

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

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The views and conclusions are those of the authors and do not necessarily indicate concurrence by the Federal Reserve System or its staff.

Why the Main Street Lending Program?

- 1 Historic 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
- 3 Key function of **backstop** to the bank loan market; take-up is not necessarily a gauge for success

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: How did the MSLP affect the flow of credit through participating banks? Did it support the flow of credit more generally? Through what channels?

Questions and Results

Questions:

1. What effects did the MSLP have on the flow of credit to the real economy?
2. Through what channels?

Results:

1. The MSLP encouraged banks to lend beyond the program on the extensive and intensive margins of lending
 - ▶ More likely to grant new business loans
 - ▶ Provided relatively better terms: larger loans, lower spreads
2. Operated through two non-exclusive channels: (1) changing risk perceptions (improving risk tolerance) and (2) easing of bank balance sheet constraints

Contribution to Literature

Closely related to literature on central banks' emergency lending programs and unconventional monetary policies during pandemic:

- Bank lending during the Covid-19 crisis [Berger and Demirguc-Kunt 2021](#) *Contribution: Deepen our understanding of bank lending decisions in the face of uncertainty shocks and the role of risk perceptions*
- Effectiveness of bank-intermediated credit support programs during Covid-19 crisis [Autor et al 2022](#); [Berger et al 2021a,b](#); [Duchin and Hackney 2021](#); [Granja et al 2021](#); [Bartik et al 2020](#) *Contribution: Study historic lending program, different from funding for lending, government loan guarantee, and grant-making programs, with low takeup.*
- Effects of emergency lending facilities (“The Fed takes credit risk”) on market functioning. [Gilchrist Wei Yue Zakrajsek 2020](#); [Kargar et al 2021](#). *Contribution: Existing evidence is on corporate and municipal bond markets, we analyze the private bank loan market.*
- The effects of Fed communications on investor risk attitudes and the role of Fed facilities as backstop [Cox Greenwald and Ludvigson 2020](#); [Vissing-Jorgensen 2020](#). *Contribution: Focus on banks.*

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 qualify 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: → 2020:Q3 vs. **pre-MSLP:** 2020:Q1–2020:Q2

Key Identification Issues

- Diff in diff approach
 - ▶ **Treatment:** MSLP lending bank (“MSLP bank”)
 - ▶ Pre-MSLP: 2020:Q1–2020:Q2 vs. post-MSLP: 2020:Q3
- Key issue: MSLP participation is a decision variable, likely correlated with **bank characteristics** and credit demand.
 - ▶ Control for key bank characteristics (pre/post)
 - ▶ Show “treatment” uncorrelated with demand proxies
 - ▶ Control for credit demand shifts with $\text{firm} \times \text{quarter}$ and $\text{bank} \times \text{firm}$ FE in the microdata
- Solutions:
 - ▶ **Instrumental variables**
 - ▶ Battery of falsification tests

Bank Participation in the MSLP

MSLP participation was more prevalent among larger banks.



The figure shows the fraction of MSLP participating banks in the Call Report by size category. Source: Federal Reserve Main Street Reports to Congress Pursuant to Section 13(3) of the Federal Reserve Act in response to COVID-19 and Call Report.

Selection by Bank Characteristics into MSLP Participation

MSLP banks were traditional lenders, provided more business loans, had lower capital ratios.

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
	1: MSLP bank					
Size (log-assets)	0.012 (0.042)					0.016 (0.093)
Loans/Assets		1.073*** (0.293)				1.180*** (0.404)
C&I Loans/Loans			1.331* (0.689)			-0.366 (1.045)
CET1 ratio				-0.736** (0.283)		-0.648 (0.856)
Core Deposits/Liabilities					-0.515 (0.616)	-1.257*** (0.435)
Observations	30	30	30	30	30	30
R^2	0.002	0.194	0.090	0.047	0.030	0.305

This table shows OLS (linear probability model) estimates for a regression of MSLP participation dummy ("MSLP bank") on bank characteristics measured at end-2020:Q2. Standard errors are robust. Significance: *** 1%, **5%, *10%.

Selection by Local Demand Conditions into MSLP Participation

MSLP participation is uncorrelated with measures of local demand conditions during the pandemic.

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
	1: MSLP bank					
COVID cases (Mar 1-Dec 15) [1]	-0.0257 (0.046)					0.1165 (0.096)
COVID cases (Mar 1-Dec 15) [2]		-0.0038 (0.008)				-0.0002 (0.015)
Change in unemployment rate			0.0788 (0.128)			-0.1622 (0.207)
% Small firms unmet demand through PPP				0.0717 (0.057)		0.1263 (0.086)
% Small firms experienced revenue drop					0.0425 (0.029)	0.0899* (0.048)
Observations	30	30	30	30	30	30
R^2	0.423	0.423	0.430	0.454	0.456	0.516
Bank controls	Y	Y	Y	Y	Y	Y

This table shows OLS (linear probability model) estimates for a regression of MSLP participation dummy ("MSLP bank") on measures of local conditions facing each bank. These measures refer to Covid-19 pandemic intensity (the cumulative case infections at the county or state level during Mar 1-Dec 15 2020), the change in the unemployment rate at the state level during Jan-Nov 2020), and small business credit demand and revenue shock (the share of small firms with unmet credit demand through the PPP and the share of small firms experiencing a revenue drop). These variables are computed at the bank level by weighting them across locations (state [2] or county [1] for Covid cases) by banks' deposits shares in those locations, measured in June 2019. Standard errors are robust. Significance: *** 1%, **5%, *10%.

Instrumentation Strategy

- Goal: Address the nonrandom selection into program participation (“treatment”)
- Two instruments: Strong predictors of participation but orthogonal on lending decisions.
 - ▶ Exploit the idea of familiarity with Fed facilities and operational processes
 - ▶ Need variables that capture banks’ preexisting engagement and communications with the Fed regarding the eligibility, riskiness and custody of collateral
 - ▶ **Two dummies for banks that are ready to borrow from the discount window** – pledged loans or securities as collateral at the Federal Reserve’s discount window during December 1-31, 2019 – interacted with Post ([Anbil, Carlson, and Styczynski, 2020](#))

▶ IV Relevance

Instrument Relevance

The Instrumental Variables are strongly correlated with the treatment variable in our main regression samples

	Y14-Q sample	Dealscan sample
Pledged loan collateral	0.0679***	0.0276**
Pledged securities collateral	-0.5562***	-0.3984*

This table reports the simple correlation coefficient between the instrumental variables and MSLP participation dummy in the 2SLS regression samples. The variables "Pledged loan collateral" and "Pledged securities collateral" take value one for those banks that had loan or securities collateral pledged to the Federal Reserve's discount window during December 1-31, 2019 and zero otherwise. Significance: *** 1%, **5%, *10%.

The Data

- “U.S. credit register”
- Loan-level data for **large business loans** (Y-14Q, H.1), large BHCs
- Syndicated loan data from Dealscan
- Data on program participation
 - ▶ Public loan-level disclosures in the Federal Reserve Board’s periodic report to Congress, available on the Federal Reserve Main Street webpage.
 - ▶ Provides the list of MSLP loan-granting banks over time along with banks’ RSSD ID and their MSLP loan characteristics.
- Bank balance sheet data from the Call Report
- Regional data on pandemic intensity, labor market conditions, small business conditions.

Credit Spillovers: Main Results

Empirical Approach

Examine the effect of MSLP participation on loan outcomes in a diff-in-diff framework.
Unit is the bank-firm-quarter:

$$\text{Loan outcome}_{ijt} = \alpha + \beta \text{MSLP}_i \text{ bank} \times \text{Post}_t + \gamma' \text{Bank characteristics}_{it} + \delta' \text{Bank characteristics}_{it} \times \text{Post}_t + \zeta_{jt} + \eta_i + \theta_{ij} + \epsilon_{ijt}$$

- *Loan outcome*_{ijt}: % of new loans in existing loans within each bank-borrower pair in each quarter (unweighted and weighted by loan volumes).
- *MSLP bank*_i × *Post*_t: dummy for MSLP banks after program start in 2020:Q3
- *Bank characteristics*_{it}: size, loans/assets, C&I loans/loans, capital, and core deposits
- *Fixed effects*: borrower × quarter and bank × borrower

Credit Spillovers: Extensive Margin Results for Credit Register Loans

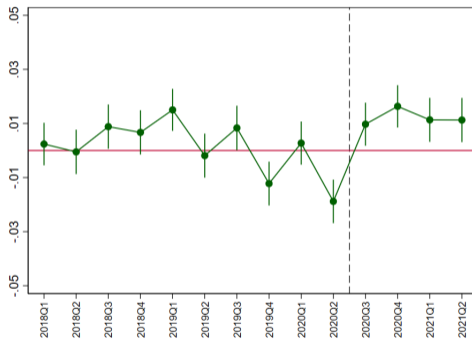
MSLP banks were relatively more likely to provide new loans (renew maturing loans or originate new loans) in the post-MSLP period.

Dependent variable:	(1) New loan share	(2)	(3) New loan share volume-weighted	(4)
A. OLS estimates				
MSLP bank \times Post	0.0298*** (0.004)	0.0257*** (0.004)	0.0304*** (0.004)	0.0269*** (0.004)
R^2	0.600	0.748	0.609	0.753
B. 2SLS estimates				
MSLP bank \times Post	0.0344*** (0.010)	0.0204** (0.009)	0.0377*** (0.010)	0.0250*** (0.009)
No. of observations	78,107	75,836	78,101	75,832
Mean of dep. var	0.103	0.0965	0.101	0.0947
F-stat first stage	3174	3021	3173	3021
Bank controls	Y	Y	Y	Y
Bank controls \times Post	Y	Y	Y	Y
Borrower \times quarter FE	Y	Y	Y	Y
Bank FE	Y	Y	Y	Y
Bank \times borrower FE		Y		Y

OLS and 2SLS regressions using credit register data from the Y-14Q H1. The data are at the bank-firm-quarter level over 2020:Q1–2020:Q3. Standard errors are clustered on bank-firm. Significance: *** 1%, ** 5%, * 10%.

Dynamic diff-in-diff coefficient chart for lending

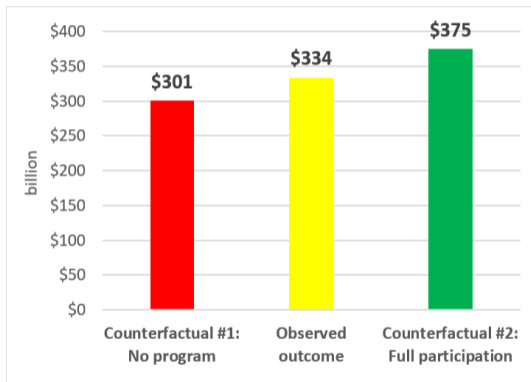
MSLP banks were relatively more likely to provide new loans in the post-MSLP period but not systematically different from non-MSLP banks before the program.



The figure shows the effects of MSLP bank participation on the share of new loans during the period between 2018:Q1 and 2021:Q2. The chart plots the estimated difference-in-differences coefficients and the associated 99% confidence levels of the dynamic variant of model (2) in the Table on "Extensive Margin Results for Credit Register Loans" with interaction effects between MSLP bank and quarterly dummies over the sample period.

Economic Interpretations

Back of the envelope calculations on our estimates indicate that:



- **Counterfactual #1:** Without the program, in the credit register sample (assets > 100bn), total new loans in 2020:Q3 would have been **10%** lower than they were.
- **Counterfactual #2:** If all the credit register banks had participated in the program, total new loans in 2020:Q3 would have been **12%** higher than they were.

Credit Spillovers: Intensive Margin Results—Volumes and Spreads

Conditional on granting loans, MSLP banks were relatively more likely to provide larger and cheaper loans in the post-MSLP period. Dealscan offers external validity and larger sample of banks.

	(1)	(2)	(3)	(4)
	Evidence from Credit Register		Evidence from Dealscan	
Dependent variable:	Loan growth	Loan spread	Loan share	Loan spread
MSLP bank \times Post	1.3170** (0.644)	-0.0214# (0.015)	0.1559** (0.061)	-0.4377** (0.093)
No. of observations	70,046	39,368	5,107	4000
Mean of dep. var	0.332	1.948	0.245	2.470
F-stat first stage	2766	842.8	22.20	49.16
Bank controls	Y	Y	Y	Y
Bank controls \times Post	Y	Y	Y	Y
Borrower \times Quarter FE	Y	Y	Y	Y
Bank FE	Y	Y	Y	Y
Bank \times Borrower FE	Y	Y		
State \times Quarter FE			Y	Y
Industry \times Quarter FE			Y	Y

2SLS regressions using credit register data from the Y-14Q H1 at the bank-firm-quarter level (columns 1-2) and Dealscan data at the loan level (columns 3-4). Sample period is 2020:Q1–2020:Q3. Significance: *** 1%, ** 5%, * 10%, # 15%.

Mechanisms: Risk Perceptions and Balance Sheet Constraints

Two Mutually-Nonexclusive Mechanisms

Risk perceptions mechanism:

- The monetary authority's credible commitment to provide a liquidity backstop can change market participants' risk perceptions, improve risk tolerance, and boost willingness to take risk in the face of extreme uncertainty shocks

Balance sheet constraints mechanism:

- MSLP eases lending constraints directly by removing 95% of credit exposure and freeing up resources from the lenders' balance sheet
- MSLP eases future lending constraints by providing the option to originate business loans in the future should conditions deteriorate

Empirical tests: Exploit indicators of balance sheet constraints and firm risk

Mechanisms: Evidence from CAMELS and Risk Management Index

MSLP banks with poor CAMELS score (more balance sheet constrained) and higher Risk Management Index (stronger risk controls, hence likely more risk averse) were more likely to grant new loans.

Dependent variable:	(1) New loan share	(2) New loan share volume-weighted	(3) New loan share	(4) New loan share volume-weighted
MSLP bank × Post × Poor Camels score (1)	0.0409*** (0.011)	0.0397*** (0.011)		
MSLP bank × Post × Favorable Camels score (2)	0.0276*** (0.009)	0.0305*** (0.009)		
MSLP bank × Post × High RMI (3)			0.0831*** (0.023)	0.0967*** (0.023)
MSLP bank × Post × Low RMI (4)			0.0372*** (0.010)	0.0446*** (0.010)
No. of observations	75,836	75,832	55,265	55,261
P-value test: coeff 1 > 2	0.011	0.041		
P-value test: coeff 3 > 4			0.001	0.000
F-stat first stage	3121	3120	1021	1020
Bank controls, controls × Post	Y	Y	Y	Y
Borrower × quarter FE	Y	Y	Y	Y
Bank × borrower FE	Y	Y	Y	Y

In columns 1–2 the specifications open up the coefficient on “MSLP bank × Post” by the level of overall Camels score, measured at end 2020:Q2. Favorable Camels score takes value one for banks with an overall score of 1 and zero otherwise. Poor Camels score takes value one for banks with an overall score ranging between 2 and 4 and zero otherwise. In columns 3–4 the specifications open up the coefficient on “MSLP bank × Post” depending on the level of the RMI, a measure of the strength of risk management controls from Ellul and Yerramilli (2013) computed for 2013. Banks are split into low versus high RMI based on the sample median.

Mechanisms: Evidence from Bank Capital

More constrained banks had relatively larger spillover credit effects from MSLP participation.

Dependent variable:	(1) New loan share	(2) New loan share volume-weighted	(3) New loan share	(4) New loan share volume-weighted
Measure of bank constraints	<u>Voluntary capital buffer</u>		<u>Capital issuance</u>	
MSLP bank × Post × Low capital buffer (1)	0.0446*** (0.013)	0.0463*** (0.013)		
MSLP bank × Post × High capital buffer (2)	0.0261*** (0.007)	0.0277*** (0.007)		
MSLP bank × Post × No capital issuance (3)			0.0339*** (0.008)	0.0366*** (0.008)
MSLP bank × Post × Capital issuance (4)			0.0220** (0.010)	0.0278*** (0.010)
No. of observations	75,836	75,832	75,836	75,832
F-stat first stage	1119	1118	1863	1862
P-value test: coeff 1 > 2	0.021	0.021		
P-value test: coeff 3 > 4			0.045	0.104
Bank controls, controls × Post	Y	Y	Y	Y
Borrower × quarter FE	Y	Y	Y	Y
Bank × borrower FE	Y	Y	Y	Y

Banks are constrained if they have below-median excess capital buffers or below-median capital issuance. Excess capital as of 2020:Q2 is computed as in Berrospide et al. (2021) as the CET1 capital ratio level of bank capital in excess of regulatory minimums plus regulatory buffers and captures the amount of capital that banks could lose without facing potential payout restrictions or shrinking their balance sheet in order to become compliant. The dummy variable "Capital issuance" takes value one for those banks that issued equity or subordinated debt during 2020:Q1-Q2 and zero otherwise based on SNL Financial data.

Mechanisms: Evidence from Firm Risk

Dependent variable:	(1) New loan share	(2) New loan share volume-weighted	(3) New loan share	(4) New loan share volume-weighted	(5) New loan share	(6) New loan share volume-weighted
Measure of firm heterogeneity	<u>Firm in social-intensive sector</u>		<u>Firm size</u>		<u>Firm credit risk rating</u>	
MSLP bank × Post:						
× Social-intensive sector (1)	0.0560*** (0.016)	0.0544*** (0.016)				
× Regular sector (2)	0.0302*** (0.010)	0.0360*** (0.010)				
× Small firm (3)			0.0196** (0.010)	0.0255*** (0.010)		
× Large firm (4)			0.0224 (0.023)	0.0222 (0.023)		
× Speculative-grade rated (5)					0.0301*** (0.012)	0.0352*** (0.011)
× Investment-grade rated (6)					0.0197 (0.013)	0.0248* (0.013)
No. of observations	77,599	77,593	75,836	75,832	69,505	69,501
F-stat first stage	1181	1179	1310	1310	821.2	821
P-value test: coeff 1 > 2	0.050	0.116				
P-value test: coeff 5 > 6					-	0.108
Bank controls, controls × Post	Y	Y	Y	Y	Y	Y
Borrower × quarter FE	Y	Y	Y	Y	Y	Y
Bank × borrower FE			Y	Y	Y	Y

Mechanisms: Persistence of MSLP Effects/Backstop Role

Credit spillover effects were persistent through early-2021 but coefficient size decreases, suggesting diminished effects in 2020:Q4 after program expiration announcement and in 2021:Q1 after expiration.

Dependent variable:	(1)	(2)	(3)
	A. New loan share		
	A. 2020:Q3	B. Add 2020:Q4	C. Add 2021:Q1
MSLP bank \times Post	0.0204** (0.009)	0.0217*** (0.008)	0.0132* (0.007)
No. of observations	75,836	105,816	132,713
F-stat first stage	3021	3227	3162
B. New loan share, volume-weighted			
	A. 2020:Q3	B. Add 2020:Q4	C. Add 2021:Q1
MSLP bank \times Post	0.0250*** (0.009)	0.0253*** (0.008)	0.0169** (0.007)
No. of observations	75,832	105,106	131,792
F-stat first stage	3021	3276	3230
Bank controls, controls \times Post	Y	Y	Y
Borrower \times quarter FE	Y	Y	Y
Bank \times borrower FE	Y	Y	Y

Falsification Tests and Additional Results

Determinants of MSLP participation:

- MSLP participation by bank size [▶ MSLP by bank size](#)
- Determinants of MSLP participation in Dealscan, Call Report samples [▶ MSLP Dealscan, Call Report](#)

Robustness and falsification tests:

- Placebo tests [▶ Placebo](#)
- Control for PPP participation [▶ PPP loan balances](#), security holdings [▶ Security holdings](#), credit line drawdowns and bank cyclically [▶ CLDDs, Bank Cyclicity](#)
- Extensive margin results at the loan level [▶ Extensive margin @ loan-level](#)
- Alternative MSLP status definitions [▶ MSLP status alternative definitions](#)
- CAMELS individual components [▶ CAMELS components](#)

Additional results:

- Why was MSLP takeup so low? [▶ MSLP low takeup](#) Who were the MSLP borrowers? [▶ MSLP borrowers](#)

Conclusions

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

- Were more likely to grant new loans outside of the MSLP program, provided new loans at better terms.
 - Program participation generated positive lending spillovers outside of the program, both by easing balance sheet constraints and changing risk perceptions.
 - Effects persisted but declined after the program ended.
 - The program's presence or possible reinstatement encouraged banks to lend, knowing that if macro conditions or asset quality deteriorated further, they could keep lending via MSLP.
- Despite low overall takeup, the MSLP increased banks' willingness to take risk and use capacity to extend loans to businesses, supporting the provision of credit during an extreme uncertainty shock and consistent with the goals of the policy as a backstop.

Additional Slides

MSLP Participation by Bank Size

This table shows Main Street Lending Program participation statistics for commercial banks in the Call Report. Size groups are based on total assets at end-2020:Q2. [▶ Back](#)

	(1) All banks	(2) < \$1 bn	(3) > \$1 bn	(4) \$1-10 bn	(5) \$10-50 bn	(6) > \$50 bn
Total no. of banks	5242	4191	893	748	98	47
Registered	614	274	336	251	55	30
Lender as of Nov 18 2020 (baseline)	181	77	101	63	22	16
Lender before program expiration	304	128	174	119	34	21
Not registered	4628	3917	557	497	43	17
% Registered	11.7%	6.5%	37.6%	33.6%	56.1%	63.8%
% Lender as of Nov 18 2020 (baseline)	29.5%	28.1%	30.1%	25.1%	40.0%	53.3%
% Lender before program expiration	49.5%	46.7%	51.8%	47.4%	61.8%	70.0%
% Not registered	88.3%	93.5%	62.4%	66.4%	43.9%	36.2%

Determinants of MSLP Participation—Dealscan, Call Report [▶ Back](#)

Dependent variable:	1: MSLP bank					
	A. Selection by bank characteristics					
Size (log-assets)	0.0387** (0.019)					0.0448** (0.022)
Loans/Assets		0.0205 (0.236)				0.2012 (0.279)
C&I Loans/Loans			0.8732*** (0.320)			0.7871** (0.320)
CET1 ratio				-2.7801** (1.164)		-1.7181 (1.311)
Core Deposits/Liabilities					-0.4300 (0.367)	-0.4214 (0.367)
Observations	152	152	152	152	152	152
R^2	0.027	0.000	0.046	0.018	0.008	0.092
	B. Selection by local conditions					
COVID cases (Mar 1-Dec 15) [1]	0.0023 (0.026)					0.0418 (0.047)
COVID cases (Mar 1-Dec 15) [2]		-0.0020 (0.003)				-0.0014 (0.005)
Change in unemployment rate			0.0153 (0.027)			-0.0242 (0.038)
% Small firms unmet demand through PPP				0.0431*** (0.015)		0.0702*** (0.020)
% Small firms experienced revenue drop					0.0072 (0.012)	-0.0135 (0.020)
Observations	152	152	152	152	152	152
R^2	0.093	0.096	0.094	0.136	0.095	0.159
Bank controls	Y	Y	Y	Y	Y	Y

Placebo Tests

Placebo test that centers the analysis on 2018 and 2019 shows no evidence that bank unobservables are driving the association between MSLP participation status and lending outcomes. [▶ Back](#)

Dependent variable:	(1) New loan share	(2) New loan share volume-weighted	(3) New loan share	(4) New loan share volume-weighted
	A. Placebo test for 2019		B. Placebo test for 2018	
MSLP bank \times Post	0.0007 (0.004)	-0.0003 (0.004)	0.0046 (0.005)	0.0039 (0.006)
No. of observations	76,781	75,939	75,055	74,279
R^2	0.754	0.764	0.752	0.765
Bank controls	Y	Y	Y	Y
Bank controls \times Post	Y	Y	Y	Y
Borrower \times quarter FE	Y	Y	Y	Y
Bank FE	Y	Y	Y	Y
Bank \times borrower FE	Y	Y	Y	Y

This table reports OLS estimates of placebo tests for the spillover effects of MSLP participation on the extensive margin of C&I lending. The dependent variables are the share of new loans out of outstanding loans, unweighted (columns 1–2) and loan volume-weighted (columns 3–4). Specifications in columns 1–2 refer to 2019 outcomes (sample period 2019:Q1–2019:Q3, variable Post takes value one in 2019:Q3) and those in columns 3–4 refer to 2018 outcomes (sample period 2018:Q1–2018:Q3, variable Post takes value one in 2018:Q3). Standard errors are clustered at the bank-firm level. Significance: *** 1%, **5%, *10%.

Control for PPP Loan Balances

Controlling for the intensity of PPP participation in 2020:Q2 or Q3 leaves results unchanged. [▶ Back](#)

Dependent variable:	(1)	(2)	(3)	(4)
	New loan share		New loan share volume-weighted	
A. Control for PPP balances end-2020Q2				
MSLP bank \times Post	0.0329*** (0.010)	0.0200** (0.009)	0.0363*** (0.010)	0.0247*** (0.009)
PPP balances/Assets \times Post	0.0189*** (0.003)	0.0154*** (0.003)	0.0199*** (0.003)	0.0164*** (0.003)
No. of observations	78,107	75,836	78,101	75,832
F-stat	3479	3299	3478	3298
B. Control for PPP balances end-2020Q3				
MSLP bank \times Post	0.0339*** (0.010)	0.0208** (0.009)	0.0374*** (0.010)	0.0256*** (0.009)
PPP balances/Assets \times Post	0.0195*** (0.003)	0.0159*** (0.003)	0.0207*** (0.003)	0.0170*** (0.003)
No. of observations	78,107	75,836	78,101	75,832
F-stat	3474	3292	3473	3291
Bank controls	Y	Y	Y	Y
Bank controls \times Post	Y	Y	Y	Y
Borrower \times quarter FE	Y	Y	Y	Y
Bank \times borrower FE		Y		Y

TBD.

Control for bank-level securities holdings

Results are robust to controlling for security holdings, which capture valuation effects from other Federal Reserve secondary market interventions, including quantitative easing. [▶ Back](#)

Dependent variable:	(1) New loan share	(2) New loan share	(3) New loan share	(4) New loan share volume-weighted
A. Control for securities/assets, 2019:Q4				
MSLP bank × Post	0.0429*** (0.009)	0.0323*** (0.009)	0.0462*** (0.009)	0.0366*** (0.009)
Securities/Assets × Post	0.2096*** (0.046)	0.2337*** (0.046)	0.2091*** (0.046)	0.2299*** (0.046)
No. of observations	78,107	75,836	78,101	75,832
F-stat	2893	2757	2892	2757
B. Control for securities/assets, 2020:Q2				
MSLP bank × Post	0.0408*** (0.009)	0.0290*** (0.009)	0.0439*** (0.009)	0.0332*** (0.009)
Securities/Assets × Post	0.1658*** (0.038)	0.1723*** (0.037)	0.1616*** (0.037)	0.1658*** (0.037)
No. of observations	78,107	75,836	78,101	75,832
F-stat	2959	2824	2958	2823
Bank controls, controls × Post	Y	Y	Y	Y
Borrower × quarter FE	Y	Y	Y	Y
Bank × borrower FE		Y		Y

Control for drawdowns and bank cyclicality

Results are robust to controlling for credit line drawdowns and bank lending cyclicality.

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Dependent variable:	(1)	(2)	(3)	(4)
	New loan share		New loan share volume-weighted	
A. Control for credit line drawdowns				
MSLP bank \times Post	0.0423*** (0.008)	0.0284*** (0.008)	0.0458*** (0.008)	0.0331*** (0.008)
Drawdowns	0.0076*** (0.001)	0.0072*** (0.001)	0.0077*** (0.001)	0.0073*** (0.001)
Drawdowns \times Post	-0.0313*** (0.005)	-0.0309*** (0.005)	-0.0319*** (0.005)	-0.0311*** (0.005)
No. of observations	78,107	75,836	78,101	75,832
F-stat	3577	3410	3576	3409
B. Control for bank cyclicality				
MSLP bank \times Post	0.0392*** (0.010)	0.0259*** (0.009)	0.0427*** (0.010)	0.0307*** (0.009)
Bank cyclicality \times Post	-0.0114*** (0.002)	-0.0132*** (0.002)	-0.0119*** (0.002)	-0.0136*** (0.002)
No. of observations	78,107	75,836	78,101	75,832
F-stat	3095	2946	3095	2945
Bank controls, controls \times Post	Y	Y	Y	Y
Borrower \times quarter FE	Y	Y	Y	Y
Bank \times borrower FE		Y		Y

Extensive margin results with loan-level data

The loan type fixed effects capture a loan's status as term loan vs. revolving credit; and also a loan's security status as asset-based, earnings-based, or unsecured. [▶ Back](#)

Dependent variable:	(1)	(2)	(3)	(4)
	1: New loan			
A. OLS estimates				
MSLP bank \times Post	0.0288*** (0.004)	0.0241*** (0.004)	0.0277*** (0.004)	0.0241*** (0.004)
No. of observations	228,701	226,947	213,521	211,954
R^2	0.613	0.673	0.634	0.689
B. 2SLS estimates				
MSLP bank \times Post	0.0375*** (0.010)	0.0262*** (0.010)	0.0291*** (0.011)	0.0229** (0.011)
No. of observations	228,701	226,947	213,521	211,954
F-stat first stage	2182	2083	1918	1832
Bank controls, controls \times Post	Y	Y	Y	Y
Borrower \times quarter FE	Y	Y	Y	Y
Bank FE	Y	Y	Y	Y
Bank \times borrower FE		Y	Y	Y
Loan type FE			Y	Y
Loan type \times quarter FE				Y

Robustness to alternative lender status definitions

In the baseline results, the MSLP lender status defined as of Nov 18, 2020 results in 11 MSLP banks and 21 non-MSLP banks in the Y-14Q sample. In robustness results, the breakdown of MSLP/mon-MSLP banks is 4/28 banks as of end-Sep; 6/26 banks as of end-Oct; and 12/20 banks as of end-Nov 2020. [▶ Back](#)

Definition of MSLP participation:	(1) Lender end-Sep	(2) Lender end-Oct	(3) Lender end-Nov
A. New loan share			
MSLP bank \times Post	0.0325*** (0.009)	0.0364*** (0.010)	0.0272*** (0.008)
No. of observations	75,836	75,836	75,836
First stage F-stat	3797	2230	3617
B. New loan share (volume-weighted)			
MSLP bank \times Post	0.0343*** (0.009)	0.0383*** (0.010)	0.0287*** (0.008)
No. of observations	75,832	75,832	75,832
First stage F-stat	3796	2230	3617
Bank controls, controls \times Post	Y	Y	Y
Borrower \times quarter FE	Y	Y	Y
Bank \times borrower FE	Y	Y	Y

Mechanisms: Bank b/s constraints, CAMELS components ▶ Back

	(1)	(2)	(3)	(4)	(5)
A. New loan share					
Camels component:	Capital	Asset quality	Management	Earnings	Liquidity
MSLP bank × Post × Poor Camels score (1)	0.0409*** (0.011)	0.0326*** (0.010)	0.0340*** (0.011)	0.0471*** (0.011)	0.0409*** (0.011)
MSLP bank × Post × Favorable Camels score (2)	0.0276*** (0.009)	0.0244*** (0.009)	0.0215** (0.009)	0.0254*** (0.008)	0.0276*** (0.009)
No. of observations	75,836	75,836	75,836	75,836	75,836
P-value test: coeff 1 > 2	0.022	0.106	0.029	0.001	0.022
F-stat first stage	3121	4022	3259	3377	3121
B. New loan share (volume-weighted)					
MSLP bank Post × Poor Camels score (1)	0.0397*** (0.011)	0.0320*** (0.010)	0.0327*** (0.011)	0.0468*** (0.011)	0.0397*** (0.011)
MSLP bank × Post × Favorable Camels score (2)	0.0305*** (0.009)	0.0275*** (0.009)	0.0243*** (0.009)	0.0296*** (0.008)	0.0305*** (0.009)
No. of observations	75,832	75,832	75,832	75,832	75,832
P-value test: coeff 1 > 2	0.081	0.248	0.102	0.006	0.081
F-stat first stage	3120	4020	3258	3376	3120
Bank controls, controls × Post	Y	Y	Y	Y	Y
Borrower × quarter FE	Y	Y	Y	Y	Y
Bank × borrower FE	Y	Y	Y	Y	Y

Why Was Program Takeup So Low?

Both lender terms and borrower terms in the MSLP design discouraged participation. [▶ Back](#)

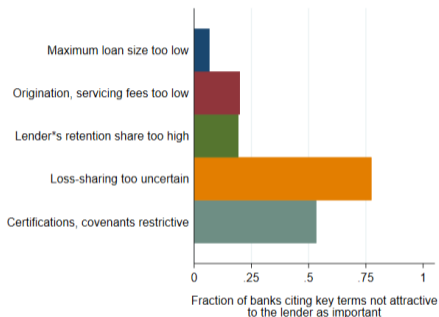


Figure: Banks' Reasons Not to Participate

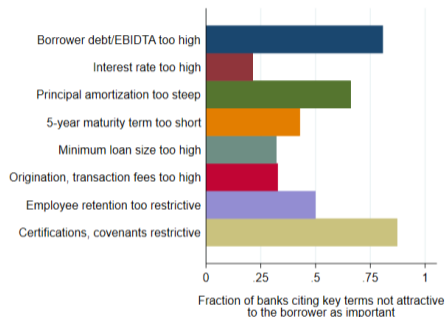


Figure: Firms' Reasons Not to Participate

This figure tabulates bank-level responses to survey questions asked in the September 2020 MSLP Senior Loan Officer Opinion Survey (SLOOS) that examined the determinants of banks' MSLP participation. The panels show the key lender and borrower terms cited by banks as reasons for not registering or lending (pooled across banks that did not register and banks that registered but did not lend as of survey close at end-August 2020). Source: Federal Reserve.

Borrower Analysis: Who Borrowed Under the Program?

MSLP borrowers are more levered, have lower cash buffers and lower current profitability, and are assessed as riskier by banks. But they also exhibit significantly higher growth opportunities compared to eligible non-MSLP borrowers. [▶ Back](#)

	(1)	(2)	(3)	(4)	(5)	(6)
	MSLP borrowers (N=159)		Eligible non-borrowers borrowers (N=26,729)		p-value t-tests	
	Means	Medians	Means	Medians	Means	Medians
Total assets (\$mn)	169.47	27.46	909.34	20.49	0.26	0.00
ICR (EBITDA/interest expense)	15.31	6.44	33.88	12.96	0.00	0.00
ROA (EBITDA/assets, %)	18.83	15.66	22.50	16.25	0.04	0.56
Debt-to-asset ratio (%)	40.69	38.00	27.86	22.89	0.00	0.00
Cash-to-asset ratio (%)	9.07	4.84	12.18	6.73	0.01	0.00
Sales growth (%)	24.10	10.26	12.65	7.54	0.00	0.02
Rating (1=AAA, 5=BB, 9=C)	5.40	5.00	4.63	5.00	0.00	0.00

This table reports means and medians for key borrower and loan characteristics for MSLP borrowers and eligible non-borrowers, with p-values for t-tests of equality of means and medians across the two groups using financials data for end-2019. Borrower MSLP eligibility is defined using the following criteria: (i) the firm had 2019 annual revenues of up to \$5 billion; (ii) total debt does not exceed 6x the 2019 EBITDA; (iii) internal risk rating equivalent to a “pass” in the FFIEC supervisory rating system (or not worse than BB on the S&P rating scale). We matched 159 MSLP borrowers from the MSLP loan data release of January 11 with the Y-14Q dataset as of 2019:Q4, using exact and scrubbed matching by borrower name and city-state location. Source: Federal Reserve Y-14Q H1.