Expanding the Reach of Corporate Bond Purchase Program: the Spillover Effect of SMCCF on Bank-dependent Firms

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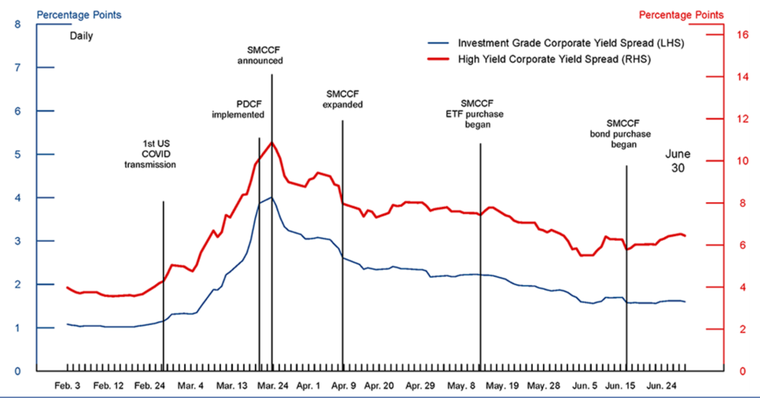
Motivation

- **Corporate bond purchases** have become a popular monetary policy tool
- Many research focus on how these programs affect corporate bond market
- But less is known about its effect on **bank loan market**, and the consequential effect on **bank-dependent firms**
- **This paper studies Fed's SMCCF and its spillover effect on the loan market**

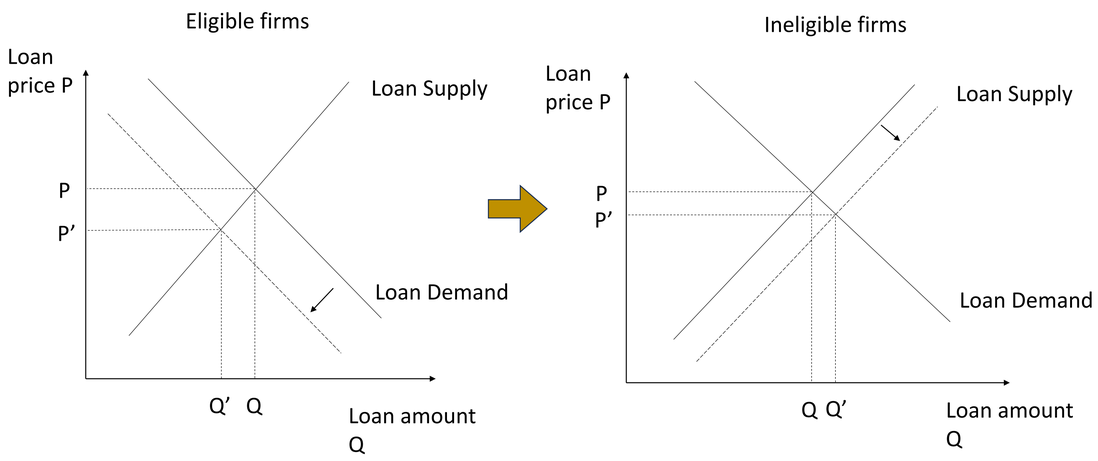
Secondary Market Corporate Credit Facility (SMCCF) Timeline

- Event Study before & after announcement date: March 23, 2020
- Bond eligibility: rating > BBB- rating & maturity < 5 years



Empirics

- Datasets: DealScan Syndicated Loan + TRACE Enhanced + Compustat/Capital IQ
- Time Period: 2018Q - 2022Q4
- Identification Assumption:
  1. No significant debt issuance diff. btw eligible and ineligible firms pre-SMCCF
  2. SMCCF does not affect banks differentially/directly



Result 1: Eligible firms **decrease loan demand**

$$Loan_{ijt} = a_{ij} + a_{jt} + \beta_1 * Eligible_i * Post_t + \theta' X_{it-1} + \epsilon_{ijt}$$

Result 2: Banks with higher exposure to eligible firms **does not change** loan supply

$$Loan_{ijt} = a_{ij} + a_{it} + \beta_2 * IGShr_j * Post_t + \theta' X_{jt-1} + \epsilon_{ijt}$$

where $IGShr_j = \frac{\sum term\ loans\ to\ all\ \boldsymbol{eligible}\ firms}{\sum term\ loans\ to\ all\ firms}$ for each bank j

Result 3: **Only Constrained** banks with higher exposure to eligible firms **increase loan supply** to in eligible firms

$$Loan_{ijt} = a_{ij} + a_{it} + \beta_2 * IGShr_j * Post_t + \delta BankCAR_j * Post_t$$
$$+\gamma IGShr_j * BankCAR_j * Post_t + \theta' X_{jt-1} + \epsilon_{ijt}$$

where $BankCAR_j$ is the Tier-1 Risk-Adj Capital Ratio for bank j

⇨ $\gamma < 0$: *Constrained banks with high IG share increase loan supply*

Model

- Private & Public Firms

Private firms borrow from banks, and buy capital to produce:

$$\max_{P^x_{t+1}, L^x_t} \quad P^x_{t+1} Y^x_{t+1} - R^x_{t+1} L^x_t + (1-\delta) K^x_{t+1}$$
subject to
$$Y^x_{t+1} = A^x_{t+1} K^x_{t+1}$$
$$K^x_{t+1} = L^x_t$$
$$Y^x_{t+1} = \left(\frac{P^x_{t+1}}{P_{t+1}}\right)^{-\zeta} Y_{t+1}$$

Optimal borrowing decision:

$$L^x_t = \left[\frac{(1-1/\zeta) M^{1/\zeta}_{t+1} \left(A^x_{t+1}\right)^{1-1/\zeta}}{R^x_{t+1} - (1-\delta)}\right]^{\zeta}$$

where $M_{t+1} = P^{\zeta}_{t+1} Y_{t+1}$ is the downstream demand where firms take as given.

Public firms issue bonds and loans, buy capital to produce:

$$\max_{P^y_{t+1}, L^y_t, B_t} \quad P^y_{t+1} Y^y_{t+1} - R^y_{t+1} L^y_t - R^B_{t+1} B_t + (1-\delta) K^y_{t+1} - \frac{1}{2}\kappa \left(B_t - \bar{B}_t\right)^2$$
subject to
$$K^y_{t+1} = (L^y_t + B_t)$$

Equilibrium bond issuing decision

$$B_t = \bar{B}_t + \frac{R^y_{t+1} - R^B_{t+1}}{\kappa}$$

Public firm loan demand curve: **flatter** than private firms

$$L^y_t = \left[\frac{(1-1/\zeta) M^{1/\zeta}_{t+1} \left(A^y_{t+1}\right)^{1-1/\zeta}}{R^y_{t+1} - (1-\delta)}\right]^{\zeta} - \bar{B}_t - \frac{R^y_{t+1} - R^B_{t+1}}{\kappa}$$

- Banks

Representative bankers with capital (net worth) N_t:

$$V(N_t) = \max_{R^y_{t+1}, R^x_{t+1}, L^y_t, L^x_t, D_t} E_t \Lambda_{t,t+1} \left(\Pi^{bank}_{t+1} + V_{t+1}(N_{t+1})\right)$$
subject to
$$L^x_t + L^y_t = D_t + N_t \quad \text{(balance sheet constraint)}$$
$$L^x_t + L^y_t \le \phi N_t \quad \text{(capital constraint)}$$
$$N_{t+1} = (1-\sigma)\left[R^y_{t+1} L^y_t + R^x_{t+1} L^x_t - R^f_{t+1} D_t\right]$$
$$\Pi^{bank}_{t+1} = \frac{\sigma}{1-\sigma} N_{t+1}$$

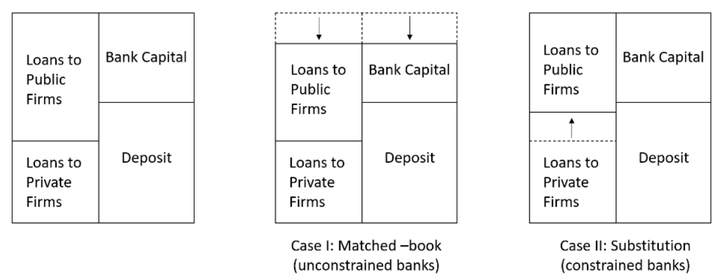
where Π^{bank}_{t+1} is the profit rebates to household in period $t+1$.

When bankers are **unconstrained** ($\lambda_t = 0$):

$$L^i_t + \left(R^i_{t+1} - R^f_{t+1}\right) \frac{\partial L^i_t}{\partial R^i_{t+1}} = 0$$

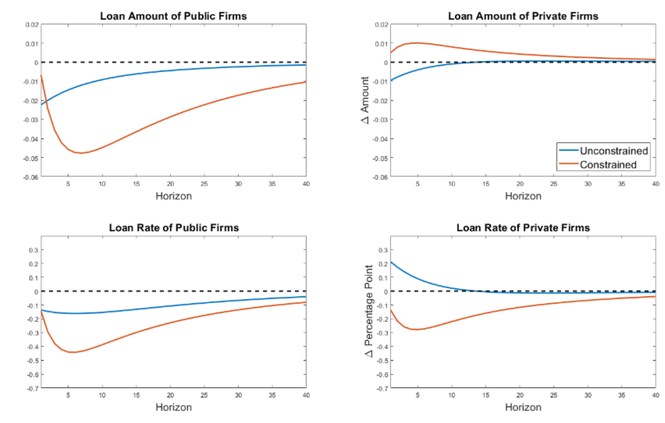
When bankers are **constrained** ($\lambda_t > 0$), we have

$$L^i_t + \left(R^i_{t+1} - R^f_{t+1}\right) \frac{\partial L^i_t}{\partial R^i_{t+1}} < 0$$
$$L^x_t + L^y_t = \phi N_t$$



- Summary

1. For public firms, loan amount ⬇ loan spread ⬇
2. For private firms, when banks are unconstrained, limited spillover effect
3. When banks are constrained, private firms' loan amount ⬆ loan spread ⬇



Empirical Results

	(1) Pr(Loan)	(2) Pr(Loan)	(3) Pr(Loan)	(4) Loan Spread	(5) Loan Spread	(6) Loan Spread
$\beta 1$: Post × Eligible	-1.891***			-30.70*		
	(0.390)			(17.51)		
$\beta 2$: Post × IG Shr		-0.328	4.348***		0.0611	-13.94
		(0.623)	(1.645)		(4.822)	(20.17)
δ: Post × BankCAR			5.636***			-18.19
			(1.590)			(19.84)
γ: Post × IG Shr × BankCAR			-5.266***			13.76
			(1.739)			(20.42)
Pair FE	Yes	Yes	Yes	Yes	Yes	Yes
Borrower × Time FE	No	Yes	Yes	No	Yes	Yes
Lender × Time FE	Yes	No	No	Yes	No	No
Observations	67651	22030	22027	808	1215	1215

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Policy Implications

- Corporate bond purchases have boarder effects beyond the targeted markets.
- It affects bank-dependent firms by decreasing targeted firms' loan demand and then increasing loan supply of related banks to untargeted firms.
- This channel only operates through constrained banks.

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Selected References

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