09	138691
12 month CD Rate - Savings Rate	.991	.529	1.05	-1.72	5.12	101384
18 month CD Rate - Savings Rate	1.09	.673	1.04	-1.67	5.12	84827
24 month CD Rate - Savings Rate	1.25	.85	1.04	-1.52	5.17	99759
Growth in Agg Reserves (qoq) X Average Past 4Q Reserve Share	.0000312	1.05e-08	.00224	-.0108	.447	122471
County Deposit Growth Instrument	.113	.0545	.343	-4.96	5.93	137884

Panel C: Credit Lines Quantities and Pricing

Bank Balance Sheet Data is sourced from Consolidated Reports of Condition and Income for a Bank with Domestic and Foreign Offices (Call Reports) of the FDIC. *Reserves* are cash and balances from Federal Reserve Banks at the consolidated bank-level (RCFD0090). *Credit lines* are credit line originations from the Refinitive LoanConnector database. Δ*Ln(Credit Lines)* is the change in the amount of originated credit lines of investment-grade and unrated firms in the U.S. The instrument for credit lines, z_{it}^{CL} (henceforth, *Credit Line Instrument)* is the *Ln(Credit Lines)$_{it-1}$ x ELP$_{t-1}$*. The instrument for reserves z_{it}^{R} is defined as *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over past four quarters. Aggregate Reserves* are sourced from *FRED. AISD/AISU*-ratio is the ratio for credit lines originated to investment-grade and unrated firms in the U.S

	Mean	Median	SD	Min	Max	N
Δ Ln(Reserves)	.233	.0778	1.34	-9.61	8.94	2353
z_{it}^{R}	.00109	3.03e-07	.016	-.0115	.481	2582
Ln(Reserves)$_{t-5}$	13.4	13.2	2.68	1.79	20	2336
ΔLn(Credit Lines)	.106	.0617	.862	-4.98	5.78	2828
Ln(Reserves)$_{t-5}$	13.4	13.2	2.68	1.79	20	2336
Ln(Credit Lines)	9.29	9.59	2.08	1.5	13	2941
z_{it}^{CL}	10.1	7.69	10.9	-4.73	70.7	2652
AISD/AISU	6.98	6.75	2.68	1	73.8	2880

Table A3: Summary Statistics by Above/Below Median IV

Panel A: Split by Above/Below Median Reserves Instrument

The table below shows the summary statistics of bank-level variables split by whether the bank's reserve instrument value lies above or below the across-sample median. The reserve instrument is defined as the Growth in Aggregate Reserves x Lagged Reserve share, averaged over previous four quarters. Total Deposits is the sum of Total Domestic and Foreign Deposits held at the depository level (RCON2200+RCFN2200 of Call Reports). Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 of Call Reports). ΔLn(Reserves) and ΔLn(Deposits) are the year-on-year change of quarterly-levels. 3, 12 18 and 24 month Certificate of Deposits (CD) spreads w.r.t Savings Deposit Rates is calculated at the bank-quarter level from S&P Global's *RateWatch data.* The reserve instrument i.e. Growth in Aggregate Reserves is the quarter-on-quarter growth in the Reserve Balances of the Federal Reserve Bank. Reserve Share is the ratio of bank-level Reserves to Aggregate Reserves. The County Deposit Growth Instrument is the log of the ratio of contemporary to one-quarter lagged level of total county deposits summed across all the counties the bank has a presence. $\Delta Y_{it} = Y_{it} - Y_{it-4}$.

Above Median Reserve Instrument	Mean	Median	SD	Min	Max	N
Ln(Total Deposits)	13.6	13.2	1.37	0	21.7	67375
Ln(Reserves)	9	9.24	2.73	0	20.1	65439
ΔLn(Reserves)	.268	.109	1.63	-9.25	13.3	64390
ΔLn(Deposits)	.0706	.052	.241	-10.4	9.74	67375
3 month CD Rate - Savings Rate	.477	.119	.767	-1.92	4.96	47300
12 month CD Rate - Savings Rate	.885	.467	.957	-1.47	4.91	50588
18 month CD Rate - Savings Rate	.983	.6	.953	-1.42	4.91	42309
24 month CD Rate - Savings Rate	1.13	.767	.958	-1.27	4.98	49807
Growth in Agg Reserves (qoq) X Average Past 4Q Reserve Share	.0000661	8.97e-07	.00301	5.01e-13	.447	67483
County Deposit Growth Instrument	.104	.0542	.309	-4.96	4.7	67051

Below Median Reserve Instrument	Mean	Median	SD	Min	Max	N
Ln(Total Deposits)	13.4	13.2	1.47	.693	21.5	67164
Ln(Reserves)	8.94	9.21	2.59	0	19.9	57032
ΔLn(Reserves)	.155	.0715	1.52	-10.5	12.5	55806
ΔLn(Deposits)	.074	.0519	.281	-10.2	10.5	67158
3 month CD Rate - Savings Rate	.545	.139	.88	-2.6	4.98	44608
12 month CD Rate - Savings Rate	1.03	.523	1.11	-1.72	5.12	47821
18 month CD Rate - Savings Rate	1.13	.668	1.09	-1.67	5.12	40002
24 month CD Rate - Savings Rate	1.29	.85	1.09	-1.52	5.17	47093
Growth in Agg Reserves (qoq) X Average Past 4Q Reserve Share	-9.38e-06	-2.14e-07	.000151	-.0108	0	67584
County Deposit Growth Instrument	.106	.0516	.352	-4.96	7.57	67006

Panel B: Above/Below Median Deposit Instrument

The table below shows the summary statistics of bank-level variables split by whether the bank's deposit instrument value lies above or below the across-sample median. The deposit instrument is defined as the log of the ratio of contemporary to one-quarter lagged level of total county deposits summed across all the counties the bank has a presence. Total Deposits is the sum of Total Domestic and Foreign Deposits held at the depository level (RCON2200+RCFN2200 of Call Reports). Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 of Call Reports). ΔLn(Reserves) and ΔLn(Deposits) are the year-on-year change of quarterly-levels. 3, 12 18 and 24 month Certificate of Deposits (CD) spreads w.r.t Savings Deposit Rates is calculated at the bank-quarter level from S&P Global's *RateWatch data*. The reserve instrument i.e. Growth in Aggregate Reserves is the quarter-on-quarter growth in the Reserve Balances of the Federal Reserve Bank. Reserve Share is the ratio of bank-level Reserves to Aggregate Reserves. The County Deposit Growth Instrument is the log of the ratio of contemporary to one-quarter lagged level of total county deposits summed across all the counties the bank has a presence. $\Delta Y_{it} = Y_{it} - Y_{it-4}$.

Above Median Deposit Instrument	Mean	Median	SD	Min	Max	N
Ln(Total Deposits)	12.1	11.9	1.53	0	21.7	287591
Ln(Reserves)	8.99	9.16	2.74	0	20.1	79514
ΔLn(Reserves)	.251	.129	1.57	-10.5	13.3	69116
ΔLn(Deposits)	.113	.0759	.255	-10.2	10.8	266399
3 month CD Rate - Savings Rate	.635	.25	.861	-2.6	5.12	174160
12 month CD Rate - Savings Rate	1.16	.777	1.09	-1.55	7.25	192201
18 month CD Rate - Savings Rate	1.25	.914	1.07	-1.4	5.12	148142
24 month CD Rate - Savings Rate	1.41	1.14	1.07	-1.25	5.17	183277
Growth in Agg Reserves (qoq) X Average Past 4Q Reserve Share	.0000354	9.50e-10	.00228	-.0108	.416	75781
County Deposit Growth Instrument	.189	.087	.4	.0446	7.57	287654

Below Median Deposit Instrument	Mean	Median	SD	Min	Max	N
Ln(Total Deposits)	11.6	11.6	1.28	0	21.2	287623
Ln(Reserves)	8.61	8.92	2.52	0	19.7	58370
ΔLn(Reserves)	.165	.042	1.58	-9.25	11.8	52176
ΔLn(Deposits)	.0422	.0275	.18	-10.4	10.5	271509
3 month CD Rate - Savings Rate	.499	.18	.752	-2.6	4.96	186270
12 month CD Rate - Savings Rate	1.02	.688	.958	-1.72	5.25	207630
18 month CD Rate - Savings Rate	1.12	.807	.953	-1.67	5.1	160573
24 month CD Rate - Savings Rate	1.29	1.02	.948	-1.52	5.1	196766
Growth in Agg Reserves (qoq) X Average Past 4Q Reserve Share	.0000195	0	.00194	-.00644	.447	58276
County Deposit Growth Instrument	-.0113	.0139	.171	-5.85	.0446	287654

Panel C: Above/Below Median Reserve Instrument at BHC level

The table below shows the summary statistics of BHC-level variables split by whether the bank's reserve instrument value lies above or below the across-sample median. The reserve instrument is defined as the Growth in Aggregate Reserves x Lagged Reserve share, averaged over previous four quarters. Bank Balance Sheet Data is sourced from Consolidated Reports of Condition and Income for a Bank with Domestic and Foreign Offices (Call Reports) of the FDIC. *Reserves* are cash and balances from Federal Reserve Banks at the consolidated bank-level (RCFD0090). *Credit lines* are credit line originations from the Refinitive LoanConnector database. *ΔLn(Credit Lines)* is the change in the amount of originated credit lines of investment-grade and unrated firms in the U.S. The instrument for credit lines, z_{it}^{CL} (henceforth, *Credit Line Instrument*) is the *Ln(Credit Lines)$_{it-1}$ x ELP$_{t-1}$*. The instrument for reserves z_{it}^{R} is defined as *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over past four quarters. Aggregate Reserves* are sourced from *FRED*. *AISD/AISU*-ratio is the ratio for credit lines originated to investment-grade and unrated firms in the U.S.

Above Median Reserves Instrument	Mean	Median	SD	Min	Max	N
Δ Ln(Reserves)	.393	.211	1.41	-9.61	7	1242
z_{it}^{R}	.00248	.0000871	.0226	3.05e-07	.481	1291
Ln(Reserves)$_{t-5}$	13.4	13.2	2.65	4.93	19.7	1213
ΔLn(Credit Lines)	.106	.0668	.855	-4.98	4.38	1269
Ln(Reserves)$_{t-5}$	9.41	9.78	1.93	1.61	13	1291
Ln(Credit Lines)	.106	.0668	.855	-4.98	4.38	1269
z_{it}^{CL}	12.9	11.4	11.7	-4.58	70.7	1112
AISD/AISU	7.09	6.83	3.07	2	73.8	1283
Below Median Reserve Instrument	Mean	Median	SD	Min	Max	N
Δ Ln(Reserves)	.0547	-.0205	1.24	-4.73	8.94	1111
z_{it}^{R}	-.000302	-.0000252	.00098	-.0115	3.00e-07	1291
Ln(Reserves)$_{t-5}$	13.4	13.3	2.71	1.79	20	1123
ΔLn(Credit Lines)	.0866	.0329	.8	-4.24	5.78	1253
Ln(Reserves)$_{t-5}$	9.47	9.93	2.08	1.5	12.8	1291
Ln(Credit Lines)	.0866	.0329	.8	-4.24	5.78	1253
z_{it}^{CL}	8.27	5.4	9.95	-4.55	53.4	1213
AISD/AISU	7.01	6.96	2.1	1	35.2	1284

Panel D: Above/Below Median Credit Lines Instrument at BHC level

The table below shows the summary statistics of bank-level variables split by whether the bank's deposit instrument value lies above or below the across-sample median. The deposit instrument is defined as the log of the ratio of contemporary to one-quarter lagged level of total county deposits summed across all the counties the bank has a presence. Total Deposits is the sum of Total Domestic and Foreign Deposits held at the depository level (RCON2200+RCFN2200 of Call Reports). Bank Balance Sheet Data is sourced from Consolidated Reports of Condition and Income for a Bank with Domestic and Foreign Offices (Call Reports) of the FDIC. *Reserves* are cash and balances from Federal Reserve Banks at the consolidated bank-level (RCFD0090). *Credit lines* are credit line originations from the Refinitive LoanConnector database. *ΔLn(Credit Lines)* is the change in the amount of originated credit lines of investment-grade and unrated firms in the U.S. The instrument for credit lines, z_{it}^{CL} (henceforth, *Credit Line Instrument)* is the *Ln(Credit Lines)$_{it-1}$ x ELP$_{t-1}$*. The instrument for reserves z_{it}^{R} is defined as *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over past four quarters. Aggregate Reserves* are sourced from *FRED*. *AISD/AISU*-ratio is the ratio for credit lines originated to investment-grade and unrated firms in the U.S.

Above Median Credit Lines Instrument	Mean	Median	SD	Min	Max	N
Δ Ln(Reserves)	.381	.141	1.59	-9.61	7.85	1102
z_{it}^{R}	.00229	.0000164	.0236	-.00645	.481	1174
Ln(Reserves)$_{t-5}$	13.1	12.9	2.68	1.79	20	1075
ΔLn(Credit Lines)	.108	.078	.817	-4.07	4.32	1297
Ln(Reserves)$_{t-5}$	9.4	9.81	1.97	1.61	12.8	1326
Ln(Credit Lines)	.108	.078	.817	-4.07	4.32	1297
z_{it}^{CL}	17.8	14.6	10.4	7.69	70.7	1326
AISD/AISU	6.67	6.48	1.84	1	33.7	1307
Below Median Credit Lines Instrument	Mean	Median	SD	Min	Max	N
Δ Ln(Reserves)	-.0157	-.0221	1.02	-4.73	8.94	1047
z_{it}^{R}	-.000104	-1.87e-06	.00106	-.0115	.0107	1151
Ln(Reserves)$_{t-5}$	13.5	13.3	2.64	3	19.9	1056
ΔLn(Credit Lines)	.0751	.0384	.839	-4.98	5.78	1279
Ln(Reserves)$_{t-5}$	9.26	9.39	2.07	1.5	12.7	1326
Ln(Credit Lines)	.0751	.0384	.839	-4.98	5.78	1279
z_{it}^{CL}	2.46	3.15	3.26	-4.73	7.69	1326
AISD/AISU	7.1	6.84	3.33	2.4	73.8	1303

Table A4: Deposit & Credit Line Quantities 2-SLS with Alternate Reserves Instrument

The table represents the first-stage and second-stage results of deposit quantities using an alternate reserves instrument. The reserve instrument used here is Ln(Aggregate Reserves $_t$/Aggregate Reserves $_{t-4}$) x Reserve Share $_{t-1}$ *(z^{Ralt}_{it})*.. Total Deposits is the sum of Total Domestic and Foreign Deposits held at the depository level (RCON2200+RCFN2200 of Call Reports). Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 of Call Reports). Aggregate Reserves is taken from FRED. Panel A reports the 1st Stage of the endogenous regressor ΔLn(Reserves) and the 2nd Stage with ΔLn(Total Deposits). Panel B reports the 2nd Stage with ΔLn(*Demand and Savings deposits*)(RCON2210+RCON6810+RCON0352 of Call Reports) and ΔLn(*Time Deposits)* (RCON6648 + RCONJ473 + RCONJ474) or (RCON6648+RCON2604) ΔY$_{it}$=Y$_{it}$-Y$_{it-4}$. All specifications control for Time-Fixed Effects. Standard errors are two-way clustered at the bank and quarter level. Columns (1) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Columns (2) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Columns (3) represent the QEI-III period: 2008Q4 - 2014Q3. Columns (4) show results for the Post-QE III + QT period 2014Q4 - 2019Q * p<0.1, ** p<0.05, *** p<0.01

Panel A: 1st Stage & 2nd Stage Results with Ln(Total Deposits) as the 2nd Stage Dependent variable

First Stage	(1) ΔLn(Reserves)	(2) ΔLn(Reserves)	(3) ΔLn(Reserves)	(4) ΔLn(Reserves)
z^{Ralt}_{it} (=Ln(Aggregate Reserves $_t$/Aggregate Reserves $_{t-4}$) x Reserve Share $_{t-1}$)	5.393***	5.640***	5.558***	-22.78*
	(1.217)	(1.311)	(1.299)	(12.96)
L5.Ln(Reserves)	-0.101***	-0.125***	-0.127***	-0.0675***
	(0.00602)	(0.00606)	(0.00983)	(0.00586)
Constant	1.100***	1.616***	1.563***	0.734***
	(0.0522)	(0.0582)	(0.0871)	(0.0574)
N	115886	51082	43251	30842
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Second Stage	(1) ΔLn(Total Deposits)	(2) ΔLn(Total Deposits)	(3) ΔLn(Total Deposits)	(4) ΔLn(Total Deposits)
ΔLn(Reserves)	0.0272**	0.0271**	0.0272**	-0.149
	(0.0112)	(0.0106)	(0.0107)	(0.0913)
L5.Ln(Reserves)	0.00282**	0.00242	0.00256*	-0.00901
	(0.00121)	(0.00145)	(0.00149)	(0.00578)
N	115727	51002	43192	30801
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Panel B: 2nd Stage Results with Demand+Savings & Time Deposits

Second Stage	(1) ΔLn(Demand + Savings Deposits)	(2) ΔLn(Demand + Savings Deposits)	(3) ΔLn(Demand + Savings Deposits)	(4) ΔLn(Demand + Savings Deposits)
ΔLn(Reserves)	0.121***	0.116***	0.119***	-0.140
	(0.0286)	(0.0293)	(0.0282)	(0.104)
L5.Ln(Reserves)	0.0128***	0.0145***	0.0149***	-0.00971
	(0.00285)	(0.00361)	(0.00351)	(0.00668)
N	115580	50941	43145	30782
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Second Stage	(1) ΔLn(Time Deposits)	(2) ΔLn(Time Deposits)	(3) ΔLn(Time Deposits)	(4) ΔLn(Time Deposits)
ΔLn(Reserves)	-0.0750	-0.0602	-0.0538	-0.0336
	(0.0468)	(0.0476)	(0.0473)	(0.156)
L5.Ln(Reserves)	-0.0111**	-0.0169**	-0.0143**	0.00106
	(0.00503)	(0.00637)	(0.00574)	(0.0103)
N	114734	50573	42868	30563
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

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Panel C: 1st Stage Credit Line Results

This table shows the first stage results of the instrumental variable two-stage least-squares regressions in Panel D. *Reserves* is aggregated to the bank holding company (BHC) level from Call Reports, in particular, as. cash and balances due from Federal Reserve Banks at the consolidated bank level (RCFD0090). The instrument for reserves,is defined as Ln(Aggregate Reserves $_t$/Aggregate Reserves $_{t-4}$) x Reserve Share $_{t-1}$. Aggregate Reserves are sourced from FRED. Column (1) represents the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Column (2) represents QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Column (3) represents the QEI-III period: 2008Q4 - 2014Q3. Column (4) shows results for the Post-QE III + QT period: 2014Q4 - 2019Q3. All specifications contain time fixed effects. Standard errors are two-way clustered at the bank and time level. * p<0.1, ** p<0.05, *** p<0.01

	(1)	(2)	(3)	(4)
	Δ	Δ	Δ	Δ
	Ln(Reserves)	Ln(Reserves)	Ln(Reserves)	Ln(Reserves)
z^{Ralt}_{it} (=Ln(Aggregate Reserves $_t$/Aggregate Reserves $_{t-4}$) x Reserve Share $_{t-1}$)	0.00000230***	0.00000230***	0.00000230***	0.00000230***
	(0.000000453)	(0.000000453)	(0.000000453)	(0.000000453)
Ln(Reserves)$_{t-5}$	-0.0851***	-0.0851***	-0.0851***	-0.0851***
	(0.0194)	(0.0194)	(0.0194)	(0.0194)
Constant	1.367***	1.367***	1.367***	1.367***
	(0.252)	(0.252)	(0.252)	(0.252)
Obs	2239	2239	2239	2239
R-sq	0.241	0.241	0.241	0.241
Time-FE	Y	Y	Y	Y
Bank and Time Clustered SEs	Y	Y	Y	Y
F	17.16	11.43	45.15	4.652
Period	Overall: 2001Q1 - 2021Q4	QE I-III + Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE I-III: 2008Q4 - 2014Q3	Post-QE III + QT2014Q4 - 2019Q3

Panel D: 2nd Stage Results with Ln(Credit Lines) as the 2nd Stage Dependent variable

The table shows OLS and the second-stage of 2SLS IV regressions of the change in the amount of originated credit lines ΔLn(Credit Lines)) of investment-grade and unrated firms in the U.S. as the dependent variable against change in bank's reserve holdings aggregated to the BHC level. Reserve data is sourced from FDIC's Call Reports, credit line originations from the Refinitive LoanConnector database. Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090). Change is the contemporary level minus the deposit level lagged by 4 quarters. All specifications control for time-FE. Columns (1) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Columns (2) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Columns (3) represent the QEI-III period: 2008Q4 - 2014Q3. Columns (4) show results for the Post-QE III + QT period: 2014Q4 - 2019Q3. We report the second stage where Δ Ln(Reserves) is instrumented by Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters (zRit . Standard errors are two-way clustered at the bank and time or at the time level (second stage). Newey West SEs correcting for autocorrelation up to four quarters are also reported in Panel A. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

	(1) Δ Ln(Credit Lines)	(2) Δ Ln(Credit Lines)	(3) Δ Ln(Credit Lines)	(4) Δ Ln(Credit Lines)
Δ Ln(Reserves)	0.0590* (0.0344)	0.0628* (0.0353)	0.0632* (0.0351)	-0.382 (0.392)
Ln(Reserves)$_{t-5}$	-0.00784 (0.00913)	-0.00422 (0.0134)	-0.00416 (0.0135)	-0.0262 (0.0311)
Obs	2235	894	669	570
Time-FE	Y	Y	Y	Y
Bank and Time Clustered SEs	Y	Y	Y	Y
Reg Type	IV	IV	IV	IV
Period	Overall: 2001Q1 - 2021Q4	QE I-III + Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE I-III: 2008Q4 - 2014Q3	Post-QE III + QT2014Q4 - 2019Q3

Table A5: First-Stage for Deposit Rate Spread Regressions with Alternate Reserves Instrument

The table represents the first-stage regressions in the 2SLS IV regression of Deposit Spreads with the Reserve Instrument replaced with the alternate reserve instrument - *Ln(Aggregate Reserves $_t$/Aggregate Reserves $_{t-4}$) x Reserve Share $_{t-1}$ (z^{Ralt}_{it}). Total Deposits* is the sum of Total Domestic and Foreign Deposits held at the depository level (RCON2200+RCFN2200 of Call Reports). *Reserve*s are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 of Call Reports). *Aggregate Reserves* is taken from FRED. The *County Deposit Growth Instrument (z^D_{it})* is the log of the ratio of contemporary to one-quarter lagged level of total county deposits summed across all the counties the bank has a presence. Columns (1) & (5) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Columns (2) & (6) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Columns (3) & (7) represent the QEI-III period: 2008Q4 - 2014Q3. Columns (4) & (8) show results for the Post-QE III + QT period 2014Q4 - 2019Q3. We control for bank and time-fixed effects. Standard errors are two-way clustered at the bank and time level. * p<0.1, ** p<0.05, *** p<0.01

	(1) Ln(Total Deposits)	(2) Ln(Total Deposits)	(3) Ln(Total Deposits)	(4) Ln(Total Deposits)	(5) Ln(Reserves)	(6) Ln(Reserves)	(7) Ln(Reserves)	(8) Ln(Reserves)
Ln(Aggregate Reserves $_t$/Aggregate Reserves $_{t-4}$) x Reserve Share $_{t-1}$	0.275**	0.0743	-0.0182	4.954	3.583***	2.658***	2.348***	32.70***
	(0.119)	(0.0477)	(0.0474)	(3.165)	(0.994)	(0.577)	(0.467)	(9.620)
County Deposit Growth Instrument	0.0400***	0.0317***	0.0449***	0.0298***	0.0329	0.00341	0.0300	0.0665**
	(0.00621)	(0.00982)	(0.00979)	(0.00715)	(0.0218)	(0.0361)	(0.0326)	(0.0280)
Constant	13.41***	13.42***	13.25***	13.60***	8.859***	9.602***	9.280***	9.771***
	(0.000568)	(0.000829)	(0.000767)	(0.000622)	(0.00196)	(0.00290)	(0.00215)	(0.00242)
N	148542	61253	52728	37355	132517	56086	48029	32177
R-sq	0.934	0.957	0.965	0.988	0.721	0.762	0.755	0.843
F-stat	23.94	6.749	11.42	10.05	8.160	10.78	13.38	9.918
Bank & Time-FE	Y	Y	Y	Y	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Table A6: Deposit Spread & Credit Line Costs: Second Stage Regressions with Alternate Reserves Instruments

The table shows 2nd stage of 2SLS IV regressions of *3, 12, 18 and 24-month CD – savings spread* against bank-level *Ln(Total Deposits)* and *Ln(Reserves)*. CD and savings rates are sourced from *S&P Global's RateWatch* deposit data. Bank-level variables are sourced from *FDIC's Call Reports* data. *Reserves* are cash and balances due from Federal Reserve Banks at the consolidated bank level (RCFD0090). *Total Deposits* are the sum total of deposits held in domestic and foreign offices (RCON2200 + RCFN2200). Panel A shows the OLS regression. Panel B shows the IV regression with *Ln(Total Deposits)* instrumented with the *County Deposit Growth Instrument (z^D_{it})* and *Ln(Reserves)* instrumented with Ln(Aggregate Reserves $_t$/Aggregate Reserves $_{t-4}$) x Reserve Share $_{t-1}$ (z^{Ralt}_{it}). Panel A shows the second stage results for the Overall and QE I-III+ Pandemic QE periods. Panel B shows results for QE I-III and Post-QE-III+QT periods. All specifications control for bank and time fixed effects. Standard errors are two-way clustered at the bank and time level. The sample period is 2001 Q1 – 2021 Q4. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.302	0.473**	0.595**	0.445**
	(0.208)	(0.213)	(0.277)	(0.194)
Ln(Reserves)	-0.161***	-0.0899	-0.224***	-0.124***
	(0.0333)	(0.0690)	(0.0555)	(0.0430)
N	91355	97634	81716	96098
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4			
	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.220	0.573**	0.273	0.438*
	(0.249)	(0.224)	(0.326)	(0.224)
Ln(Reserves)	-0.145***	-0.0474	-0.168*	-0.0705
	(0.0418)	(0.0481)	(0.0910)	(0.0509)
N	41471	44440	36873	43720
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4			

Panel A: Overall and QE-I-III + Pandemic QE periods

Panel B: QE-I-III and Post-QE-III+QT periods

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.332*	0.520***	0.377	0.409**
	(0.190)	(0.166)	(0.243)	(0.169)
Ln(Reserves)	-0.152***	-0.0280	-0.171*	-0.0624
	(0.0448)	(0.0694)	(0.0895)	(0.0490)
N	36588	39020	32282	38346
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III :2008Q4 - 2014Q3			
	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	-0.655	-0.965	-0.502	-1.308
	(0.843)	(1.117)	(1.129)	(1.151)
Ln(Reserves)	0.395	0.372	0.186	0.506
	(0.233)	(0.384)	(0.453)	(0.347)
N	22524	24558	20454	24230
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Post-QE-III + QT: 2014Q4 - 2019Q3			

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Panel C: First stage credit lines

This table shows the first stage results of the instrumental variable two-stage least-squares regressions in Table 11. Bank Balance Sheet Data is sourced from Consolidated Reports of Condition and Income for a Bank with Domestic and Foreign Offices (Call Reports) of the FDIC. *Reserves* are cash and balances from Federal Reserve Banks at the consolidated bank-level (RCFD0090). *Credit lines* are credit line originations from the Refinitive LoanConnector database. The instrument for credit lines, z_{it}^{CL} (henceforth, *Credit Line Instrument*) is the *Ln(Credit Lines)$_{it-1}$ x ELP$_{t-1}$*. Reserve Instrument is replaced with the alternate reserve *instrument - Ln(Aggregate Reserves $_t$/Aggregate Reserves $_{t-4}$) x Reserve Share $_{t-1}$ (z^{Ralt}_{it})*. Columns (1) & (5) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Columns (2) & (6) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Columns (3) & (7) represent the QEI-III period: 2008Q4 - 2014Q3We control for bank and time-fixed effects. Standard errors are two-way clustered at the bank and time level. * p<0.1, ** p<0.05, *** p<0.01

	(1) Ln(Credit Lines)	(2) Ln(Credit Lines)	(3) Ln(Credit Lines)	(4) Ln(Credit Lines)	(5) Ln(Reserves)	(6) Ln(Reserves)	(7) Ln(Reserves)	(8) Ln(Reserves)
Ln(Aggregate Reserves t/Aggregate Reserves t-4) x Reserve Share t-1	-0.000000829	-9.81e-08	-2.18e-08	-0.000129***	0.00000265***	0.00000308***	0.00000133***	-0.000248***
	(0.000000964)	(0.000000401)	(6.72e-08)	(0.0000330)	(0.000000377)	(0.000000594)	(0.000000371)	(0.0000439)
z_{it}^{CL}	0.407***	0.314***	0.0386***	1.191***	0.289***	0.246***	-0.0559***	1.206***
	(0.0496)	(0.0428)	(0.0126)	(0.219)	(0.0590)	(0.0627)	(0.0150)	(0.219)
Constant	5.231***	3.661***	8.549***	5.590***	10.29***	10.03***	15.59***	10.47***
	(0.532)	(0.777)	(0.246)	(0.733)	(0.608)	(1.143)	(0.291)	(0.743)
Obs	2436	804	742	648	2326	773	719	591
R-sq	0.460	0.596	0.921	0.460	0.501	0.293	0.840	0.423
Bank & Time-FE	Y	Y	Y	Y	Y	Y	Y	Y
Bank and Time Clustered SEs	Y	Y	Y	Y	Y	Y	Y	Y
F-stat	34.74	27.02	4.753	39.40	175.3	61.01	10.60	50.87
Period	Overall: 2001Q1 - 2021Q4	QE I-III + Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE I-III: 2008Q4 - 2014Q3	Post-QE III + QT2014Q4 - 2019Q3	Overall: 2001Q1 - 2021Q4	QE I-III + Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE I-III: 2008Q4 - 2014Q3	Post-QE III + QT2014Q4 - 2019Q3

Panel D: Second stage with AISD/AISU-ratio as dependent variable with Alternate Reserves Instruments

The table shows the second-stage of 2SLS IV regressions of the price of credit lines measured as the *AISD/AISU*-ratio of credit lines originated to investment-grade and unrated firms in the U.S. as the dependent variable on a bank's reserve holdings and credit lines aggregated to the BHC level. Reserve data is sourced from FDIC's Call Reports, credit line originations from the Refinitive LoanConnector database. Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 The instrument for credit lines is the *Ln(Credit Lines)$_{it-1}$ x ELP$_{t-1}$*. Reserve Instrument is replaced with the alternate reserve *instrument - Ln(Aggregate Reserves $_t$/Aggregate Reserves $_{t-4}$) x Reserve Share $_{t-1}$ (z^{Ralt}_{it})*. Column (1) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Column (2) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Column (3) represent the QEI-III period: 2008Q4 - 2014Q3. Column (4) show results for the Post-QE III + QT period: 2014Q4 - 2019Q3. Standard errors are two-way clustered at the bank and time level. * p<0.1, ** p<0.05, *** p<0.01

	(1) AISD/AISU	(2) AISD/AISU	(3) AISD/AISU	(4) AISD/AISU
Ln(Reserves)	-0.400	-1.002**	-1.024**	-0.0534
	(0.256)	(0.362)	(0.377)	(0.647)
Ln(Credit Lines)	-0.142	-1.457	-1.516	0.139
	(0.431)	(0.917)	(1.126)	(5.472)
Obs	2314	767	714	590
Bank & Time-FE	Y	Y	Y	Y
Bank and Time Clustered SEs	Y	Y	Y	Y
Reg Type	IV	IV	IV	IV
Period	Overall: 2001Q1 - 2021Q4	QE I-III + Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE I-III: 2008Q4 - 2014Q3	Post-QE III + QT2014Q4 - 2019Q3

Panel E: Second stage with AISD/AISU-ratio as dependent variable with Alternate Credit Line Instruments

The table shows the second-stage of 2SLS IV regressions of the price of credit lines measured as the *AISD/AISU*-ratio of credit lines originated to investment-grade and unrated firms in the U.S. as the dependent variable on a bank's reserve holdings and credit lines aggregated to the BHC level. Reserve data is sourced from FDIC's Call Reports, credit line originations from the Refinitive LoanConnector database. Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 The alternative instrument for credit lines is the *Ln(Credit Lines)$_{it-1}$ x EBP$_{t-1}$*. Reserve Instrument is as defined above. Column (1) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Column (2) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Column (3) represent the QEI-III period: 2008Q4 - 2014Q3. Column (4) show results for the Post-QE III + QT period: 2014Q4 - 2019Q3. Standard errors are two-way clustered at the bank and time level. * p<0.1, ** p<0.05, *** p<0.01

	(1) AISD/AISU	(2) AISD/AISU	(3) AISD/AISU	(4) AISD/AISU
Ln(Reserves)	-1.014	-1.085*	-1.318*	-8.463
	(0.949)	(0.558)	(0.660)	(16.31)
Ln(Credit Lines)	2.266	-4.142	-6.369	2.599
	(14.64)	(4.852)	(9.033)	(18.39)
Obs	2386	952	715	586
Bank & Time-FE	Y	Y	Y	Y
Bank and Time Clustered SEs	Y	Y	Y	Y
Reg Type	IV	IV	IV	IV
Period	Overall: 2001Q1 - 2021Q4	QE I-III + Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE I-III: 2008Q4 - 2014Q3	Post-QE III + QT2014Q4 - 2019Q3

Table A7: Alternate Deposit Instruments – Senior Share Instrument

The table represents the first-stage regressions in the 2SLS IV regression of Deposit Spreads with the Deposit Instrument replaced with the Senior Share Instrument defined as $z_{it}^{Dss} = ln\left(\frac{\sum_{c \in C_{it}} Senior\ Share_{ct} \times County\ Deposits_{ct}}{\sum_{c \in C_{it-1}} County\ Deposits_{ct-1}}\right)$, where C_{it} is the set of all counties where the bank i has presence. Senior Share is share of county population above 65 years of age from Census Bureau data. County-level deposits are estimated from FDIC's Summary of Deposits. Total Deposits is the sum of Total Domestic and Foreign Deposits held at the depository level (RCON2200+RCFN2200 of Call Reports). Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 of Call Reports). Reserves instrument is defined as *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters*. Aggregate Reserves is taken from FRED. Columns (1) & (5) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Columns (2) & (6) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Columns (3) & (7) represent the QEI-III period: 2008Q4 - 2014Q3. Columns (4) & (8) show results for the Post-QE III + QT period 2014Q4 - 2019Q3. We control for bank and time-fixed effects. Standard errors are two-way clustered at the bank and time level. * p<0.1, ** p<0.05, *** p<0.01

	(1) Ln(Total Deposits)	(2) Ln(Total Deposits)	(3) Ln(Total Deposits)	(4) Ln(Total Deposits)	(5) Ln(Reserves)	(6) Ln(Reserves)	(7) Ln(Reserves)	(8) Ln(Reserves)
Growth in Agg Reserves (qoq) X Average Past 4Q Reserve Share	1.037***	0.324**	0.0147	6.946	11.97***	9.529***	8.577***	38.34*
	(0.351)	(0.151)	(0.132)	(5.638)	(1.469)	(0.839)	(0.706)	(21.70)
Senior Share Instrument	0.0387***	0.0196*	0.0369***	0.0311***	0.0438*	-0.0194	0.0236	0.0606*
	(0.00736)	(0.0102)	(0.00981)	(0.00792)	(0.0258)	(0.0403)	(0.0343)	(0.0311)
Constant	13.56***	13.50***	13.36***	13.72***	9.046***	9.597***	9.348***	9.909***
	(0.0139)	(0.0192)	(0.0189)	(0.0142)	(0.0486)	(0.0761)	(0.0657)	(0.0554)
N	133401	57788	49450	34572	121355	53196	45293	31245
R-sq	0.938	0.959	0.967	0.988	0.725	0.762	0.754	0.842
F-stat	18.95	4.559	7.949	9.842	34.59	65.81	74.32	3.855
Bank & Time-FE	Y	Y	Y	Y	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Table A8: Deposit Spread Secon Stage Results with Senior Share Instrument

The table shows 2nd stage of 2SLS IV regressions of *3, 12, 18 and 24-month CD – savings spread* against bank-level *Ln(Total Deposits)* and *Ln(Reserves)*. CD and savings rates are sourced from *S&P Global's RateWatch* deposit data. Bank-level variables are sourced from *FDIC's Call Reports* data. *Reserves* are cash and balances due from Federal Reserve Banks at the consolidated bank level (RCFD0090). *Total Deposits* are the sum total of deposits held in domestic and foreign offices (RCON2200 + RCFN2200). Panel A shows the OLS regression. Panel B shows the IV regression with *Ln(Total Deposits)* instrumented with the *Senior Share Instrument (z^{Dss}_{it})* and *Ln(Reserves)* instrumented with as *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters*. Aggregate Reserves is taken from FRED. Panel A shows the second stage results for the Overall and QE I-III+ Pandemic QE periods. Panel B shows results for QE I-III and Post-QE-III+QT periods. All specifications control for bank and time fixed effects. Standard errors are two-way clustered at the bank and time level. The sample period is 2001 Q1 – 2021 Q4. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Panel A: Overall and QE-I-III + Pandemic QE periods

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.133	0.194	0.472	0.225
	(0.229)	(0.222)	(0.343)	(0.195)
Ln(Reserves)	-0.105***	-0.0396	-0.218***	-0.0972***
	(0.0329)	(0.0528)	(0.0617)	(0.0274)
N	85168	91061	76285	89681
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4			
	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	-0.0310	0.450	-0.106	0.335
	(0.304)	(0.322)	(0.499)	(0.305)
Ln(Reserves)	-0.0915***	-0.0179	-0.160**	-0.0768**
	(0.0330)	(0.0452)	(0.0757)	(0.0292)
N	39844	42674	35460	41994
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4			

Panel B: QE-I-III and Post-QE-III+QT periods

	(1)	(2)	(3)	(4)
	3 month CD Rate - Savings Rate	12 month CD Rate - Savings Rate	18 month CD Rate - Savings Rate	24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.175	0.344*	0.187	0.284
	(0.180)	(0.183)	(0.297)	(0.185)
Ln(Reserves)	-0.102**	0.00417	-0.173**	-0.0686**
	(0.0400)	(0.0600)	(0.0831)	(0.0317)
N	35034	37334	30939	36701
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period		QE-I-III :2008Q4 - 2014Q3		
	(1)	(2)	(3)	(4)
	3 month CD Rate - Savings Rate	12 month CD Rate - Savings Rate	18 month CD Rate - Savings Rate	24 month CD Rate - Savings Rate
Ln(Total Deposits)	-0.666	-1.322	-0.778	-1.509
	(1.078)	(1.572)	(1.366)	(1.692)
Ln(Reserves)	0.469	0.614	0.350	0.685
	(0.317)	(0.520)	(0.527)	(0.531)
N	21929	23918	19914	23611
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period		Post-QE-III + QT: 2014Q4 - 2019Q3		

Table A9: **Alternate Deposit Instruments – Small Business Administration (SBA) Disaster Assistance Instrument**

The table represents the first-stage regressions in the 2SLS IV regression of Deposit Spreads with the Deposit Instrument replaced with the SBA Disaster Assistance Instrument defined as $z_{it}^{Dsba} = \ln\left(\sum_{z \in Z_{it}} Loss_{zt} \times \frac{Bank\ Zip\ Share_{izt_0}}{\sum_{z \in Z_{it}} Bank\ Zip\ Share_{izt_0}}\right)$, where Z_{it} is the set of all zips bank i has presence in and t_0 is the earliest year of bank's presence in the zip in the Summary of Deposit sample starting 2000q1. *Loss* is the zip-level perceived loss for which SBA disaster assistance is requested. Bank Zip Share is the ratio of bank i's deposits in zip z to the Total Deposits of the bank. Total Deposits is the sum of Total Domestic and Foreign Deposits held at the depository level (RCON2200+RCFN2200 of Call Reports). Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 of Call Reports). Reserves instrument is defined as *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters.* Aggregate Reserves is taken from FRED. Columns (1) & (5) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Columns (2) & (6) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Columns (3) & (7) represent the QEI-III period: 2008Q4 - 2014Q3. Columns (4) & (8) show results for the Post-QE III + QT period 2014Q4 - 2019Q3. We control for bank and time-fixed effects. Standard errors are two-way clustered at the bank and time level. * p<0.1, ** p<0.05, *** p<0.01

	(1) Ln(Total Deposits)	(2) Ln(Total Deposits)	(3) Ln(Total Deposits)	(4) Ln(Total Deposits)	(5) Ln(Reserves)	(6) Ln(Reserves)	(7) Ln(Reserves)	(8) Ln(Reserves)
Growth in Agg Reserves (qoq) X Average Past 4Q Reserve Share	1.055***	0.343**	0.0247	6.498	11.97***	9.536***	8.572***	37.71*
	(0.347)	(0.152)	(0.134)	(5.626)	(1.471)	(0.852)	(0.715)	(21.72)
SBA Disaster Assistance Instrument	0.00475***	0.00418***	0.00203***	0.00141**	0.00414**	-0.000576	-0.000514	-0.00219
	(0.000558)	(0.000781)	(0.000592)	(0.000508)	(0.00199)	(0.00253)	(0.00269)	(0.00208)
Constant	13.47***	13.46***	13.29***	13.66***	8.959***	9.645***	9.314***	9.815***
	(0.00149)	(0.00207)	(0.00146)	(0.00117)	(0.00533)	(0.00637)	(0.00664)	(0.00449)
N	134028	57998	49628	34683	121876	53388	45453	31355
R-sq	0.939	0.960	0.967	0.988	0.726	0.763	0.756	0.843
F-stat	38.15	14.39	5.906	3.881	33.54	66.91	82.45	2.155
Bank & Time-FE	Y	Y	Y	Y	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Table A10: **2nd Stage Results Alternate Deposit Instruments – SBA Disaster Assistance**

The table shows 2nd stage of 2SLS IV regressions of *3, 12, 18 and 24-month CD – savings spread* against bank-level *Ln(Total Deposits)* and *Ln(Reserves)*. CD and savings rates are sourced from *S&P Global's RateWatch* deposit data. Bank-level variables are sourced from *FDIC's Call Reports* data. *Reserves* are cash and balances due from Federal Reserve Banks at the consolidated bank level (RCFD0090). *Total Deposits* are the sum total of deposits held in domestic and foreign offices (RCON2200 + RCFN2200). Panel A shows the OLS regression. Panel B shows the IV regression with *Ln(Total Deposits)* instrumented with the *SBA Disaster Assistance Instrument (z^{Dsba}_{it})* and *Ln(Reserves)* instrumented with as *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters*. Aggregate Reserves is taken from FRED. Panel A shows the second stage results for the Overall and QE I-III+ Pandemic QE periods. Panel B shows results for QE I-III and Post-QE-III+QT periods. All specifications control for bank and time fixed effects. Standard errors are two-way clustered at the bank and time level. The sample period is 2001 Q1 – 2021 Q4. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Panel A: Overall and QE-I-III + Pandemic QE periods

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	-0.0801	-0.157	0.00965	-0.122
	(0.156)	(0.172)	(0.199)	(0.165)
Ln(Reserves)	-0.0892***	-0.0124	-0.183***	-0.0706***
	(0.0263)	(0.0413)	(0.0613)	(0.0248)
N	85328	91221	76428	89839
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4			
	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.0608	0.131	0.0658	0.175
	(0.151)	(0.201)	(0.255)	(0.204)
Ln(Reserves)	-0.0947***	-0.00867	-0.166**	-0.0726**
	(0.0319)	(0.0467)	(0.0757)	(0.0303)
N	39951	42781	35553	42099
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4			

Panel B: QE-I-III and Post-QE-III+QT periods

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.223	0.664	0.725	0.709
	(0.423)	(0.529)	(0.648)	(0.551)
Ln(Reserves)	-0.102**	0.00133	-0.177**	-0.0719**
	(0.0395)	(0.0614)	(0.0788)	(0.0295)
N	35133	37433	31024	36798
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III :2008Q4 - 2014Q3			

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	-0.719	-1.021	-1.365	-1.224
	(0.797)	(1.038)	(0.994)	(1.179)
Ln(Reserves)	0.483**	0.563*	0.473	0.637**
	(0.198)	(0.286)	(0.278)	(0.299)
N	21949	23938	19934	23631
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Post-QE-III + QT: 2014Q4 - 2019Q3			

Table A11: Second Stage Results with CD – Money Market Rate Spreads

The table shows 2nd stage of 2SLS IV regressions of *3, 12, 18 and 24-month CD – money market rate spread* against bank-level *Ln(Total Deposits)* and *Ln(Reserves)*. CD and savings rates are sourced from *S&P Global's RateWatch* deposit data. Bank-level variables are sourced from *FDIC's Call Reports* data. *Reserves* are cash and balances due from Federal Reserve Banks at the consolidated bank level (RCFD0090). *Total Deposits* are the sum total of deposits held in domestic and foreign offices (RCON2200 + RCFN2200). Panel A shows the OLS regression. Panel B shows the IV regression with *Ln(Total Deposits)* instrumented with the *County Deposit Growth Instrument (z^D_{it})* and *Ln(Reserves)* instrumented with as *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters*. Aggregate Reserves is taken from FRED. Panel A shows the second stage results for the Overall and QE I-III+ Pandemic QE periods. Panel B shows results for QE I-III and Post-QE-III+QT periods. All specifications control for bank and time fixed effects. Standard errors are two-way clustered at the bank and time level. The sample period is 2001 Q1 – 2021 Q4. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Panel A: Overall and QE-I-III + Pandemic QE periods

	(1) 3 month CD Rate - Money Market AC Rate	(2) 12 month CD Rate - Money Market AC Rate	(3) 18 month CD Rate - Money Market AC Rate	(4) 24 month CD Rate - Money Market AC Rate
Ln(Total Deposits)	0.107	0.171	0.482*	0.204
	(0.263)	(0.240)	(0.288)	(0.247)
Ln(Reserves)	-0.131***	-0.0585	-0.230***	-0.119***
	(0.0370)	(0.0599)	(0.0383)	(0.0300)
N	84006	89703	75179	88356
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4			
	(1) 3 month CD Rate - Money Market AC Rate	(2) 12 month CD Rate - Money Market AC Rate	(3) 18 month CD Rate - Money Market AC Rate	(4) 24 month CD Rate - Money Market AC Rate
Ln(Total Deposits)	0.116	0.308	0.238	0.287
	(0.330)	(0.251)	(0.444)	(0.288)
Ln(Reserves)	-0.165***	-0.0679**	-0.233**	-0.127**
	(0.0409)	(0.0258)	(0.105)	(0.0541)
N	39347	42084	34972	41432
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4			

Panel B: QE-I-III and Post-QE-III+QT periods

	(1) 3 month CD Rate - Money Market AC Rate	(2) 12 month CD Rate - Money Market AC Rate	(3) 18 month CD Rate - Money Market AC Rate	(4) 24 month CD Rate - Money Market AC Rate
Ln(Total Deposits)	0.319	0.412**	0.450	0.402*
	(0.255)	(0.186)	(0.323)	(0.221)
Ln(Reserves)	-0.177***	-0.0689**	-0.244**	-0.134**
	(0.0392)	(0.0309)	(0.105)	(0.0521)
N	34578	36818	30526	36200
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III :2008Q4 - 2014Q3			
	(1) 3 month CD Rate - Money Market AC Rate	(2) 12 month CD Rate - Money Market AC Rate	(3) 18 month CD Rate - Money Market AC Rate	(4) 24 month CD Rate - Money Market AC Rate
Ln(Total Deposits)	-0.642	-0.146	0.378	-0.746
	(1.107)	(1.492)	(1.129)	(1.528)
Ln(Reserves)	0.442	0.0302	-0.242	0.304
	(0.424)	(0.706)	(0.526)	(0.698)
N	21426	23331	19429	23039
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Post-QE-III + QT: 2014Q4 - 2019Q3			

Table A12: Deposit Quantities - Heterogeneity by Assets

The table represents the second-stage results of deposit quantities regression split by above/below 90th percentile of bank assets (RCFD2170). The reserve instrument used here is *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters*. Total Deposits is the sum of Total Domestic and Foreign Deposits held at the depository level (RCON2200+RCFN2200 of Call Reports). Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 of Call Reports). Aggregate Reserves is taken from FRED. Panel A reports the 2nd Stage with ΔLn(Total Deposits). Panel B reports the 2nd Stage with ΔLn(*Demand and Savings deposits*)(RCON2210+RCON6810+RCON0352 of Call Reports) and Panel C with ΔLn(*Time Deposits)* (RCON6648 + RCONJ473 + RCONJ474) or (RCON6648+RCON2604) $\Delta Y_{it} = Y_{it} - Y_{it-4}$. All specifications control for Time-Fixed Effects. Standard errors are two-way clustered at the bank and quarter level. Columns (1) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Columns (2) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Columns (3) represent the QEI-III period: 2008Q4 - 2014Q3. Columns (4) show results for the Post-QE III + QT period 2014Q4 - 2019Q * $p<0.1$, ** $p<0.05$, *** $p<0.01$

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Panel A: ΔLn(Total Deposits)

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Above 90th Percentile Bank Assets	(1) ΔLn(Total Deposits)	(2) ΔLn(Total Deposits)	(3) ΔLn(Total Deposits)	(4) ΔLn(Total Deposits)
ΔLn(Reserves)	0.0270**	0.0272**	0.0265**	-0.132**
	(0.0128)	(0.0113)	(0.0113)	(0.0516)
Ln(Reserves)$_{t-5}$	0.000970	0.000180	0.000246	-0.0115***
	(0.00150)	(0.00190)	(0.00207)	(0.00388)
N	44345	19000	13577	14078
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3
Below 90th Percentile Bank Assets	(1) ΔLn(Total Deposits)	(2) ΔLn(Total Deposits)	(3) ΔLn(Total Deposits)	(4) ΔLn(Total Deposits)
ΔLn(Reserves)	0.145***	0.116***	0.120***	-0.191
	(0.0477)	(0.0270)	(0.0278)	(.)
Ln(Reserves)$_{t-5}$	0.0168**	0.0155***	0.0156***	-0.0209
	(0.00679)	(0.00486)	(0.00495)	(.)
N	66552	30118	28134	15487
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

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Panel B: ΔLn(Demand + Savings Deposits)

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Above 90th Percentile Bank Assets	(1) ΔLn(Demand + Savings Deposits)	(2) ΔLn(Demand + Savings Deposits)	(3) ΔLn(Demand + Savings Deposits)	(4) ΔLn(Demand + Savings Deposits)
ΔLn(Reserves)	0.156***	0.144***	0.148***	-0.105***
	(0.0170)	(0.0183)	(0.0158)	(0.0327)
Ln(Reserves)$_{t-5}$	0.0138***	0.0167***	0.0167***	-0.0116
	(0.00223)	(0.00325)	(0.00336)	(.)
N	44268	18968	13551	14066
F-stat	3.468	6.795	7.616	1.958
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Below 90th Percentile Bank Assets	(1) ΔLn(Demand + Savings Deposits)	(2) ΔLn(Demand + Savings Deposits)	(3) ΔLn(Demand + Savings Deposits)	(4) ΔLn(Demand + Savings Deposits)
ΔLn(Reserves)	0.0932*	0.0749**	0.0789**	-0.166*
	(0.0505)	(0.0357)	(0.0366)	(0.0912)
Ln(Reserves)$_{t-5}$	0.0114	0.00935	0.00949	-0.0179*
	(0.00731)	(0.00655)	(0.00666)	(0.00908)
N	66494	30096	28120	15484
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

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Panel C: Δ Ln(Time Deposits)

	(1) Δ Ln(Time Deposits)	(2) Δ Ln(Time Deposits)	(3) Δ Ln(Time Deposits)	(4) Δ Ln(Time Deposits)
Δ Ln(Reserves)	-0.134***	-0.105***	-0.103***	-0.0178
	(0.0353)	(0.0339)	(0.0264)	(0.181)
Ln(Reserves)$_{t-5}$	-0.0183***	-0.0284***	-0.0258***	0.00420
	(0.00493)	(0.00658)	(0.00452)	(0.0125)
N	43816	18766	13441	13877
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3
	(1) Δ Ln(Time Deposits)	(2) Δ Ln(Time Deposits)	(3) Δ Ln(Time Deposits)	(4) Δ Ln(Time Deposits)
Δ Ln(Reserves)	-0.0490	-0.0273	-0.0259	-0.276
	(0.0678)	(0.0395)	(0.0403)	(0.189)
Ln(Reserves)$_{t-5}$	-0.0125	-0.0111	-0.0110	-0.0312*
	(0.00968)	(0.00662)	(0.00657)	(0.0160)
N	66158	29964	27983	15452
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Table A13: Deposit Rate Spreads - Heterogeneity by Assets

The table shows 2nd stage of 2SLS IV regressions of *3, 12, 18 and 24-month CD – savings rate spread* against bank-level *Ln(Total Deposits)* and *Ln(Reserves)* split by above/below 90th Percentile bank assets (RCFD2170). CD and savings rates are sourced from *S&P Global's RateWatch* deposit data. Bank-level variables are sourced from *FDIC's Call Reports* data. *Reserves* are cash and balances due from Federal Reserve Banks at the consolidated bank level (RCFD0090). *Total Deposits* are the sum total of deposits held in domestic and foreign offices (RCON2200 + RCFN2200). Panel A shows the OLS regression. Panel B shows the IV regression with *Ln(Total Deposits)* instrumented with the *County Deposit Growth Instrument (z^D_{it})* and *Ln(Reserves)* instrumented with as *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters*. Aggregate Reserves is taken from FRED. Panel A shows the second stage results for the Overall period, Panel B for QE I-III+ Pandemic QE periods Panel C shows results for QE I-III and Panel D shows results for Post-QE-III+QT periods. All specifications control for bank and time fixed effects. Standard errors are two-way clustered at the bank and time level. The sample period is 2001 Q1 – 2021 Q4. * p<0.1, ** p<0.05, *** p<0.01

Panel A: Overall

Above 90th Percentile Bank Assets	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.167	0.388	0.178	0.266
	(0.335)	(0.325)	(0.448)	(0.315)
Ln(Reserves)	-0.147***	-0.0836	-0.234***	-0.127***
	(0.0462)	(0.0703)	(0.0730)	(0.0402)
N	33713	35581	31150	35244
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period		Overall: 2001Q1-2021Q4		
Below 90th Percentile Bank Assets	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.0678	0.332	0.164	0.417*
	(0.262)	(0.244)	(0.314)	(0.244)
Ln(Reserves)	-0.0117	0.0101	0.0406	-0.00920
	(0.0238)	(0.0245)	(0.0369)	(0.0268)
N	51563	55589	45232	54545
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period		Overall: 2001Q1-2021Q4		

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Panel B: QE I-III+ Pandemic QE

Above 90th Percentile Bank Assets	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.252	0.725	0.194	0.375
	(0.455)	(0.453)	(0.595)	(0.491)
Ln(Reserves)	-0.157***	-0.0754	-0.206**	-0.121***
	(0.0378)	(0.0542)	(0.0842)	(0.0358)
N	15101	15950	13903	15786
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4			
Below 90th Percentile Bank Assets	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.437	1.056	0.915	1.114*
	(0.404)	(0.657)	(1.005)	(0.639)
Ln(Reserves)	-0.0325*	0.00226	0.0222	-0.0126
	(0.0177)	(0.0209)	(0.0316)	(0.0217)
N	24788	26764	21587	26248
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4			

Panel C: QE I-III

Above 90th Percentile Bank Assets	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.250	0.499**	0.248	0.268
	(0.279)	(0.225)	(0.364)	(0.293)
Ln(Reserves)	-0.168***	-0.0448	-0.215**	-0.113***
	(0.0394)	(0.0689)	(0.0910)	(0.0324)
N	11659	12113	10571	11972
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III: 2008Q4 - 2014Q3			

Below 90th Percentile Bank Assets	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.555	1.085	1.176	1.239
	(0.452)	(0.723)	(1.320)	(0.744)
Ln(Reserves)	-0.0334*	0.00561	0.0210	-0.0109
	(0.0183)	(0.0201)	(0.0345)	(0.0221)
N	23432	25277	20409	24783
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III: 2008Q4 - 2014Q3			

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Panel D: Post-QE-III+QT periods

Above 90th Percentile Bank Assets	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	-0.107	-1.719	-0.572	-2.160
	(1.564)	(3.429)	(2.101)	(4.194)
Ln(Reserves)	0.350	0.730	0.335	0.880
	(0.421)	(0.977)	(0.698)	(1.170)
N	10555	11342	9776	11272
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Post-QE-III + QT: 2014Q4 - 2019Q3			
Below 90th Percentile Bank Assets	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.132	-0.272	-0.823	-0.687
	(0.303)	(0.517)	(0.937)	(0.755)
Ln(Reserves)	0.00157	0.117	0.232	0.208
	(0.0767)	(0.145)	(0.240)	(0.205)
N	11364	12563	10129	12326
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Post-QE-III + QT: 2014Q4 - 2019Q3			

Table A14: **Deposit Quantities – Heterogeneity by Equity/Assets Ratio**

The table represents the second-stage results of deposit quantities regression split by above/below median of bank equity/assets (RCFD3210/RCFD2170). The reserve instrument used here is *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters*. Total Deposits is the sum of Total Domestic and Foreign Deposits held at the depository level (RCON2200+RCFN2200 of Call Reports). Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 of Call Reports). Aggregate Reserves is taken from FRED. Panel A reports the 2nd Stage with ΔLn(Total Deposits). Panel B reports the 2nd Stage with ΔLn(*Demand and Savings deposits*)(RCON2210+RCON6810+RCON0352 of Call Reports) and Panel C with ΔLn(*Time Deposits)* (RCON6648 + RCONJ473 + RCONJ474) or (RCON6648+RCON2604) $\Delta Y_{it}=Y_{it}-Y_{it-4}$. All specifications control for Time-Fixed Effects. Standard errors are two-way clustered at the bank and quarter level. Columns (1) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Columns (2) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Columns (3) represent the QEI-III period: 2008Q4 - 2014Q3. Columns (4) show results for the Post-QE III + QT period 2014Q4 - 2019Q * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Panel A: ΔLn(Total Deposits)

Above Median Equity/Assets Ratio	(1) ΔLn(Total Deposits)	(2) ΔLn(Total Deposits)	(3) ΔLn(Total Deposits)	(4) ΔLn(Total Deposits)
ΔLn(Reserves)	0.0754***	0.0603***	0.0554**	-0.0878
	(0.0229)	(0.0209)	(0.0218)	(0.0787)
L5.Ln(Reserves)	0.00666***	0.00534**	0.00544**	-0.00413
	(0.00219)	(0.00219)	(0.00225)	(0.00433)
N	42619	19077	15302	15288
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Below Median Equity/Assets Ratio	(1) ΔLn(Total Deposits)	(2) ΔLn(Total Deposits)	(3) ΔLn(Total Deposits)	(4) ΔLn(Total Deposits)
ΔLn(Reserves)	0.0235**	0.0232**	0.0240**	-0.184***
	(0.0116)	(0.0103)	(0.0102)	(0.0633)
L5.Ln(Reserves)	0.00291**	0.00244	0.00227	-0.0122***
	(0.00127)	(0.00159)	(0.00163)	(0.00318)
N	56617	23790	21176	11160
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Panel B: ΔLn(Demand + Savings Deposits)

Above Median Equity/Assets Ratio	(1) ΔLn(Demand + Savings Deposits)	(2) ΔLn(Demand + Savings Deposits)	(3) ΔLn(Demand + Savings Deposits)	(4) ΔLn(Demand + Savings Deposits)
ΔLn(Reserves)	0.125**	0.0868**	0.102**	-0.153
	(0.0491)	(0.0416)	(0.0400)	(.)
L5.Ln(Reserves)	0.0107**	0.00842*	0.0104**	-0.0100
	(0.00447)	(0.00461)	(0.00453)	(.)
N	42495	19038	15277	15270
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Below Median Equity/Assets Ratio	(1) ΔLn(Demand + Savings Deposits)	(2) ΔLn(Demand + Savings Deposits)	(3) ΔLn(Demand + Savings Deposits)	(4) ΔLn(Demand + Savings Deposits)
ΔLn(Reserves)	0.132***	0.127***	0.129***	-0.202***
	(0.0159)	(0.0149)	(0.0137)	(0.0595)
L5.Ln(Reserves)	0.0150***	0.0168***	0.0170***	-0.0133***
	(0.00168)	(0.00230)	(0.00225)	(0.00253)
N	56611	23784	21170	11160
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Panel C: ΔLn(Time Deposits)

Above Median Equity/Assets Ratio	(1) ΔLn(Time Deposits)	(2) ΔLn(Time Deposits)	(3) ΔLn(Time Deposits)	(4) ΔLn(Time Deposits)
ΔLn(Reserves)	-0.0723	0.00359	0.00261	0.0821
	(0.0874)	(0.0469)	(0.0461)	(0.287)
L5.Ln(Reserves)	-0.0112	-0.0104*	-0.00905	0.00880
	(0.00815)	(0.00608)	(0.00591)	(0.0158)
N	42045	18858	15114	15175
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3
Below Median Equity/Assets Ratio	(1) ΔLn(Time Deposits)	(2) ΔLn(Time Deposits)	(3) ΔLn(Time Deposits)	(4) ΔLn(Time Deposits)
ΔLn(Reserves)	-0.0962***	-0.0861***	-0.0850***	0.120
	(0.0195)	(0.0206)	(0.0204)	(0.107)
L5.Ln(Reserves)	-0.0126***	-0.0175***	-0.0161***	0.00794
	(0.00212)	(0.00274)	(0.00319)	(0.00703)
N	56367	23666	21097	11085
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Table A15: **Deposit Rate Spread – Heterogeneity by Equity/Assets Ratio**

The table shows 2nd stage of 2SLS IV regressions of *3, 12, 18 and 24-month CD – savings rate spread* against bank-level *Ln(Total Deposits)* and *Ln(Reserves)* split by above/below median equity/assets (RCFD3210/RCFD2170). CD and savings rates are sourced from *S&P Global's RateWatch* deposit data. Bank-level variables are sourced from *FDIC's Call Reports* data. *Reserves* are cash and balances due from Federal Reserve Banks at the consolidated bank level (RCFD0090). *Total Deposits* are the sum total of deposits held in domestic and foreign offices (RCON2200 + RCFN2200). Panel A shows the OLS regression. Panel B shows the IV regression with *Ln(Total Deposits)* instrumented with the *County Deposit Growth Instrument (z^D_{it})* and *Ln(Reserves)* instrumented with as *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters*. Aggregate Reserves is taken from FRED. Panel A shows the second stage results for the Overall period, Panel B for QE I-III+ Pandemic QE periods Panel C shows results for QE I-III and Panel D shows results for Post-QE-III+QT periods. All specifications control for bank and time fixed effects. Standard errors are two-way clustered at the bank and time level. The sample period is 2001 Q1 – 2021 Q4. * p<0.1, ** p<0.05, *** p<0.01

Panel A: Overall

Above Median Equity/Assets Ratio	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	-0.372	-0.0858	-0.0552	-0.340
	(0.479)	(0.433)	(0.404)	(0.545)
Ln(Reserves)	0.154	0.129	0.0179	0.215
	(0.124)	(0.118)	(0.113)	(0.160)
N	36866	40083	33464	39244
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4			

Below Equity/Assets Ratio	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.0687	0.210	0.157	0.322
	(0.240)	(0.225)	(0.313)	(0.256)
Ln(Reserves)	-0.105***	-0.0514	-0.172***	-0.120***
	(0.0314)	(0.0569)	(0.0347)	(0.0386)
N	48302	50973	42802	50429
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4			

Panel B: QE I-III+ Pandemic QE

Above Median Equity/Assets Ratio	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	-0.267	0.603	0.0233	0.0835
	(0.681)	(0.669)	(0.531)	(0.695)
Ln(Reserves)	0.142	0.0638	0.0882	0.154
	(0.120)	(0.105)	(0.0824)	(0.101)
N	17416	18917	15686	18495
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4			
Below Median Equity/Assets Ratio	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.176	0.448	-0.0598	0.528
	(0.300)	(0.313)	(0.483)	(0.437)
Ln(Reserves)	-0.101***	-0.0559	-0.161**	-0.121***
	(0.0365)	(0.0501)	(0.0603)	(0.0359)
N	22366	23683	19699	23422
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4			

Panel C: QE I-III

Above Median Equity/Assets Ratio	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	-0.829	0.0143	-0.236	-0.588
	(0.857)	(0.723)	(0.568)	(0.866)
Ln(Reserves)	0.234*	0.169	0.147	0.263**
	(0.133)	(0.105)	(0.0859)	(0.119)
N	14889	16099	13285	15713
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period		QE-I-III: 2008Q4 - 2014Q3		
Below Median Equity/Assets Ratio	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.240	0.469**	0.238	0.522*
	(0.167)	(0.202)	(0.253)	(0.269)
Ln(Reserves)	-0.0179	-0.0341	-0.129	-0.0707***
	(0.0841)	(0.0977)	(0.0765)	(0.0141)
N	20088	21171	17592	20923
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period		QE-I-III: 2008Q4 - 2014Q3		

Panel D: Post QE III + QT

Above Median Equity/Assets Ratio	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	115.2	35.63	-1.758	21.60
	(4053.8)	(263.4)	(54.70)	(106.4)
Ln(Reserves)	-41.49	-13.56	0.652	-7.755
	(1483.7)	(105.9)	(22.38)	(40.94)
N	12468	13729	11569	13510
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period		Post-QE-III + QT: 2014Q4 - 2019Q3		
Below Median Equity/Assets Ratio	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.0848	-0.524	-0.714	-0.469
	(0.432)	(0.825)	(1.267)	(0.779)
Ln(Reserves)	0.141	0.203	0.325	0.257
	(0.0991)	(0.414)	(0.451)	(0.288)
N	9344	10054	8232	9966
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period		Post-QE-III + QT: 2014Q4 - 2019Q3		

Table A16: Loan Quantities - Impact due to Exogenous Increase in Bank Reserves

The table represents the second-stage results of loan quantities regression The reserve instrument used here is *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters*. Total Loans is the sum of Loans and leases held for sale and loans and leases net of unearned income (RCFD5369+RCFDB528 of Call Reports). Reserves are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090 of Call Reports). Aggregate Reserves is taken from FRED. $\Delta Y_{it}=Y_{it}-Y_{it-4}$. All specifications control for Time-Fixed Effects. Standard errors are two-way clustered at the bank and quarter level. Columns (1) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Columns (2) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Columns (3) represent the QEI-III period: 2008Q4 - 2014Q3. Columns (4) show results for the Post-QE III + QT period 2014Q4 - 2019Q * $p<0.1$, ** $p<0.05$, *** $p<0.01$

	(1) ΔLn(Total Loans)	(2) ΔLn(Total Loans)	(3) ΔLn(Total Loans)	(4) ΔLn(Total Loans)
ΔLn(Reserves)	-0.0497***	-0.0465***	-0.0457***	-0.151**
	(0.0127)	(0.0116)	(0.0118)	(0.0582)
Ln(Reserves)$_{t-5}$	-0.00444***	-0.00579***	-0.00541***	-0.00853**
	(0.00141)	(0.00172)	(0.00181)	(0.00386)
N	115350	50834	43071	30701
R-sq	-0.143	-0.135	-0.140	-1.233
F-stat	7.662	8.273	7.613	3.646
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001Q1-2021Q4	QE-I-III+ Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE-I-III :2008Q4 - 2014Q3	Post-QE-III + QT: 2014Q4 - 2019Q3

Table A17: Uninsured vs. Insured Deposits

The table represents the second-stage results of insured and uninsured time and non-time deposits. Estimation of Insured and Uninsured Domestic Deposits are based on the items in the call report schedule RC-O. Insured deposits are defined as deposits lying below the FDIC deposit insurance thresholds of $100,000 before 2008Q4 and $250,000 after 2008Q4. Uninsured deposits are domestic deposits above the aforementioned deposit insurance thresholds and all foreign deposits. Insured deposits are adjusted for the FDIC Transaction Account Guarantee (TAG) program. Split of Time Deposits into Insured vs. Uninsured Deposits are based by splits of Time Deposits by the aforementioned deposit insurance thresholds in schedule RC-E. Non-time Insured and Uninsured deposits are estimated by taking the difference of Total Insured/Uninsured Deposits and Insured/Uninsured Time Deposits respectively. Panel A shows the result for Insured Time Deposits, Panel B for Insured Non-Time Deposits, Panel C for Uninsured Time Deposits and Panel D for Uninsured Non-Time Deposits. All specifications control for Time-Fixed Effects. Standard errors are two-way clustered at the bank and quarter level. Columns (1) represent the regressions on the overall sample ranging 2001 Q1 – 2021 Q4. Columns (2) represent QE I-III + Pandemic QE of 2008Q4 - 2014Q3 & 2019Q4-2021Q4. Columns (3) represent the QEI-III period: 2008Q4 - 2014Q3. Columns (4) show results for the Post-QE III + QT period 2014Q4 - 2019Q3 * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Panel A: Insured Time Deposits

	(1)	(2)	(3)	(4)
	ΔLn(Insured Time Deposits)			
ΔLn(Reserves)	0.0149	0.0306	0.0383	0.234
	(0.0402)	(0.0325)	(0.0242)	(0.506)
Ln(Reserves)$_{t-5}$	-0.00191	-0.00469	-0.000273	0.0183
	(0.00443)	(0.00525)	(0.00342)	(0.0368)
N	114156	41651	33974	30485
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001 Q1 - 2021 Q4	QE I-III + Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE I-III: 2008Q4 - 2014Q3	Post-QE III + QT: 2014Q4-2019Q3

Panel B: Insured Non– Time Deposits

	(1)	(2)	(3)	(4)
		ΔLn(Non-Time Deposits)		
ΔLn(Reserves)	0.00212	0.00113	-0.000691	-0.0755
	(0.00912)	(0.00882)	(0.00998)	(0.0738)
Ln(Reserves)$_{t-5}$	0.000561	0.000665	0.00102	-0.00457
	(0.00100)	(0.00125)	(0.00153)	(0.00532)
N	115442	42049	34248	30785
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001 Q1 - 2021 Q4	QE I-III + Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE I-III: 2008Q4 - 2014Q3	Post-QE III + QT: 2014Q4-2019Q3

Panel C: Uninsured Time Deposits

	(1)	(2)	(3)	(4)
		ΔLn(Uninsured Time Deposits)		
ΔLn(Reserves)	-0.124***	-0.107***	-0.103***	0.338
	(0.0341)	(0.0295)	(0.0192)	(0.341)
Ln(Reserves)$_{t-5}$	-0.0162***	-0.0203***	-0.0165***	0.0210
	(0.00399)	(0.00519)	(0.00388)	(0.0225)
N	113664	41282	33661	30251
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001 Q1 - 2021 Q4	QE I-III + Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE I-III: 2008Q4 - 2014Q3	Post-QE III + QT: 2014Q4-2019Q3

Panel D: Uninsured Non-Time Deposits

	(1)	(9)	(5)	(10)
		ΔLn(Uninsured Non-Time Deposits)		
ΔLn(Reserves)	0.0837***	0.0717***	0.0741***	-0.199***
	(0.0136)	(0.0141)	(0.0142)	(0.0312)
Ln(Reserves)$_{t-5}$	0.00290*	0.00608**	0.00852**	-0.0186
	(0.00171)	(0.00256)	(0.00301)	(.)
N	95114	32562	24937	29898
Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Period	Overall: 2001 Q1 - 2021 Q4	QE I-III + Pandemic QE: 2008Q4 - 2014Q3 & 2019Q4 - 2021Q4	QE I-III: 2008Q4 - 2014Q3	Post-QE III + QT: 2014Q4-2019Q3

Table A18: Deposit Quantities Regression (Table 4) Splits by Sub-period

The table the second-stage of 2SLS IV regressions of $\Delta Ln(Total\ Deposits)$ as the dependent variable against $\Delta Ln(Reserves)$. Deposit and reserve data are sourced from *FDIC's Call Reports*. Panel A uses *Total Deposits* defined as the total deposits held in domestic and foreign offices (RCON2200+RCFN2200). Panel B uses the Ln(*Demand and Savings deposits*)(RCON2210+RCON6810+RCON0352) and Ln(*Time Deposits*) (RCON6648 + RCONJ473 + RCONJ474) or (RCON6648+RCON2604) as the dependent variables. *Reserves* are cash and balances due from Federal Reserve Banks at the consolidated bank-level (RCFD0090). $\Delta Y = Y_t - Y_{t-4}$. All specifications control for time-FE. Panel A shows the results for $\Delta Ln(Total\ Deposits)$, Panel B shows the corresponding results for $\Delta Ln(Demand\ \& Savings\ Deposits)$ and Panel C for $\Delta Ln(Time\ Deposits)$ as the dependent variable. In all second-stage regressions, $\Delta Ln(Reserves)$ is instrumented by the reserve instrument (z^R_{it}): *Growth in Aggregate Reserves × Average Lagged Share in Reserves over the previous 4 quarters.* Standard errors are two-way clustered at the bank and time level.. * p<0.1, ** p<0.05, *** p<0.01

Panel A: Total Deposits

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					ΔLn(Total Deposits)				
ΔLn(Reserves)	0.0252**	0.0225*	0.0636	0.0346**	0.0249**	-0.0256	-0.164*	0.0248	0.0250**
	(0.0112)	(0.0107)	(0.0397)	(0.0105)	(0.0101)	(0.0572)	(0.0741)	(0.0419)	(0.0102)
Ln(Reserves)$_{t-5}$	0.00264**	0.00318	0.00563	0.00313**	0.00227	-0.000309	-0.0119*	0.00150	0.00214
	(0.00121)	(0.00219)	(0.00515)	(0.00122)	(0.00140)	(0.00314)	(0.00558)	(0.00492)	(0.00137)
N	115680	11264	5166	17916	34346	22134	8655	7805	42151
Time-FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Reg	IV	IV	IV	IV	IV	IV	IV	IV	IV
Period	Overall: 2001Q1 - 2021Q4	QEI: 2008Q4 - 2010Q2	QEII: 2010Q4 - 2011Q2	QEIII: 2012Q3 - 2014Q3	QEI + QEII + QEIII	Post-QE-III: 2014Q3-2017Q3	QT: 2017Q4 - 2019Q3	Pandemic QE: 2019Q4 - 2021Q4	QEI + QEII + QEIII + Pandemic QE

Panel B: Demand+Savings Deposits

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ΔLn(Demand + Savings Deposits)								
ΔLn(Reserves)	0.128***	0.116***	0.0894	0.0361**	0.125***	-0.124	-0.0694	-0.0285	0.122***
	(0.0168)	(0.0167)	(0.0360)	(0.0132)	(0.0151)	(.)	(0.103)	(0.0622)	(0.0174)
Ln(Reserves)$_{t-5}$	0.0136***	0.0222***	0.00909	0.00210	0.0152***	-0.00762	-0.00720	-0.000718	0.0149***
	(0.00185)	(0.00370)	(0.00448)	(0.00140)	(0.00234)	(.)	(0.00655)	(0.00725)	(0.00245)
N	115533	11256	5161	17894	34311	22118	8652	7791	42102
Time-FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Reg	IV	IV	IV	IV	IV	IV	IV	IV	IV
Period	Overall: 2001Q1 - 2021Q4	QEI: 2008Q4 - 2010Q2	QEII: 2010Q4 - 2011Q2	QEIII: 2012Q3 - 2014Q3	QEI + QEII + QEIII	Post-QE-III: 2014Q3-2017Q3	QT: 2017Q4 - 2019Q3	Pandemic QE: 2019Q4 - 2021Q4	QEI + QEII + QEIII + Pandemic QE

Panel C: Time Deposits

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	ΔLn(Time Deposits)								
ΔLn(Reserves)	-0.102***	-0.0747***	-0.169	0.0571	-0.0786***	0.184	-0.111	-0.267	-0.0820**
	(0.0323)	(0.0189)	(0.0696)	(0.0433)	(0.0226)	(0.328)	(0.133)	(0.174)	(0.0301)
Ln(Reserves)$_{t-5}$	-0.0138***	-0.0210***	-0.0349*	-0.000510	-0.0173***	0.0126	0.00113	-0.0503*	-0.0200***
	(0.00388)	(0.00439)	(0.0104)	(0.00428)	(0.00345)	(0.0208)	(0.00831)	(0.0257)	(0.00507)
N	114689	11187	5130	17779	34096	21983	8568	7702	41798
Time-FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Reg	IV	IV	IV	IV	IV	IV	IV	IV	IV
Period	Overall: 2001Q1 - 2021Q4	QEI: 2008Q4 - 2010Q2	QEII: 2010Q4 - 2011Q2	QEIII: 2012Q3 - 2014Q3	QEI + QEII + QEIII	Post-QE-III: 2014Q3-2017Q3	QT: 2017Q4 - 2019Q3	Pandemic QE: 2019Q4 - 2021Q4	QEI + QEII + QEIII + Pandemic QE

Table A19: Deposit Spreads Regressions (Tables 8 & 9) by Sub-periods

The table shows the second stage of 2SLS IV regressions *of 3, 12, 18 and 24-month CD – savings spreads* against bank-level *Ln(Total Deposits)* and *Ln(Reserves)* during various sub-sample periods. CD and savings rates are sourced from *S&P Global's RateWatch* deposit data. Bank-level variables are sourced from *FDIC's Call Reports data.* *Reserves* are cash and balances from Federal Reserve Banks at the consolidated bank level (RCFD0090). *Deposits* are the sum total of deposits held in domestic and foreign offices (RCON2200 + RCFN2200). *Ln(Total Deposits)* are instrumented with the *Deposit Growth Instrument (z^D_{it})* and *Ln(Reserves)* are instrumented with *Growth in Aggregate Reserves × Lagged Share in Reserves, averaged over previous 4 quarters (z^R_{it})*. All specifications control for bank and time fixed effects. Standard errors are two-way clustered at the bank and time level. * p<0.1, ** p<0.05, *** p<0.01

	Panel A: QEI: 2008Q4 - 2010Q2			
	(1)	(2)	(3)	(4)
	3 month CD Rate - Savings Rate	12 month CD Rate - Savings Rate	18 month CD Rate - Savings Rate	24 month CD Rate - Savings Rate
Ln(Total Deposits)	-0.0499	0.132	0.114	0.120
	(0.195)	(0.322)	(0.234)	(0.231)
Ln(Reserves)	0.0671	0.139*	-0.0577	0.0156
	(0.0692)	(0.0569)	(0.120)	(0.0419)
N	9580	10068	8437	9868
R-sq	-0.175	-0.683	-0.111	-0.00886
F-stat	0.484	3.632	0.150	0.322
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Reg	IV	IV	IV	IV
Period	QEI: 2008Q4 - 2010Q2	QEI: 2008Q4 - 2010Q2	QEI: 2008Q4 - 2010Q2	QEI: 2008Q4 - 2010Q2

Panel B: QEII: 2010Q4 - 2011Q2

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.799	1.253	2.018	2.316
	(0.921)	(0.704)	(1.785)	(1.506)
Ln(Reserves)	-0.150	-0.137	-0.320	-0.300
	(0.130)	(0.111)	(0.239)	(0.206)
N	4461	4711	3916	4628
R-sq	-4.036	-2.386	-10.85	-8.676
F-stat	0.663	1.705	1.054	1.434
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Reg	IV	IV	IV	IV
Period	QEII: 2010Q4 - 2011Q2	QEII: 2010Q4 - 2011Q2	QEII: 2010Q4 - 2011Q2	QEII: 2010Q4 - 2011Q2

Panel C: QEIII: 2012Q3 - 2014Q3

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.148	0.314	0.0389	0.150
	(0.136)	(0.222)	(0.205)	(0.252)
Ln(Reserves)	-0.00679	-0.0369	-0.0110	-0.0185
	(0.0122)	(0.0323)	(0.0363)	(0.0371)
N	13413	14505	11914	14288
R-sq	-0.124	-0.435	-0.0289	-0.0748
F-stat	0.615	1.018	0.0464	0.184
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Reg	IV	IV	IV	IV
Period	QEIII: 2012Q3 - 2014Q3	QEIII: 2012Q3 - 2014Q3	QEIII: 2012Q3 - 2014Q3	QEIII: 2012Q3 - 2014Q3

Panel D: Post-QE-III: 2014Q3-2017Q3

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	1.065	5.203	1.517	4.968
	(2.784)	(23.70)	(2.667)	(20.78)
Ln(Reserves)	-0.453	-2.565	-0.746	-2.521
	(1.321)	(12.17)	(1.373)	(10.97)
N	15738	17142	14097	16880
R-sq	-120.0	-1018.4	-69.58	-731.0
F-stat	0.0888	0.0260	0.162	0.0301
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Reg	IV	IV	IV	IV
Period	Post-QE-III: 2014Q3-2017Q3	Post-QE-III: 2014Q3-2017Q3	Post-QE-III: 2014Q3-2017Q3	Post-QE-III: 2014Q3-2017Q3

Panel E: QT: 2017Q4 - 2019Q3

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	10.44	1.965	-2.431	5.506
	(59.18)	(6.939)	(12.14)	(17.60)
Ln(Reserves)	-2.204	-0.241	0.533	-0.981
	(13.69)	(1.475)	(2.030)	(3.745)
N	6133	6718	5767	6671
R-sq	-172.9	-0.984	-3.272	-12.32
F-stat	0.0721	0.574	0.305	0.260
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Reg	IV	IV	IV	IV
Period	QT: 2017Q4 - 2019Q3	QT: 2017Q4 - 2019Q3	QT: 2017Q4 - 2019Q3	QT: 2017Q4 - 2019Q3

Panel F: Pandemic QE: 2019Q4 - 2021Q4

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.992	-0.175	0.0783	0.00651
	(0.957)	(0.675)	(0.459)	(1.009)
Ln(Reserves)	0.167	-0.0468	-0.0783	-0.0143
	(0.203)	(0.0648)	(0.125)	(0.136)
N	4759	5288	4472	5242
R-sq	-1.897	-0.0697	-0.128	-0.00545
F-stat	0.601	0.265	0.284	0.0167
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Reg	IV	IV	IV	IV
Period	Pandemic QE: 2019Q4 - 2021Q4	Pandemic QE: 2019Q4 - 2021Q4	Pandemic QE: 2019Q4 - 2021Q4	Pandemic QE: 2019Q4 - 2021Q4

Panel G: QEI + QEII + QEIII

	(1) 3 month CD Rate - Savings Rate	(2) 12 month CD Rate - Savings Rate	(3) 18 month CD Rate - Savings Rate	(4) 24 month CD Rate - Savings Rate
Ln(Total Deposits)	0.278[*]	0.414[**]	0.414	0.481[**]
	(0.155)	(0.158)	(0.270)	(0.171)
Ln(Reserves)	-0.0926[**]	0.00928	-0.183[*]	-0.0770[**]
	(0.0424)	(0.0594)	(0.0894)	(0.0356)
N	27597	29436	24401	28935
R-sq	-0.415	-0.0574	-1.283	-0.268
F-stat	2.940	4.158	2.412	5.013
Bank & Time-FE	Y	Y	Y	Y
Bank & Time Clustered FE	Y	Y	Y	Y
Reg	IV	IV	IV	IV
Period	QEI + QEII + QEIII	QEI + QEII + QEIII	QEI + QEII + QEIII	QEI + QEII + QEIII

Table A20: Stationarity of Time Series Regression (Table 2)
Time Series Stationarity – Table 2: Elliott-Jansson unit root test for EFFR – IOR with 1 lag.
Reference:Elliot, G., and M. Jansson (2003) "Testing for unit roots with stationary
covariates", *Journal of Econometrics*, 2003, vol. 115, issue 1, 75-89.

H_0: rho = 1 [EFFR - IOR is unit root]
H_1: rho < 1 [EFFR - IOR is not unit root]
Reject H_0 if Lambda < critical value

Column	Covariates	Time Period	Observations	Critical Value	Lambda
1	Ln(Reserves)	2009M1 – 2021M11	154	6.2307	5.7951
2	Ln(Reserves), Ln(Deposits)			6.2864	-4.1153
3	Ln(Reserves) , Ln(Demand & Liquid Deposits), Ln(Time Deposits)			6.3309	-32.8873
4	Ln(Reserve), Ln(Credit Lines)			6.2067	-9.1156
5	Ln(Reserves_, Ln(Credit Lines), Ln(Usage)			6.2267	12.7887
6	Ln(Reserves), Ln(Demand & Liquid Deposits), Ln(Time Deposits), Ln(Credit Lines), Ln(Usage)			6.3214	-11.3586

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