Motivating Banks to Lend? Credit Spillover Effects of the Main Street Lending Program

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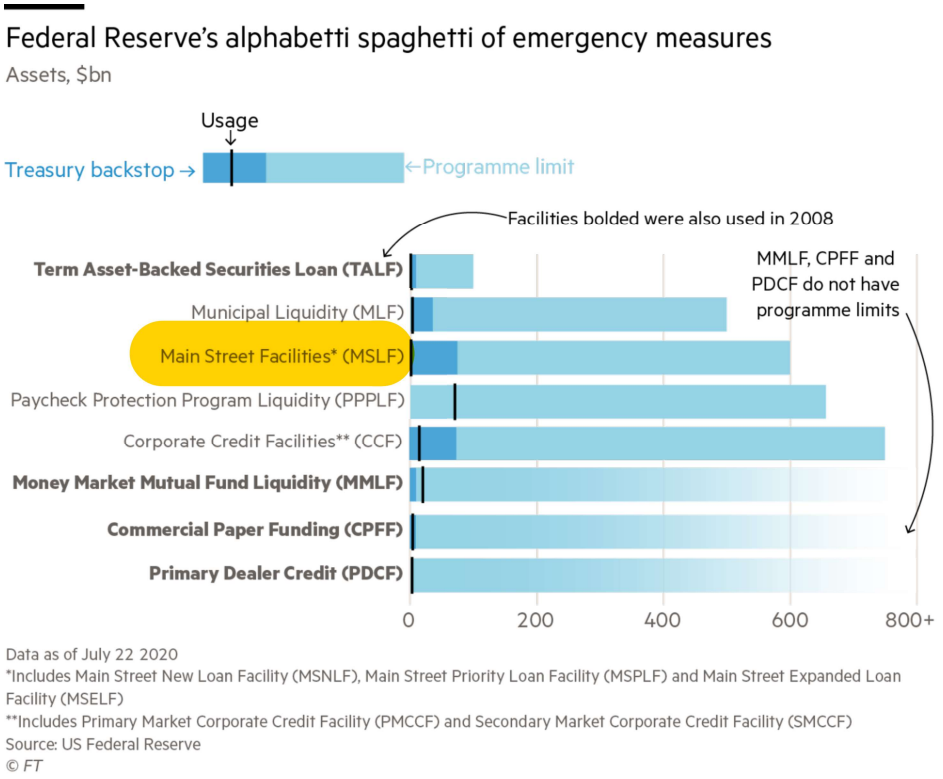
Motivation–Fed Facilities at Onset of Pandemic

Very low usage compared to the capacity of Fed emergency facilities



Source: "Federal Reserve extends emergency lending facilities by 3 months," Financial Times, July 28 2020.

Why the Main Street Lending Program?

1. Innovative emergency lending program aimed at supporting the flow of bank credit to small and medium sized firms affected by the Covid-19 pandemic
2. Unique opportunity to study the effects of government interventions in the private loan market due to several key features:
   - reliance on banks to screen and originate loans
   - 95% of eligible loans are removed from banks' balance sheets
   - different from grant-making programs (PPP), funding-for-lending programs (Bank of England, European Central Bank), government loan guarantee programs
   - key function of **backstop** to the bank loan market amid widespread Fed support

This Paper

The program was intended as a backstop: – *"the facility might be used relatively little and mainly serve as a backstop, assuring lenders that they will have access to funding and giving them the confidence to make loans to households and businesses."* (J. Powell, June 30 2020)

Take-up is not necessarily a gauge for success: – *"In assessing the value of the Fed's liquidity facility, it's important not to assess it on how much it's used but assess it on how much it reassures people and changes the perception of risk."* (W. Dudley, 2020)

Our questions: What effects did the MSLP have on the flow of credit to the real economy? Did the MSLP support the flow of credit more generally? Through what channels?

Results at a Glance

1. The MSLP encouraged banks to lend beyond the program, despite low overall takeup—*positive externality*
   - MSLP banks were less likely to tighten lending standards and terms on new C&I loans than other banks
   - More likely to originate and renew large C&I loans, and provided relatively better terms on approved loans
   - Granted relatively more small business loans
2. The main channel was an improvement in banks' perceptions of risk, as opposed to an easing of immediate balance sheet constraints
3. Estimates based on instrumental variables and falsification tests suggest a causal interpretation of our results

Takeaway: *The MSLP contributed to ease financial conditions at participating banks, or at least mitigated against further tightening, similar to other Fed programs*

The Main Street Lending Program

The Main Street Lending Program

- Goal: Facilitate the granting of loans to small and mid-sized firms during the Covid-19 crisis ("bridge loans")
- Target: Firms too large to quality for PPP loans but too small to tap the corporate bond and syndicated loan markets (max firm size: 15k workers, revenues $<$\$5 bn). Loan spread 300bps over LIBOR, 5-year maturity, max firm leverage 6xEBITDA
- Key Feature: Fed's SPV purchased 95% of the participation to MSLP eligible borrowers from banks, which retain 5% ("skin in the game") ▸ Low Takeup

- MSLP opened up for registration from banks on June 15 2020; started accepting loans on July 6 2020; expired on December 31 2020.

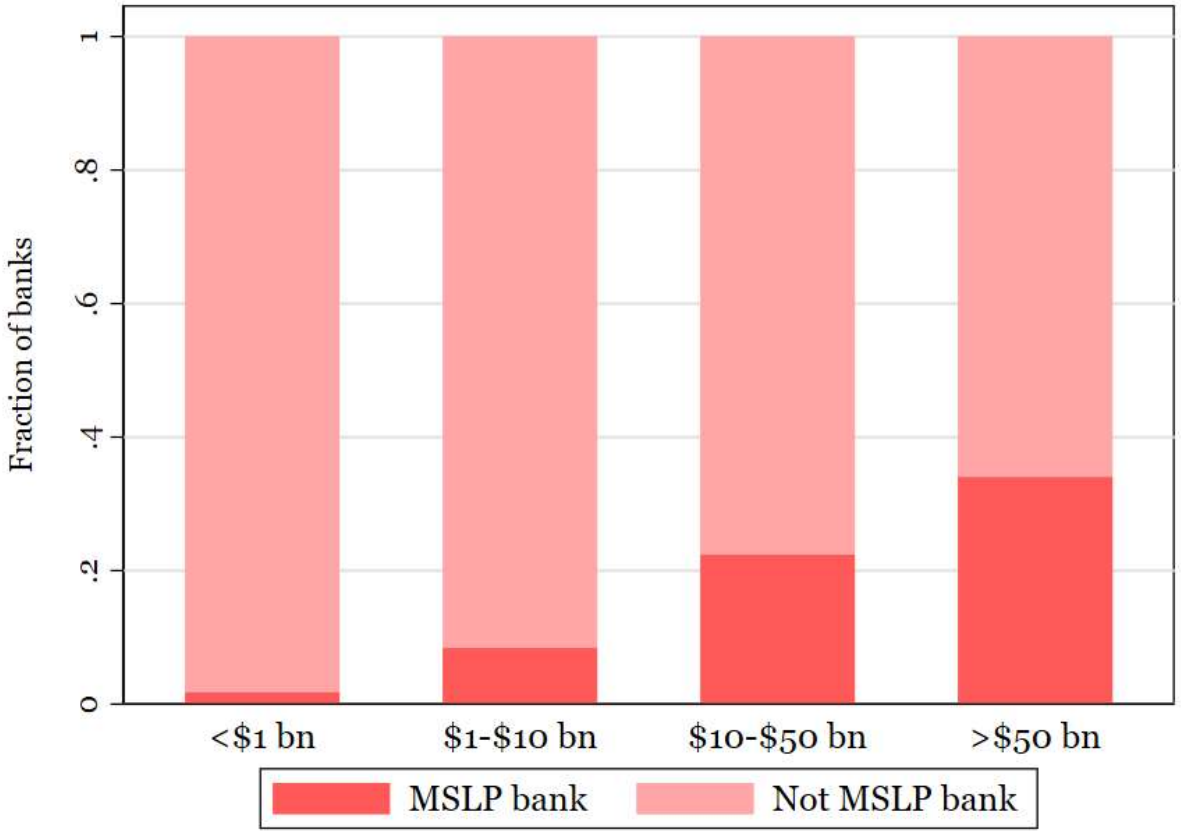
  Our post-MSLP period: $\rightarrow$ 2020:Q3 vs. pre-MSLP: 2020:Q1–2020:Q2

Key Identification Issues

- Exposure measure ("Treatment"): MSLP lending bank ("MSLP bank")
- Key issue: MSLP participation is a decision variable, likely correlated with bank characteristics, including unobservables (especially *credit demand*, e.g., MSLP banks may have faced better local demand conditions)
  - Balancing tables: "Treatment" uncorrelated with demand proxies
  - Control for key bank characteristics (pre/post)
  - Control for credit demand shifts with firm$\times$quarter and bank$\times$firm FE in the microdata; direct measures of credit demand in survey data
- Solutions:
  - Instrumental variables
  - Battery of falsification tests

Bank Participation in the MSLP

Share of Lending Banks by Size



Balancing Table (1): Bank Characteristics by MSLP Participation

▸ Regression Evidence

	MSLP bank *N=101*	**Non-MSLP bank** *N=791*	**p-value** coeff (1)=(2)	
Total assets (USD bn)	63.50	16.66	0.003	***
Loans/Assets	72.2%	68.9%	0.043	**
C&I Loans/Loans	30.0%	21.2%	0.000	***
Capital (CET1) ratio	12.1%	14.4%	0.008	***
Voluntary excess CET1 capital	5.0%	7.3%	0.008	***
Core Deposits/Liabilities	48.3%	50.2%	0.162	
Credit line drawdowns (2019:Q4 vs 2020:Q1)	0.3%	0.1%	0.168	
Credit line drawdowns (2020:Q1 vs 2020:Q2)	-1.0%	-0.8%	0.065	*

The table reports average balance sheet characteristics for banks with more than $1 bn in total assets, by MSLP participation status. Credit line drawdowns are defined as the negative of changes in off-balance sheet unused C&I loan commitments between two quarters, divided by total assets in the initial quarter (such as that a positive figure represents drawdowns and a negative figure represents repayments, net of new originations and expired credit lines.)

Balancing Table (2): Bank Demand Conditions by MSLP Participation

	MSLP bank *N=101*	Non-MSLP bank *N=791*	p-value
COVID cases (Mar 1–Dec 15)[1]	0.040	0.041	0.650
COVID cases (Mar 1–Dec 15)[2]	52.06	52.93	0.602
COVID cases (Mar 1–Aug 30)[2]	17.38	17.38	0.996
COVID cases (Mar 1–Oct 30)[2]	27.54	28.05	0.562
Unemployment insurance claims (Jan-Nov)	0.21	0.21	0.672
Unemployment rate, max (Jan-Nov)	14.7%	14.7%	0.958
Unemployment rate, change (Jan-Nov)	3.07	2.98	0.520
% Small firms missed loan payments	16.6%	16.6%	0.977
% Small firms unmet demand through PPP	8.9%	8.5%	0.188
% Small firms affected by COVID	84.6%	85.0%	0.433
% Small firms experienced revenue drop	54.4%	54.8%	0.428
% Small firms permanently closed	27.6%	27.9%	0.712
% Small firms temporarily closed	75.2%	75.7%	0.444

The table reports average bank exposure to local economic conditions for banks with above $1 bn in total assets, by MSLP participation status. Bank exposure is calculated by weighting local economic conditions by the bank's geographic footprint (% deposits in mid-2019) in each location (where location is county[1] or state[2]).

Instrumentation Strategy

- Goal: Address the issue of nonrandom selection into program participation ("treatment")
- Three instruments: Strong predictors of participation but orthogonal on lending decisions. Exploit the idea of familiarity with Fed facilities and processes ▸ IV Relevance
  - A dummy for banks that cited burdensome/costly registration process as a very important reason for not registering
  - Two dummies for banks that are ready to borrow from the discount window — pledged loans *or* securities as collateral at end-219 (Anbil, Carlson, and Styczynski, 2020)

The Data

- "U.S. credit register"
  - Loan-level data for large business loans (Y-14Q, H.1), large BHCs
  - Loan-portfolio segment data for small business loans (Y-14Q, A.9), large BHCs
- Bank-level survey data on C&I lending standards and terms (Senior Loan Officer Opinion Survey—SLOOS) ▸ Reliability
- Data on program participation (Boston Fed, FRB webpages)
- Bank balance sheet data from the Call Report; macro data on pandemic intensity, labor market conditions, small business conditions, syndicated loan data from Dealscan, etc.

Credit Spillovers: Main Results

Credit Spillovers: Evidence from the Credit Register

MSLP banks were more likely to renew maturing loans, originate new loans, and increased the # of small business loan accounts ▸ Full 2020

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	**Renewals** (% loans)		**Originations** (% loans)		**No. small business loans (log)**
	OLS	2SLS	OLS	2SLS	OLS
MSLP bank × Post	0.0166***	0.0273**	0.0140***	0.0267**	0.1734***
	(0.00339)	(0.012)	(0.00331)	(0.013)	(0.048)
No. of observations	78,081	77,172	78,099	77,188	4,458
R^2	0.517	-	0.566	-	0.629
F-stat first stage		2033.8		2031.1	
Hansen over-identification test		0.000		0.008	
Bank controls	Yes	Yes	Yes	Yes	Yes
Bank controls × Post	Yes	Yes	Yes	Yes	Yes
Borrower × quarter FE	Yes	Yes	Yes	Yes	
Bank FE	Yes	Yes	Yes	Yes	Yes
Loan segment × quarter FE					Yes

OLS and 2SLS regressions using credit register data from the Y-14Q H1 and A9 schedules. The data are at the bank-firm-quarter level (cols 1-4) or bank-loan segment-quarter level (col 5) over 2020:Q1–2020:Q3. Standard errors are clustered on bank-firm (col 1-4) or bank-quarter (col 5). *** 1%, ** 5%, * 10%, # 15%.

Credit Spillovers: Evidence from Survey Data

MSLP banks were less likely to report tightening C&I lending standards

	(1)	(2)	(3)	(4)
Dependent variable	**Bank reports tightening C&I lending standards**			
	OLS	OLS	2SLS	2SLS
MSLP bank × Post	-0.1473**	-0.1542**	-0.6652*	-0.6043*
	(0.017)	(0.019)	(0.383)	(0.376)
MSLP bank	-0.0283	-0.0214	-0.6267	-0.6877*
	(0.017)	(0.018)	(0.383)	(0.376)
Post	-0.0552		-1.2682***	
	(0.531)		(0.328)	
Observations	405	405	405	405
R^2	0.121	0.162	-	-
F-stat first stage MSLP bank × Post			14.38	14.02
Hansen over-identification test			0.0995	0.0995
Bank controls	Yes	Yes	Yes	Yes
Bank controls × Post	Yes	Yes	Yes	Yes
Loan demand	Yes	Yes	Yes	Yes
Loan demand × Post	Yes	Yes	Yes	Yes
Survey FE		Yes		Yes
Firm size FE	Yes	Yes	Yes	Yes

OLS and 2SLS regressions using SLOOS survey data. The data are at the bank-borrower size-survey (quarter) level over 2020:Q1–2020:Q3. Standard errors are clustered on survey. *** 1%, ** 5%, * 10%, # 15%.

Credit Spillovers: Intensive Margin Results for Syndicated Loans

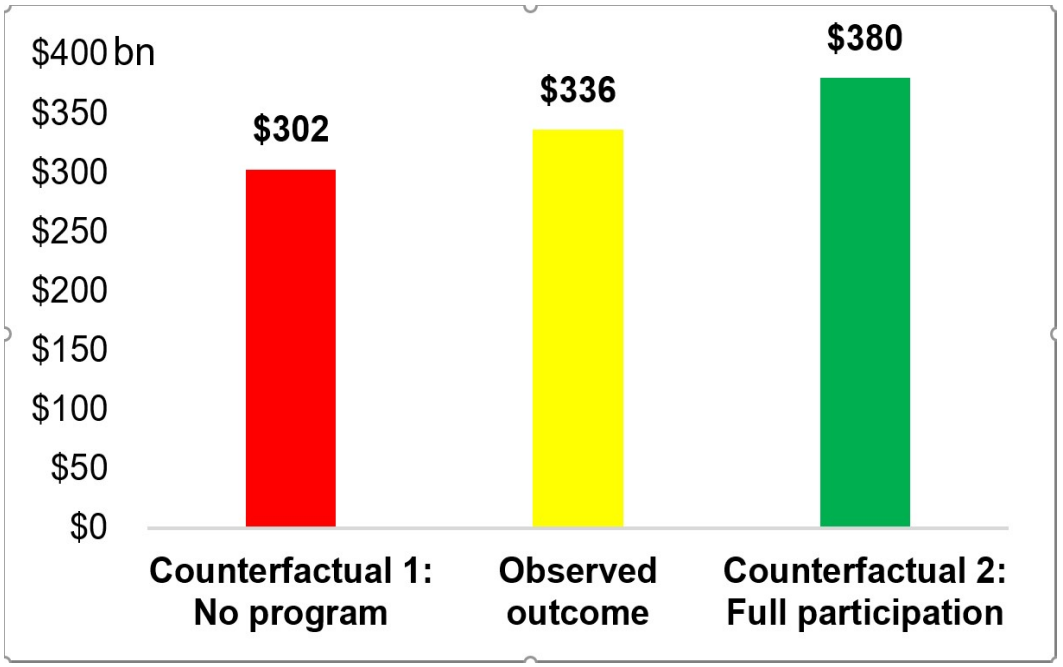
Intensive margin results for syndicated loan data from Dealscan, which offers external validity and larger sample of banks.

	(1)	(2)	(3)	(4)
Dependent variable:	**Log-amount**	**Spread over LIBOR**	**Log-amount**	**Spread over LIBOR**
	OLS	OLS	2SLS	2SLS
MSLP bank × Post	0.1127**	-0.1351***	0.2818***	-0.3817#
	(0.048)	(0.043)	(0.104)	(0.302)
Observations	4,858	4,232	4,297	3,886
R^2	0.563	0.616	-	-
First-stage	-	-	14.02	7.53
Hansen over-identification test	-	-	0.000	0.224
Bank controls	Yes	Yes	Yes	Yes
Bank controls × Post	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Borrower cluster × quarter FE	Yes	Yes	Yes	Yes

OLS and 2SLS regressions using Dealscan data on new syndicated loan originations. Sample limited to lead arrangers. The data are at the bank-borrower cluster-quarter level over 2020:Q1–2020:Q3. Borrower clusters comprise all borrowers in the same industry (two-digit NAICS) and U.S. state. Standard errors are clustered on bank-quarter. *** 1%, ** 5%, * 10%, # 15%.

Economic Interpretations

Back of the envelope calculations on our estimates indicate that:



- **Counterfactual #1**: Without the program, in the Y-14Q sample (assets $>$ 100bn), total loan renewals and originations in 2020:Q3 would have been **10%** lower than they were.
- **Counterfactual #2**: If all the Y-14Q banks had participated in the program, total loan renewals and originations in 2020:Q3 would have been **13%** higher than they were.
- **Similarly**, in the SLOOS sample (assets $>$ 2bn), without the program, the share of banks that would have tightened credit standards in 2020:Q3 would have been higher by close to 5 ppts than what it was (37.5%). If all banks had participated, the share of banks that would have tightened credit standards in 2020:Q3 would have been lower by almost 10 ppts.

Mechanisms

Two Mutually-Nonexclusive Mechanisms Behind Our Results

Risk aversion mechanism:

- The monetary authority's credible commitment to provide a liquidity backstop can change market participants' risk perceptions and boost willingness to take risk
- Evidence from the stock market suggests Fed communications early in the pandemic helped market turnaround by improving sentiment rather than substance (Cox Greenwald and Ludvigson 2020)

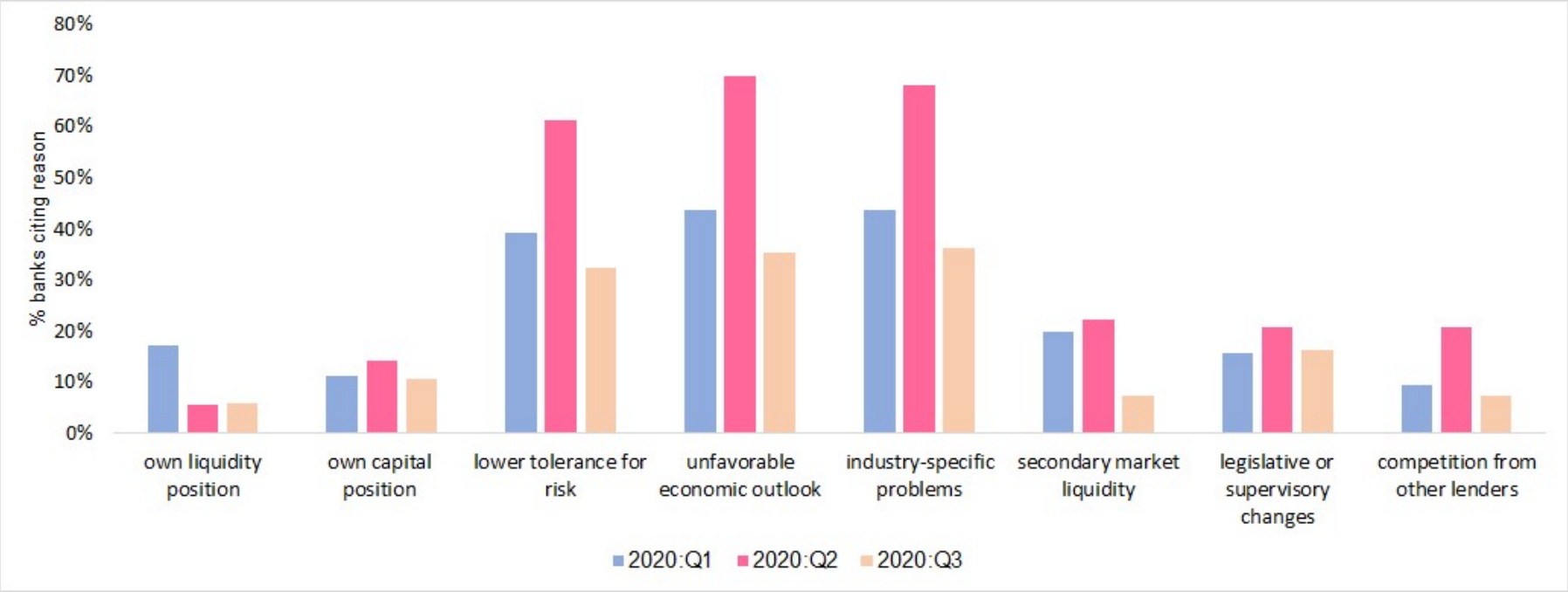
Balance sheet constraints mechanism:

- MSLP eases lending constraints directly by removing 95% of credit exposure from the lenders' balance sheet
- MSLP eases future lending constraints by providing the option to originate C&I loans in the future (and remove risk from balance sheet)

Empirical tests: Exploit indicators of risk management practices and balance sheet constraints, and survey data on reasons for tightening credit standards

Mechanisms: Why Were Banks Tightening Credit Standards in 2020?

Most banks cited a lower tolerance for risk, an unfavorable economic outlook, and industry-specific problems (especially COVID-sensitive industries)



The figure shows the fraction of domestic banks that rated each of six reasons as a "somewhat" or "very important" possible reason for tightening credit standards or terms C&I loans or credit lines. (The banks are asked to rate each possible reason using the following scale: 1=not important, 2=somewhat important, 3=very important.) The survey addresses changes in the standards and terms on bank loans over the quarter. Source: Federal Reserve Senior Loan Officer Opinion Survey, reproduced from Kapan and Minoiu (2020).

Mechanisms: Evidence from SLOOS

MSLP banks were less likely to cite a rise in risk aversion as a key reason for tightening C&I lending standards. No role for *immediate* balance sheet constraints. No evidence that other reasons mattered differentially.

▸ Additional ▸ Reliability

	(1)	(2)	(3)
Dependent variable:	**Bank cites reason as "very important" for tightening lending standards:**		
	lower risk tolerance	own capital position	own liquidity position
MSLP bank × Post	-0.3524***	-0.0429	0.0216
	(0.125)	(0.063)	(0.021)
MSLP bank	0.0389	-0.0095	-0.0154
	(0.110)	(0.050)	(0.016)
Observations	103	99	103
R^2	0.171	0.121	0.109
Bank controls	Yes	Yes	Yes
Bank controls × Post	Yes	Yes	-
Loan demand	Yes	Yes	Yes
Loan demand × Post	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes

OLS regressions using SLOOS survey data. The data are at the bank-borrower size-survey (quarter) level over 2020:Q1–2020:Q3. Standard errors are clustered on survey.

Conclusions

After the MSLP's implementation in mid-2020, participating banks:

- Were more likely to renew maturing loans and grant new loans, and increased the number of small business loan accounts
- Were less likely to tighten C&I lending standards and terms than other banks
- Were less likely to report a reduction in risk tolerance as very important reasons for tightening C&I lending standards—"risk-aversion" channel—suggesting role of "psychological backstop"

- Despite low overall takeup, the MSLP increased banks' willingness to take risk and extend loans to businesses, supporting the provision of credit to the real sector during a crisis, and consistent with the goals of the policy as a backstop.