Does liquidity disclosure regulation negatively affect liquidity holdings in the banking system?

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Motivation

▸ Illiquidity and lack of disclosure during the 2008 financial crisis

  ▸ Lack of liquidity is a key feature of the crisis. (e.g. Acharya and Mora, 2015; Ivashina and Scharfstein, 2010)

  ▸ Insufficient disclosure is believed to have added to heightened uncertainty in crisis (e.g. Bischof, Laux, and Leuz, 2018).

▸ Liquidity coverage ratio (LCR) regulation in the US

  ▸ LCR: the ratio of High Quality Liquid Assets (HQLA) to expected 30-day net cash outflows

  ▸ Requirement 1: LCR≥100%.

  ▸ **Requirement 2: Disclose LCR information.**

▸ We know little about liquidity regulation.

  ▸ "With capital regulation there is a huge literature but little agreement on the optimal level of requirements. With liquidity regulation, we do not even know what to argue about." (Allen and Gale, 2017)

Preview of the paper

Specific research question

▸ Does LCR disclosure regulation have negative spillover effect on non-disclosing banks' liquidity holdings?
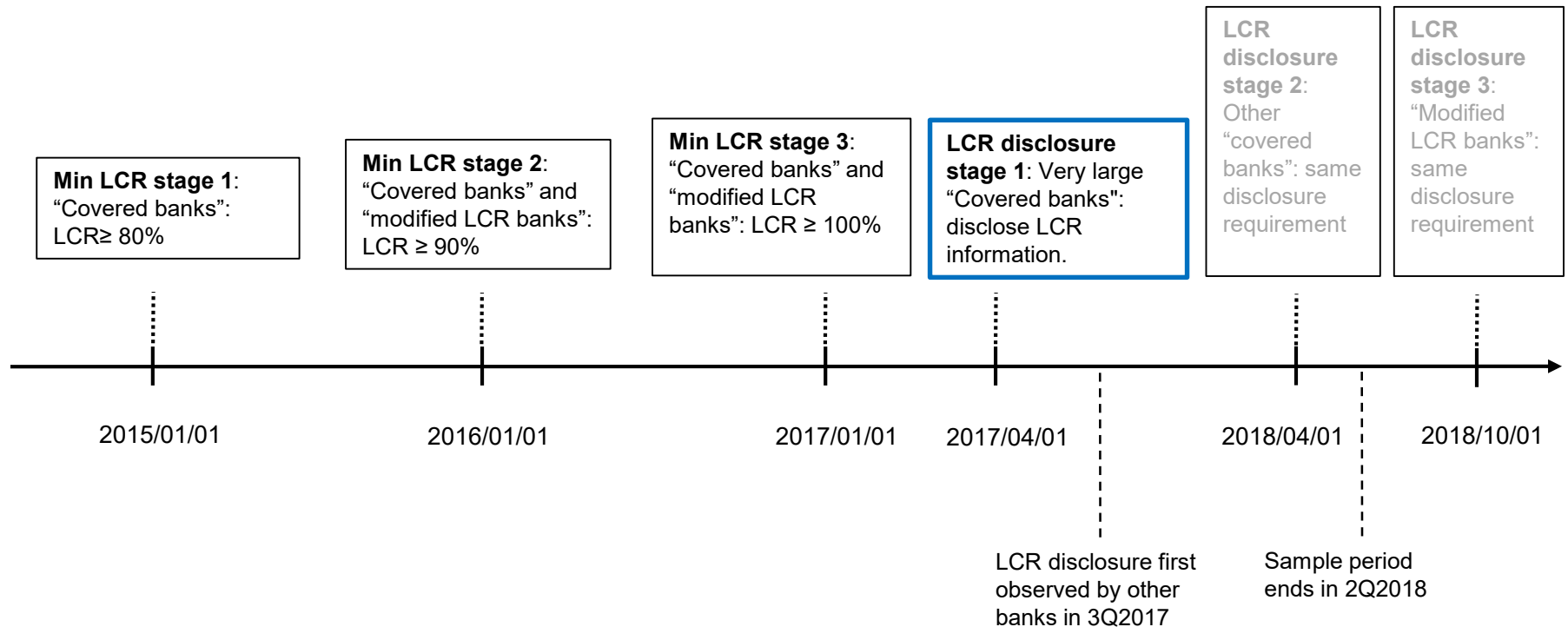
Conceptual argument

▸ LCR disclosure provides useful information about future market liquidity condition.

▸ Better information reduces banks' uncertainty about the probability of future liquidity shortage, encouraging them to cut precautionary liquidity holdings.

Main findings

▸ Non-disclosing banks reduced liquidity level and growth after LCR disclosure, especially for those potentially learned more from the disclosures.

▸ The reduction comes from a disclosure channel.

  ▸ Reduction unlikely caused by minimum LCR requirements.

  ▸ Greater reduction when the disclosing bank is more important to other banks.

  ▸ Lower incentive to form relationship with the disclosing banks after LCR disclosure.

LCR regulations

Min LCR stage 1: "Covered banks": LCR≥ 80%

Min LCR stage 2: "Covered banks" and "modified LCR banks": LCR ≥ 90%

Min LCR stage 3: "Covered banks" and "modified LCR banks": LCR ≥ 100%

LCR disclosure stage 1: Very large "Covered banks": disclose LCR information.

LCR disclosure stage 2: Other "covered banks": same disclosure requirement

LCR disclosure stage 3: "Modified LCR banks": same disclosure requirement

2015/01/01   2016/01/01   2017/01/01   2017/04/01   2018/04/01   2018/10/01

LCR disclosure first observed by other banks in 3Q2017

Sample period ends in 2Q2018

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LCR disclosure

▸ JPMorgan LCR disclosure, 2Q2017

Three months ended June 30, 2017 (in millions)		Average Unweighted Amount[a]	Average Weighted Amount[b]
HIGH-QUALITY LIQUID ASSETS			
1	Total eligible high-quality liquid assets (HQLA), of which:[c]	$ 544,328	$ 540,785
2	Eligible level 1 liquid assets	520,713	520,713
3	Eligible level 2A liquid assets	23,611	20,070
4	Eligible level 2B liquid assets	4	2
CASH OUTFLOW AMOUNTS			
5	Deposit outflow from retail customers and counterparties, of which:	$ 699,361	$ 43,959
6	Stable retail deposit outflow	424,595	12,738
7	Other retail funding outflow	251,035	26,430
8	Brokered deposit outflow	23,731	4,791
9	Unsecured wholesale funding outflow, of which:	679,517	251,049
10	Operational deposit outflow	472,594	117,870
11	Non-operational funding outflow	198,634	124,890
12	Unsecured debt outflow	8,289	8,289
13	Secured wholesale funding and asset exchange outflow[d]	577,735	154,404
14	Additional outflow requirements, of which:	532,055	134,815
15	Outflow related to derivative exposures and other collateral requirements	146,852	41,916
16	Outflow related to credit and liquidity facilities including unconsolidated structured transactions and mortgage commitments	385,203	92,899
17	Other contractual funding obligation outflow	3,509	3,509
18	Other contingent funding obligations outflow[e]	283,122	10,033
19	**TOTAL CASH OUTFLOW**	$ 2,775,299	$ 597,769
CASH INFLOW AMOUNTS			
20	Secured lending and asset exchange cash inflow[d]	$ 569,502	$ 122,803
21	Retail cash inflow	30,421	8,435
22	Unsecured wholesale cash inflow[f]	22,077	14,657
23	Other cash inflows, of which:	20,136	19,904
24	Net derivative cash inflow	5,209	5,209
25	Securities cash inflow	1,908	1,908
26	Broker-dealer segregated account inflow	12,787	12,787
27	Other cash inflow	232	–
28	**TOTAL CASH INFLOW**	$ 642,136	$ 165,799

		Average Weighted Amount[b]
29	HQLA AMOUNT[c]	$ 540,785
30	TOTAL NET CASH OUTFLOW AMOUNT EXCLUDING THE MATURITY MISMATCH ADD-ON	$ 431,970
31	MATURITY MISMATCH ADD-ON	37,294
32	TOTAL NET CASH OUTFLOW AMOUNT	$ 469,264
33	LIQUIDITY COVERAGE RATIO (%)[c]	115%

Empirical design

- ▸ Unique features of the LCR setting help identify a spillover effect:
  - ▸ Only 7 out of 210 disclose. Non-disclosing banks only affected by a spillover effect. (helps identify a *spillover effect*)
  - ▸ Disclosure requirement implemented after minimum LCR rules. (helps identify a *disclosure effect*)

- ▸ Empirical specification

$$Liquidity_{i,t+1} = \beta_0 + \beta_1 LiqInfoImprove_{i,t} + \beta_2 Controls_{i,t} + Bank\ FE + Time\ FE + \epsilon_{i,t}$$

where,

$$LiqInfoImprove_{i,t}$$
$$= (1 - FamiliarityWithDisclosingBanks_i) * 1\{t > 2Q2017\}.$$
$$= (1 - \%SyndicatedLoansIssuedWithDisclosingBanks_i) * 1\{t > 2Q2017\}.$$

Network analysis

- ▸ Node: bank
- ▸ Edge: have co-syndicated before
- ▸ Node size: # co-syndicated banks
- ▸ Color: modularity (how closely interacted)
- ▸ Layout: ForceAtlas2 algorithm (clusters closely connected, pushes away less connected)

Source: https://twitter.com/hashtag/forceatlas2
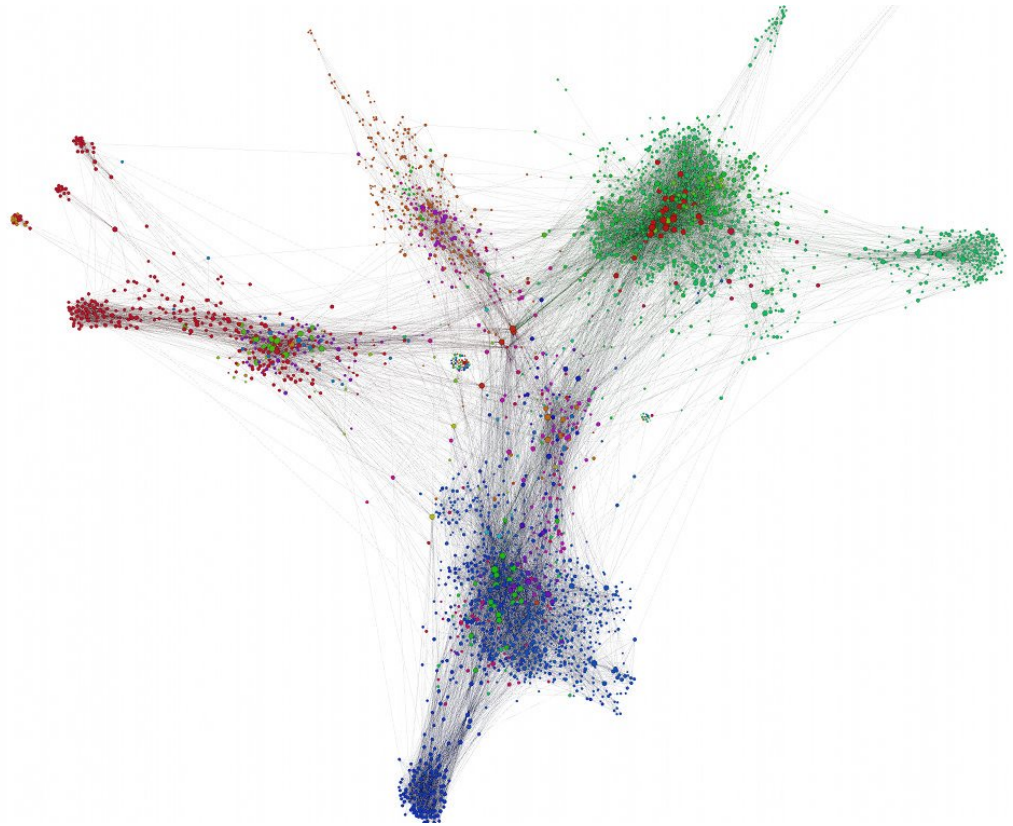
- ▸ One closely connected single network.
- ▸ LCR disclosure is relevant to all banks.

Changes in liquidity holdings after the LCR disclosure rule: disclosing vs non-disclosing banks

VARIABLES	(1) Liquidity Ratio$_t$ (Disclosing)	(2) Liquidity Ratio$_t$ (Non-disclosing)	(3) ΔLiquidity$_t$ (Disclosing)	(4) ΔLiquidity$_t$ (Non-disclosing)
Post$_{t-1}$	0.00720	-0.00307**	0.00887	-0.00371**
	(1.436)	(-2.332)	(0.952)	(-2.578)
IlliquidRatio$_{t-1}$	-0.644***	-0.422***	0.359	0.533***
	(-3.794)	(-7.357)	(1.136)	(8.725)
CoreDepositRatio$_{t-1}$	0.0286	-0.0344	0.0840	-0.126***
	(0.350)	(-0.899)	(0.585)	(-2.959)
CapitalRatio$_{t-1}$	-1.583**	-0.00101	-0.800	0.256*
	(-2.981)	(-0.00871)	(-1.124)	(1.753)
CommitmentRatio$_{t-1}$	-0.577	0.0549	0.0370	0.0667
	(-1.620)	(0.947)	(0.0569)	(1.267)
Size$_{t-1}$	-0.276***	-0.0262***	-0.452**	-0.0353***
	(-3.912)	(-3.920)	(-2.853)	(-3.841)
Observations	63	1,586	63	1,586
R-squared	0.991	0.975	0.356	0.296
Bank Fixed Effects	YES	YES	YES	YES
Clustering Level	Bank	Bank	Bank	Bank
Sample Period	1Q16-2Q18	1Q16-2Q18	1Q16-2Q18	1Q16-2Q18
Interactions Range	Full	Full	Full	Full

Effect of *LiqInfoImprove* on liquidity ratio

VARIABLES	(1) Liquidity Ratio$_t$	(2) Liquidity Ratio$_t$	(3) Liquidity Ratio$_t$	(4) Liquidity Ratio$_t$	(5) Liquidity Ratio$_t$
LiqInfoImprove$_{t-1}$	-0.0123*	-0.0127***	-0.0122	-0.0221*	-0.0178**
	(-1.673)	(-5.489)	(-0.221)	(-1.841)	(-2.055)
IlliquidRatio$_{t-1}$					-0.449***
					(-6.326)
CoreDepositRatio$_{t-1}$					0.0156
					(0.356)
CommitmentRatio$_{t-1}$					0.0599
					(0.946)
Size$_{t-1}$					-0.0236***
					(-2.979)
CapitalRatio$_{t-1}$					0.0607
					(0.423)
Observations	1,245	1,245	1,245	1,245	1,245
R-squared	0.002	0.970	0.003	0.971	0.977
Bank Fixed Effects	No	YES	No	YES	YES
Year-quarter Fixed Effects	No	No	YES	YES	YES
Clustering Level	NA	Bank	Bank	Bank	Bank
Sample Period	1Q16-2Q18	1Q16-2Q18	1Q16-2Q18	1Q16-2Q18	1Q16-2Q18
Interactions Range	5-10000	5-10000	5-10000	5-10000	5-10000

Liquidity ratio declines by 1.2 p.p., or 8% of average liquidity ratio.

Effect of *LiqInfoImprove* on liquidity growth

VARIABLES	(1) $\Delta\text{Liquidity}_t$	(2) $\Delta\text{Liquidity}_t$	(3) $\Delta\text{Liquidity}_t$	(4) $\Delta\text{Liquidity}_t$	(5) $\Delta\text{Liquidity}_t$
$\text{LiqInfoImprove}_{t-1}$	-0.00212	-0.00183	-0.0103**	-0.00990*	-0.0178**
	(-1.306)	(-1.553)	(-2.220)	(-1.874)	(-2.324)
$\text{IlliquidRatio}_{t-1}$					0.516***
					(6.909)
$\text{CoreDepositRatio}_{t-1}$					-0.0671
					(-1.328)
$\text{CommitmentRatio}_{t-1}$					0.0989
					(1.634)
Size_{t-1}					-0.0238**
					(-2.454)
$\text{CapitalRatio}_{t-1}$					0.404**
					(2.501)
Observations	1,245	1,245	1,245	1,245	1,245
R-squared	0.001	0.076	0.037	0.111	0.310
Bank Fixed Effects	No	YES	No	YES	YES
Year-quarter Fixed Effects	No	No	YES	YES	YES
Clustering Level	NA	Bank	Bank	Bank	Bank
Sample Period	1Q16-2Q18	1Q16-2Q18	1Q16-2Q18	1Q16-2Q18	1Q16-2Q18
Interactions Range	5-10000	5-10000	5-10000	5-10000	5-10000

Effect of minimum LCR rule on liquidity ratio

VARIABLES	(1) Liquidity Ratio$_t$	(2) Liquidity Ratio$_t$	(3) Liquidity Ratio$_t$	(4) Liquidity Ratio$_t$	(5) Liquidity Ratio$_t$
LiqInfoImprove$_{t-1}$	-0.0178**				-0.0175***
	(-2.055)				(-2.611)
LCR_1Q15$_{t-1}$		-0.0106			-0.00632
		(-1.220)			(-0.839)
LCR_1Q16$_{t-1}$			-0.0101		-0.00814
			(-1.464)		(-1.391)
LCR_1Q17$_{t-1}$				-0.00731	0.00406
				(-0.924)	(0.613)
IlliquidRatio$_{t-1}$	-0.449***	-0.429***	-0.464***	-0.391***	-0.622***
	(-6.326)	(-7.919)	(-6.561)	(-5.848)	(-13.45)
CoreDepositRatio$_{t-1}$	0.0156	0.00587	0.0429	0.0152	0.0617*
	(0.356)	(0.138)	(1.126)	(0.348)	(1.940)
CommitmentRatio$_{t-1}$	0.0599	-0.0594	-0.0118	0.0364	0.0169
	(0.946)	(-0.723)	(-0.187)	(0.520)	(0.319)
Size$_{t-1}$	-0.0236***	-0.0221	-0.0255**	-0.0278***	-0.0126
	(-2.979)	(-1.422)	(-1.995)	(-3.257)	(-1.584)
CapitalRatio$_{t-1}$	0.0607	-0.433***	0.149	0.120	-0.364***
	(0.423)	(-4.304)	(1.440)	(0.859)	(-2.838)
Observations	1,244	1,126	1,089	1,105	2,369
R-squared	0.977	0.972	0.977	0.979	0.965
Bank Fixed Effects	YES	YES	YES	YES	YES
Year-quarter Fixed Effects	YES	YES	YES	YES	YES
Clustering Level	Bank	Bank	Bank	Bank	Bank
Sample Period	1Q16-2Q18	1Q14-4Q15	1Q15-4Q16	1Q16-4Q17	1Q14-2Q18
Interactions Range	5-10000	5-10000	5-10000	5-10000	5-10000

Effect of minimum LCR rule on liquidity growth

VARIABLES	(1) $\Delta\text{Liquidity}_t$	(2) $\Delta\text{Liquidity}_t$	(3) $\Delta\text{Liquidity}_t$	(4) $\Delta\text{Liquidity}_t$	(5) $\Delta\text{Liquidity}_t$
$\text{LiqInfoImprove}_{t-1}$	-0.0178**				-0.0194**
	(-2.324)				(-2.392)
LCR_1Q15_{t-1}		-0.0144			-0.00922
		(-1.639)			(-1.307)
LCR_1Q16_{t-1}			-0.00477		-0.00206
			(-0.604)		(-0.342)
LCR_1Q17_{t-1}				-0.00472	0.0102
				(-0.476)	(1.104)
$\text{IlliquidRatio}_{t-1}$	0.516***	0.440***	0.523***	0.592***	0.257***
	(6.909)	(7.012)	(6.676)	(7.299)	(6.448)
$\text{CoreDepositRatio}_{t-1}$	-0.0671	-0.0908*	-0.0398	-0.0749	-0.0518**
	(-1.328)	(-1.873)	(-0.916)	(-1.365)	(-2.063)
$\text{CommitmentRatio}_{t-1}$	0.0989	-0.0551	-0.0141	0.0756	0.0400
	(1.634)	(-0.549)	(-0.182)	(1.007)	(0.788)
Size_{t-1}	-0.0238**	-0.0652***	-0.0340**	-0.0277**	-0.0213***
	(-2.454)	(-3.350)	(-2.490)	(-2.326)	(-2.992)
$\text{CapitalRatio}_{t-1}$	0.404**	0.115	0.527***	0.447**	0.182***
	(2.501)	(0.758)	(3.641)	(2.344)	(3.050)
Observations	1,244	1,080	1,041	1,057	2,270
R-squared	0.310	0.286	0.339	0.339	0.184
Bank Fixed Effects	YES	YES	YES	YES	YES
Year-quarter Fixed Effects	YES	YES	YES	YES	YES
Clustering Level	Bank	Bank	Bank	Bank	Bank
Sample Period	1Q16-2Q18	1Q14-4Q15	1Q15-4Q16	1Q16-4Q17	1Q14-2Q18
Interactions Range	5-10000	5-10000	5-10000	5-10000	5-10000

Effect of lead arrangers' LCR disclosure

VARIABLES	(1) Liquidity Ratio$_t$	(2) ΔLiquidity$_t$
LiqInfoImprove_LeadArranger$_{t-1}$	-0.0272**	-0.0244**
	(-2.120)	(-2.149)
IlliquidRatio$_{t-1}$	-0.449***	0.516***
	(-6.303)	(6.891)
CoreDepositRatio$_{t-1}$	0.0145	-0.0690
	(0.329)	(-1.367)
CapitalRatio$_{t-1}$	0.0608	0.403**
	(0.422)	(2.489)
CommitmentRatio$_{t-1}$	0.0602	0.0970
	(0.967)	(1.608)
Size$_{t-1}$	-0.0241***	-0.0244**
	(-3.020)	(-2.486)
Observations	1,244	1,244
R-squared	0.977	0.310
Bank Fixed Effects	YES	YES
Year-quarter Fixed Effects	YES	YES
Clustering Level	Bank	Bank
Sample Period	1Q16-2Q18	1Q16-2Q18
Interactions Range	5-10000	5-10000

Effect of *LiqInfoImprove* on co-syndication relationship

VARIABLES	(1) LCR Interaction$_t$ (Disclosing)	(2) LCR Interaction$_t$ (Non-disclosing)	(3) LCR Interaction$_t$ (Top 25% LiqInfoImprove)	(4) LCR Interaction$_t$ (Bottom 25% LiqInfoImprove)
Post$_{t-1}$	-0.0250	-0.0329***	0.00295	-0.0579**
	(-0.464)	(-3.549)	(1.098)	(-2.423)
IlliquidRatio$_{t-1}$	1.861*	0.122	0.0102	0.930
	(2.077)	(0.538)	(0.132)	(1.495)
CoreDepositRatio$_{t-1}$	-1.061	-0.132	-0.00430	-0.258
	(-1.222)	(-0.832)	(-0.0642)	(-0.424)
CapitalRatio$_{t-1}$	-6.955	0.255	0.143	-0.313
	(-0.991)	(0.535)	(0.576)	(-0.324)
CommitmentRatio$_{t-1}$	1.072	-0.0118	0.0211	-0.718
	(0.482)	(-0.0404)	(0.242)	(-0.681)
Size$_{t-1}$	-0.895	-0.0363	-0.0144	-0.0879
	(-1.807)	(-1.001)	(-0.689)	(-0.815)
Observations	63	1,587	393	356
R-squared	0.329	0.573	0.166	0.575
Bank Fixed Effects	YES	YES	YES	YES
Clustering Level	Bank	Bank	Bank	Bank
Sample Period	1Q16-2Q18	1Q16-2Q18	1Q16-2Q18	1Q16-2Q18
Interactions Range	Full	Full	Full	Full

Conclusion

Main finding

▸ Non-disclosing banks reduced liquidity after LCR disclosure requirement.

Implication

▸ A potentially unintended spillover effect, inconsistent with the goal that LCR disclosure "*increases* liquidity in the market *as a whole*…" (81 FR 94922)

Thank you!