Liquidity Insurance vs. Credit Provision: Evidence from the COVID-19 Crisis

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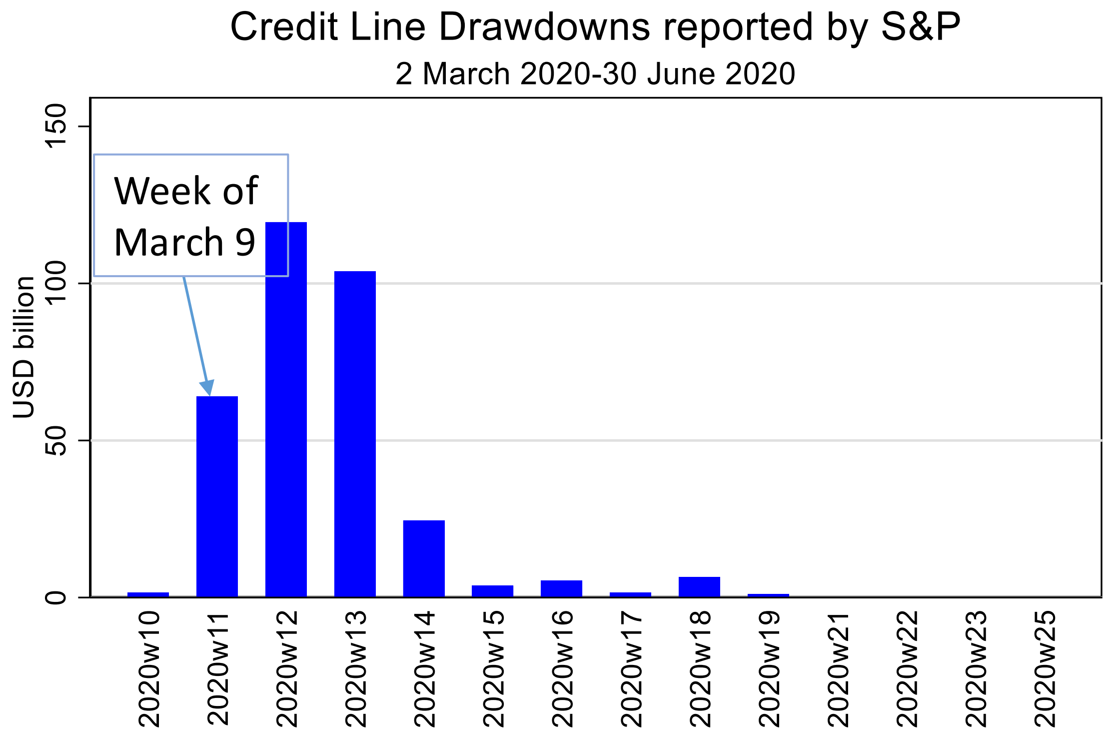
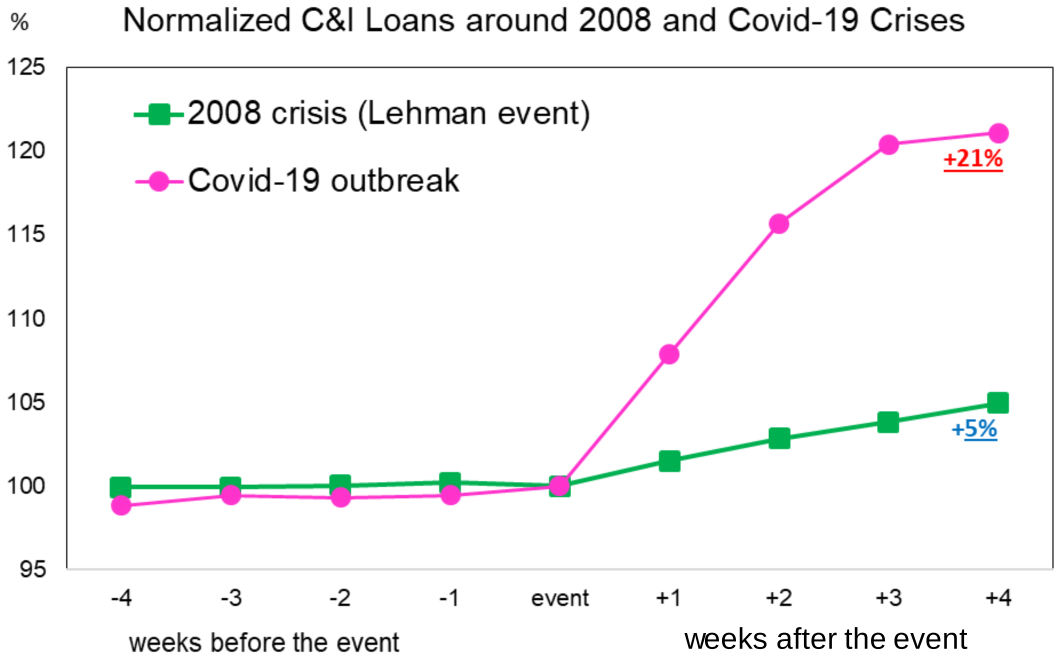
Motivation – 1

- As firms faced cash pressures in the early phase of the COVID-19 crisis, banks experienced a surge in credit line drawdowns (CLDDs).
- CLDDs were large by historical standards, far exceeding the GFC levels.



Source: S&P Global Intelligence.
Dataset covers mostly public U.S. firms and some private firms that file 8-K forms with the Securities and Exchange Commission.



The Lehman event (2008) crisis is centered on 9/17/2008 while the Covid-19 outbreak is centered on 3/11/2020 (declaration of national emergency). Source: Federal Reserve's "Assets and Liabilities of Commercial Banks in the United States" (FR2644, H8 data release).

Motivation – 2

- CLDDs were large and unexpected for banks

  - FT (Mar 25): "Back when the world was *awash with liquidity*, lenders would offer low-cost revolving credit facilities — akin to a credit card — as a perk to win other business. *The banks believed that most would never be used in full*; such was the stigma of large companies drawing them."

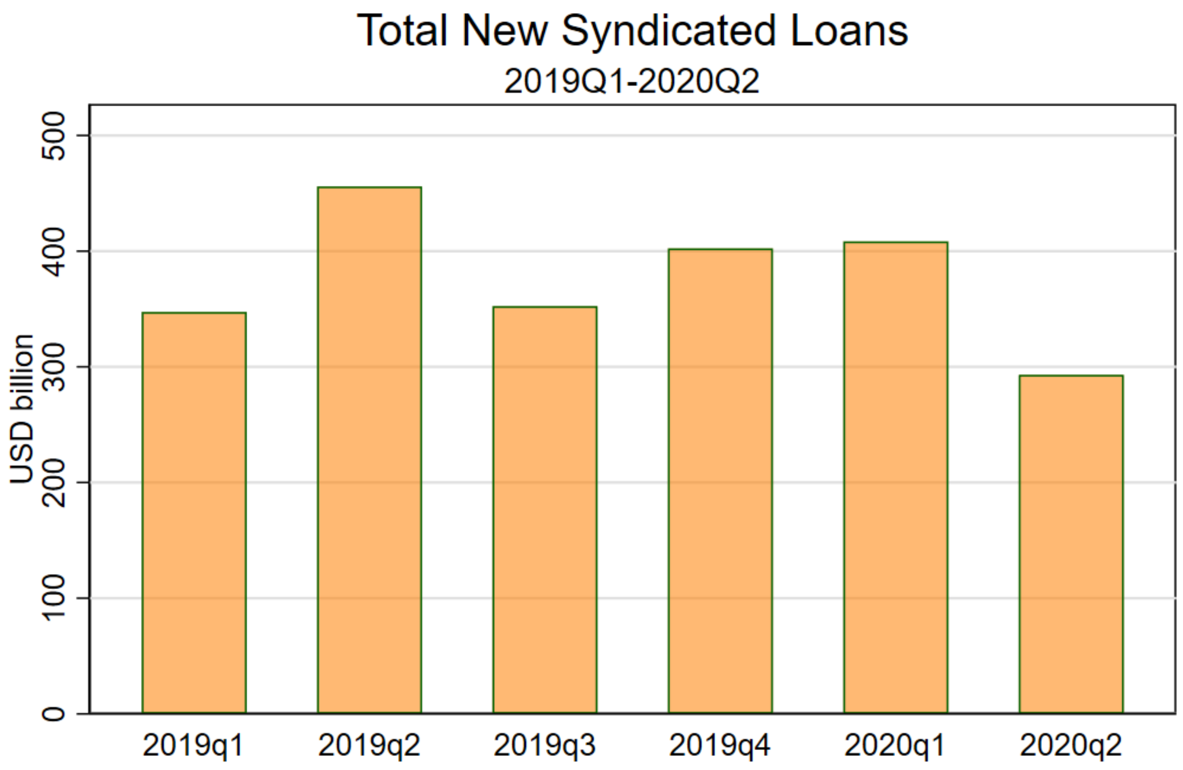
  - FT (May 27): "'We've seen an *unprecedented flight to liquidity*, no one ever thought the whole market would draw their credit lines at once,' said Steven Hunter, chief executive of 9Fin… noting that *most companies are drawing down almost all of their allotted facilities, even those that had never tapped them before*."

  - Acharya and Steffen (2020) reports utilization rates up to 70% by the end of Q2

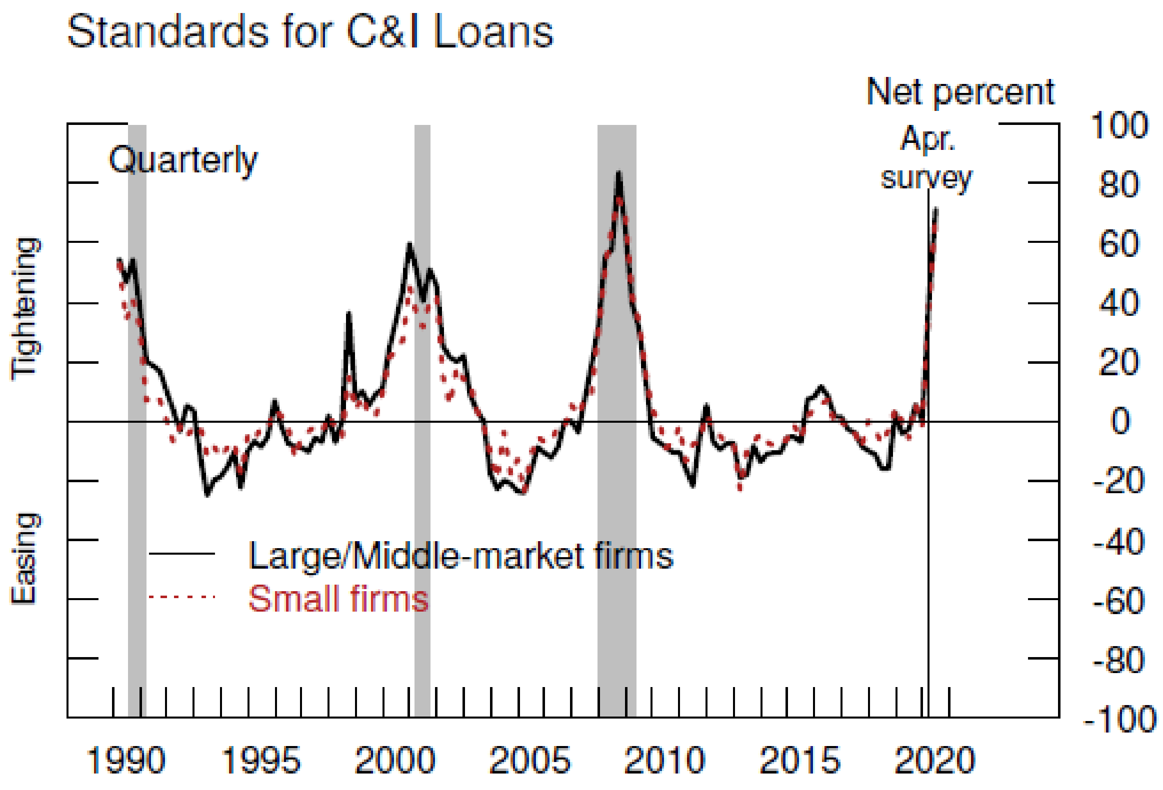
  - Compare with the *stressed* CL utilization assumption of the LCR: "Banks should assume a **10% drawdown** of the undrawn portion of these credit facilities" (likely calibrated with the experience from the GFC)

Motivation – 3

- Banks met these large drawdowns, fulfilling their liquidity insurance function.
- But bank credit has declined, and lending standards have tightened.



Loans originated by U.S. banks to U.S. borrowers.
Source: Authors' calculations using Dealscan and Hale-Kapan-Minoiu (2019).



Source: Senior Loan Officer Opinion Survey.

Potential Mechanisms

Through which channels can CLDDs make banks more cautious in their lending decisions?

- **Liquidity drain**
  - New loans need to be funded (off-BS to on-BS)

- **Reduction in capital ratios**
  1. Increase in RWA and reduction in capital ratios

     Moving CLs from off- to on-balance sheet increases RWs and reduces capital ratios
     - A "short-term revolver" has a credit conversion factor of 20% => fivefold jump in RWA upon draw of CL
  2. Increase in balance sheet size reduces the leverage ratio

- Changes in the risk profile of the borrowers drawing down their CLs

- Potential for future losses, hence **higher risk aversion**

Research Questions

- What is the impact of CLEs on banks' lending decisions vis-à-vis business borrowers?

  - On the **supply of new loans**
    - Large business loans vs. small business loans
    - Intensive vs. extensive margin
  - On the **standards and terms** of new business loans
  - On participation in government-sponsored credit subsidy programs

- What are the **mechanisms**?
  - Risk aversion vs. immediate balance sheet constraints

Evidence from Four Analyses

Drawing on the following data sets on global and U.S. banks' lending decisions during the pandemic (in 2020:Q2-Q3):

1. Syndicated Loans: DealScan

Loan-level global database of large syndicated corporate loans

2. Y-14 data on small business lending by large U.S. banks

Loan-segment level database

3. Lending Standards and Terms: Survey of U.S. Bank Loan Officers (SLOOS)

Bank-level survey data, quarterly

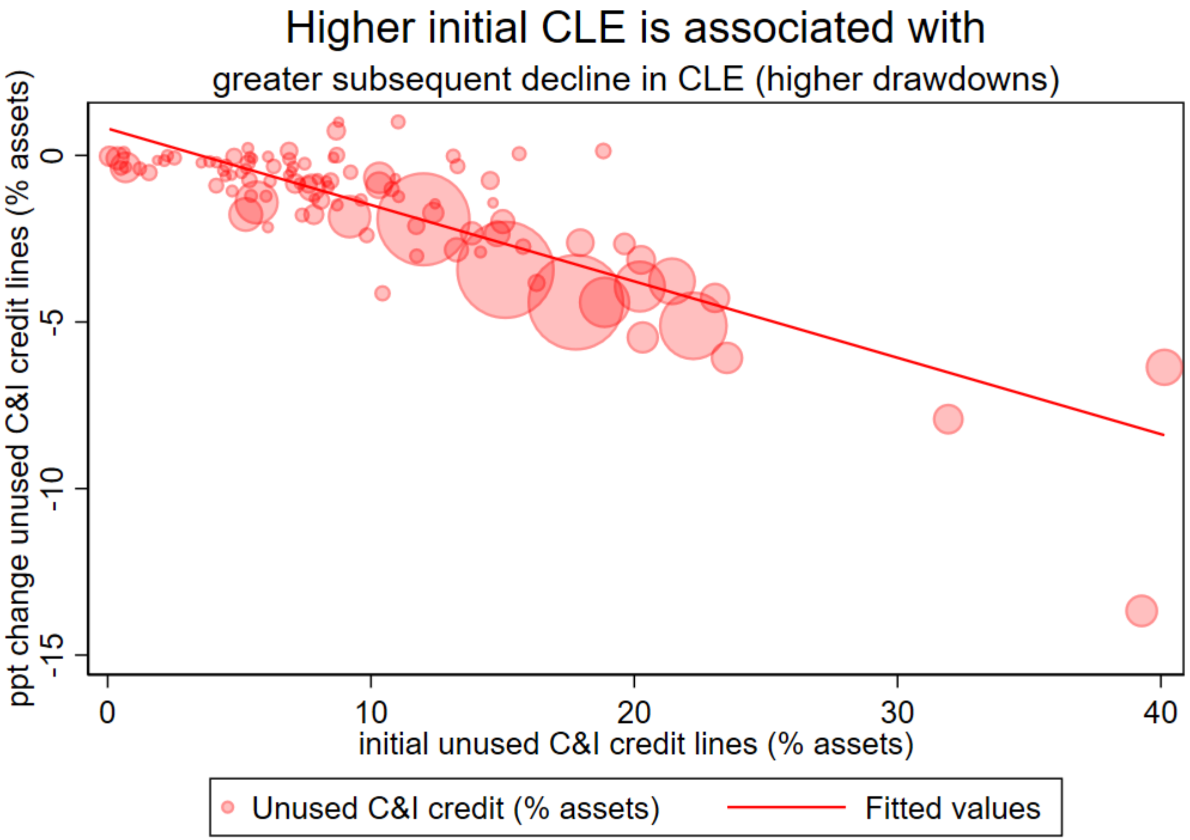
4. Government credit support programs

- Paycheck Protection Program (PPP)
- Main Street Lending Program (MSLP)

Additionally: Fitch Connect (Fitch Solutions) and U.S. Call Reports for bank financials

Bank Exposure to CLDDs

- We need a measure of **potential** exposure to CLDDs once the outbreak begins and unexpected draws start (measured *ex-ante*)
  - *Ex-post* draws could be partially endogenous
- **Credit Line Exposure (CLE)**
  - For each bank: keep CLs originated during 2016-2019 (in Dealscan) and still outstanding as of end-March 2020, scale by total assets
  - CLEs are sizeable with much variation across banks (8% for GSIBs vs. 3.3% for non-GSIBs; 14.7% for US banks vs. 0.5% for Chinese banks)
  - Strongly correlated with ex-post CLDDs



The chart shows a scatterplot and linear fitted line for the link between ex-ante CLEs measured as the unused C&I credit lines (% assets) in 2019Q4 and the change in variable during 2019Q4-2020Q1 – capturing the actual credit line draws over the period. Sample: 506 banks. Source: U.S. Call Report.

1/ Evidence from Syndicated Loans: Intensive margin

Banks' credit lines exposures and the intensive margin of lending

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	**Loan growth in 2020 Q2 and Q3**				
	All	All	All	GSIB	GSIB
CLE	-2.3751***	-1.2840*		-1.9870**	
	(0.872)	(0.750)		(0.846)	
CLE X US bank			-1.6766*		-2.1536**
			(0.876)		(0.868)
CLE X non-US bank			-0.8921		-1.6038
			(0.745)		(1.012)
Observations	2,735	2,374	2,374	1,519	1,519
R-squared	0.019	0.630	0.630	0.669	0.669
Bank controls	Yes	Yes	Yes	Yes	Yes
Firm country x industry		Yes	Yes	Yes	Yes

The table shows the link between prepandemic CLEs (at end-2019) and the growth rate of average lending volume during 2020:Q2-Q3. Bank controls include size, capital, ROA, loan/assets, and NPLs. The sample comprise all matched banks between Dealscan and Fitch Connect, of which 30 GSIBs. Firm clusters comprise all individual borrowers in the same country-industry group, where industries are based on the 3-digit SIC classification. Standard errors clustered on bank. Sources: Refinitiv's Dealscan, Fitch Connect, S&P, Bloomberg.

- Higher CLEs are associated with a lower growth rate of lending during 2020:Q2-Q3 for all GSIB banks, but esp. US banks
- Col 4: A 5.7 ppt increase in CLE (1 st.dev.) is associated with loan growth rate lower by ~11½ ppts
- Placebo test indicates no association between CLEs and 2019 outcomes
- Additionally:
  - Results are similar for the extensive margin: higher CLEs are associated with lower probability of new loan extension and renewals, and lower probability of new relationship formation
  - Robust to controlling for pre-pandemic energy exposures

3/ Evidence from U.S. Loan Officers' Opinions

- Bring together data from quarterly **SLOOS** surveys during 2020
  - Inquires about banks' changes in C&I lending standards and terms each quarter
- Match SLOOS respondents with Dealscan and Call Reports (75 US banks)
- Use the following survey questions:
  - **Lending standards:** *Over the past three months, how have your bank's credit standards for approving applications for C&I loans or credit lines changed?*
  - **Loan terms**: *For applications to C&I loans or credit lines that your bank is currently willing to approve, how have the terms of these loans changed over the past three months?*
    - Separate questions for loans to large vs. small firms
  - **Direct measure of demand for loans**: *Apart from seasonal variation, how has demand for C&I loans changed over the past 3 months?*
    - Add this as a control variable in the regressions

3/ Evidence from U.S. Loan Officers' Opinions

Lending Standards

Banks' credit lines exposures and extensive margin of lending

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	Bank tighened lending standards				
	2020:Q1	2020:Q2	2020:Q3	2020:Q4	2019
					Placebo
			A. To small firms		
CLE	0.0064***	0.0067***	0.0040*	0.0017	-0.0000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Observations	42	45	42	43	165
R-squared	0.364	0.610	0.161	0.356	0.057
			B. To large firms		
CLE	0.0036*	0.0009	-0.0018	-0.0002	0.0006
	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Observations	44	48	45	47	180
R-squared	0.288	0.096	0.278	0.214	0.052
Bank controls	Yes	Yes	Yes	Yes	Yes
Loan demand	Yes	Yes	Yes	Yes	Yes

Dependent variable: Dummy variable taking value 1 if the bank responded that they tightened somewhat or considerably in response to the questions about changes in lending standards on C&I loans over the past quarter. Bank controls include size, capital, ROA, loan/assets, NPLs, and a dummy variable for banks that reported increasing loan demand. The sample contains 75 SLOOS respondents matched to Dealscan. Regression results weighted by bank size. Standard errors clustered on bank. Source: Federal Reserve Senior Loan Officer Opinion Survey, Refinitiv's Dealscan.

- Higher CLEs are associated with greater likelihood of reporting tighter standards on new business loans, esp. for smaller firms
- Col 1: A 35 ppt increase in CLE (1 st. dev.) raises the likelihood of tightening standards on C&I loans to:
  - large firms by 13% (40% of mean)
  - small firms by 22% (72% of mean)
- Additionally,
  - Results are similar for the terms of loans: higher CLEs predict stronger tightening of loan terms (esp. spreads and risk premia) to small firms
- Effects decline starting from Q3

Role of Policy Support in Mitigating the Aggregate Shock

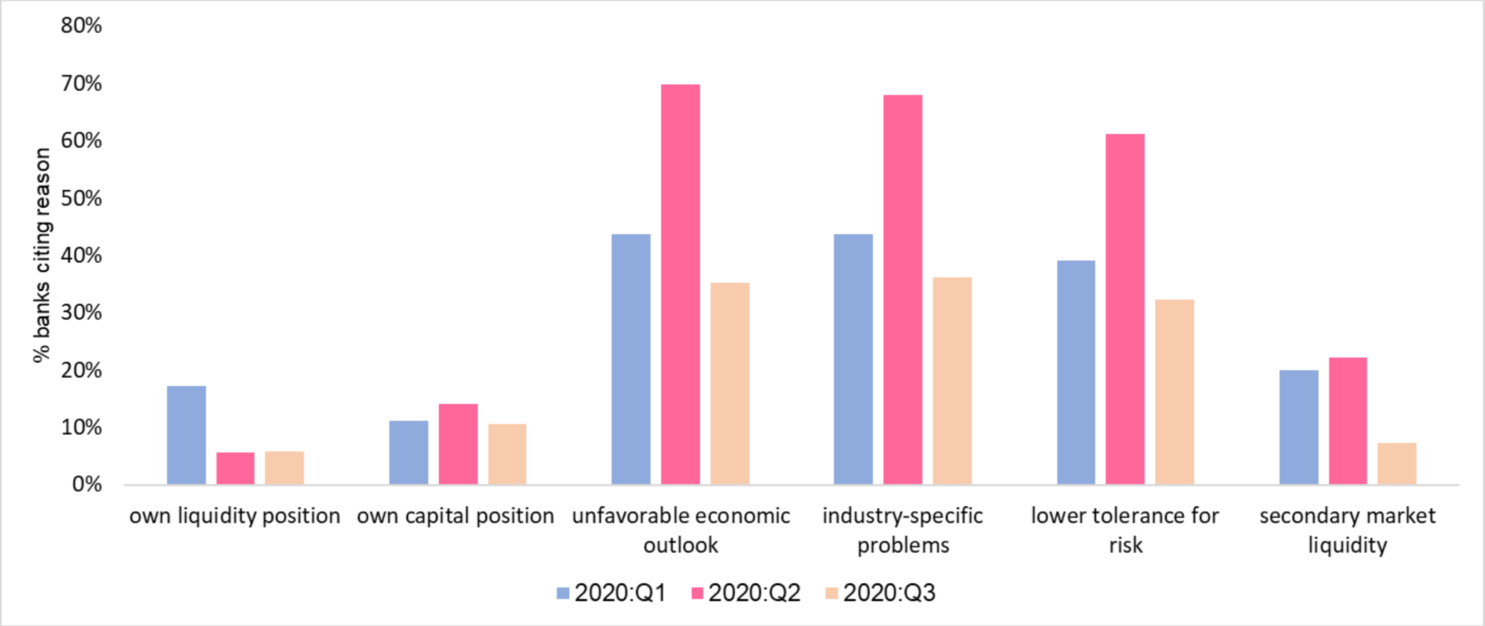
- Adverse credit supply effects for smaller firms is consistent with the broader findings of Greenwald, Krainer and Paul (2020):
  - large firms' CL drawdowns after negative macroeconomic shocks create an externality for smaller firms; redistribution of credit amplifies the *decline in aggregate investment* despite rise in total credit growth
- Specific to COVID-19 shock: Extraordinary central bank support starting at end-Q1 (asset purchases and bank credit)
- Darmouni and Siani (2021): After extraordinary corporate bond market support, large issuance by firms, partially used to pay off existing loans and recently drawn CLs
- **Thanks to the policy support, CL shock was short-lived this time.**

Mechanisms: Why Did Banks with More CLEs Tighten?

- Reduction in capital ratios, liquidity pressures, higher risk aversion?
- Exploit SLOOS questions about the reasons why banks tightened lending standards

Survey question: *If your bank has tightened or eased its credit standards or its terms for C&I loans or credit lines over the past three months, how important have been the following possible reasons for the change?*

- Own capital and liquidity positions
- Economic outlook
- Industry specific problems
- Risk tolerance
- Secondary market liquidity
- Etc.



The bars represent the fraction of respondents citing each factor as a somewhat or very important reason for tightening lending standards on new C&I loans or credit line approvals. Source: Federal Reserve Senior Loan Officer Opinion Survey.

Mechanisms: Regression Evidence

Banks' credit line exposures and reasons cited for tightening lending standards

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	**Bank cites the following reason for tightening C&I lending standards:**					
	own liquidity position	**own capital position**	**lower tolerance for risk**	**own liquidity position**	**own capital position**	**lower tolerance for risk**
	A. Full period (2020:Q1-Q3)			**B. By Quarter**		
CLE	0.0009**	-0.0008*	0.0053***			
	(0.000)	(0.000)	(0.001)			
CLE x 2020:Q1				0.0030**	-0.0002	0.0036**
				(0.001)	(0.001)	(0.002)
CLE x 2020:Q2				0.0001	-0.0006	0.0084***
				(0.000)	(0.000)	(0.002)
CLE x 2020:Q3				-0.0002	-0.0013*	0.0036*
				(0.000)	(0.001)	(0.002)
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes
Loan demand	Yes	Yes	Yes	Yes	Yes	Yes
Observations	129	125	129	129	125	129
R-squared	0.127	0.055	0.215	0.265	0.063	0.275

Dependent variable: Dummy variable taking value 1 if the bank responded that each reason indicated as column heading was somewhat or very important in its decision to tighten lending standards on new C&I loans over the past quarter. Bank controls include size, capital, ROA, loan/assets, NPLs, and a dummy variable for banks that reported increasing loan demand. The sample contains 75 SLOOS respondents matched to Dealscan. Regression results weighted by bank size. Standard errors clustered on bank. Source: Federal Reserve Senior Loan Officer Opinion Survey, Refinitiv's Dealscan.

- Higher CLEs are associated with
  - A slightly higher likelihood of citing liquidity problems, but *only in 2020:Q1*
  - No significant association with capital
    - Immediate BS constraints not the main mechanism
  - A higher likelihood of citing lower risk tolerance, persistent over time and significant each quarter
- Additionally,
  - There is no association between CLEs and the probability of citing other factors as playing a role in banks' lending decisions (economic outlook, industry specific problems, competition from other lenders, etc.)

Summary

Banks with higher ex-ante CLEs:

1. Curtailed the supply of new syndicated loans
2. Tightened the standards and terms of new C&I loans
3. Participated less in low-risk government credit support programs

Main takeaway: Dormant off-balance sheet risks materialized unexpectedly. CLDDs did not pose the systemic risks as in 2008, yet they had a meaningful impact on banks' intermediation. **These off-balance sheet exposures did not go away after COVID-19!**

Implications for policymakers:

- Banks' off-balance sheet credit exposures deserve closer attention.
  - Revisit the stressed credit line usage assumption of the LCR under Basel III: "Banks should assume a **10% drawdown** of the undrawn portion of these credit facilities" → likely calibrated with experience from the GFC, but in reality, closer to 20-30%.