FEDERAL RESERVE BANK *of* NEW YORK

Monetary Policy and the Run Risk of Loan Funds

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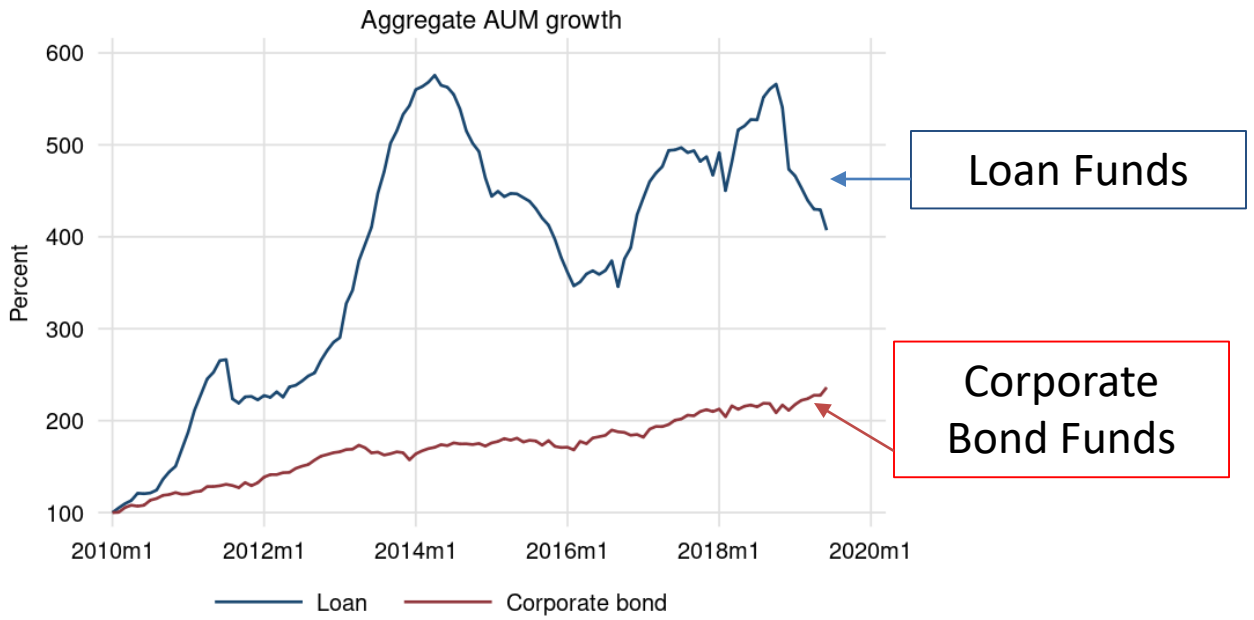
- **Non-Bank Financial Institutions** have grown steadily as providers of financial intermediation services

- **Open-End Bond Funds** highest accrued visibility among NBFIs over last two decades

- **Bank loan funds** – Newer category of open-end bond funds, holding mainly leveraged loans

Loan Fund Growth. Comparison with corporate bond funds



AUM normalized to 100 at 2010m1

Why do we care?

1. Importance for leveraged lending
   - Loan funds among the largest participants in leveraged lending structures
   - Leveraged lending sizable share of total lending to non-financial corps [$1.13T out of $2.7T at 2020q2]
   - Key segment for capital accumulation and economic growth (financing merger and acquisitions, LBOs, business recapitalizations, and business expansions)

Why do we care?

2. Runnability
   - At-will redemption optionality (open end clause). Redemptions on demand and illiquid asset holdings = liquidity transformation = Run risk
   - Run risk well understood and studied in the broader open-end bond fund industry (e.g. Chen, Goldstein and Jiang, 2010; Goldstein, Jiang and Ng, 2017)
   - Because of the different nature of their holdings, loans vs bonds, run risk in loan funds might be especially relevant

Why do we care?

3. Relation with monetary policy

   - Loans are floating coupon contracts, tied to behavior of reference rates
   - Changes in interest rates likely to represent a *common factor* loan fund investors sensitive to
   - Challenges to monetary policy implementation/financial stability when intermediation also provided by nonbanks (Stein, 2012; Feroli, Kashyap, Schoenholtz and Shin, 2014)

Institutional details. Runnability

- Leveraged loans. Highly bespoke contracts.
  - Hard to monitor
  - Contractual complexity
  - More illiquid *and* opaque assets than bonds

- **Hypothesis 1**. Loan funds are more exposed to run risk thank bond funds

Institutional details. Link to monetary policy

- Leveraged loans pay a floating coupon, typically tied to LIBOR
- Loan rates reset on a recurrent basis, btw 30 and 90 days.
- Loan funds income stream improves when LIBOR moves up, it deteriorates when LIBOR goes down

- **Hypothesis 2**. Interest rate channel
  - Monetary policy shocks have a positive effect on loan-fund flows through an interest-rate channel linked to the rate-reset feature of leveraged loans

More institutional details. Loan renegotiation

- Changes in monetary policy rates reflect changes in underlying macroeconomics
    - Economic improvements associated with increases in rates and vice versa
- Leveraged loan borrowers may be in better position to renegotiate terms when macroeconomics conditions improve
- Renegotiation may lead to *deterioration* of loan fund income stream

Refinancing likelihood and monetary policy

- Evidence from loan level data supportive of renegotiation dynamics (Table 7 results)
  - Below grade loans more likely to be renegotiated and refinanced after positive monetary policy surprises

- **Hypothesis 3**. Asymmetric effect of monetary policy.
  - The effect of monetary policy is stronger for negative monetary policy surprises than for positive ones

And still more institutional details. Rate floors

- Rate floors common feature in leveraged loan contracts
- Protection of loan income stream in periods of low interest rates

- **Hypothesis 4**. The *level* of the interest rates matters. Monetary policy effects are stronger at higher levels of the short-term rates

Identification challenges

- Controlling for overall effect of MP on debt markets and particularly on risky debt -> control group is HY or corporate bond funds

- Identifying MP surprises, especially relative to short-term rates -> Swanson's (JME 2021) FG factor

Summary of results

- Loan funds indeed exposed to higher run risk than bond funds
- Monetary policy is a key factor driving loan funds' flows
  - Loan fund investors respond positively to monetary policy shocks
  - Relationship is asymmetric (stronger for negative shocks)
  - And relationship non-linear in the level of the interest rate
- Identification of a novel channel of monetary policy transmission, through operations in leveraged lending

Results

Flow-Performance relationship and concavity

$$\begin{aligned}\text{Flow}_{it} = {} & \beta_0 \,\text{Return}_{it-1} + \gamma_0 \,\mathbf{1}\,(\text{Return}_{it-1} < 0) + \delta_0 \,\mathbf{1}\,(\text{Return}_{it-1} < 0) \times \text{Return}_{it-1} + \\ & + \beta_1 \,\text{Loan}_{it-1} \times \text{Return}_{it-1} + \gamma_1 \,\text{Loan}_{it-1} \times \mathbf{1}\,(\text{Return}_{it-1} < 0) + \\ & + \delta_1 \,\text{Loan}_{it-1} \times \mathbf{1}\,(\text{Return}_{it-1} < 0) \times \text{Return}_{it-1} + \\ & + \theta \,\text{Flow}_{it-1} + \phi \,\text{Controls}_{it-1} + \alpha_i + \mu_t + \varepsilon_{it}, \qquad (1)\end{aligned}$$

Hp 1: Enhanced concavity for loan funds (more run risk)

	Flow_{it}			
	(1)	(2)	(3)	(4)
Return_{it-1}	0.024**	0.024***	0.019***	0.011***
	(0.012)	(0.003)	(0.007)	(0.004)
$\text{Loan}_{it-1} \times \text{Return}_{it-1}$	0.092***	0.070***	0.010	-0.010
	(0.010)	(0.011)	(0.027)	(0.029)
$\text{I(Return} < 0)_{it-1}$			-0.332	-0.076
			(0.319)	(0.093)
$\text{Loan}_{it-1} \times \text{I(Return} < 0)_{it-1}$			-1.830***	-1.924***
			(0.481)	(0.517)
$\text{I(Return} < 0)_{it-1} \times \text{Return}_{it-1}$			0.002	0.036***
			(0.022)	(0.009)
$\text{Loan}_{it-1} \times \text{I(Return} < 0)_{it-1} \times \text{Return}_{it-1}$			0.099***	0.087**
			(0.038)	(0.036)
Flow_{it-1}	0.041*	0.066***	0.041*	0.065***
	(0.024)	(0.019)	(0.023)	(0.019)

Monetary policy and loan fund flows

Hp 2: Positive relationship between FG surprises and flows

$$\text{Flow}_{it} = \beta\, \text{Loan}_{it-1} \times \text{FG Surprise}_t + \theta\, \text{Flow}_{it-1} + \phi\, \text{Controls}_{it-1} + \alpha_i + \mu_t + \varepsilon_{it}\,, \tag{2}$$

	Flow_{it}			
	(1)	(2)	(3)	(4)
$\text{Loan}_{it-1} \times \text{FG Factor}_t$	0.996***	0.914***	0.910***	0.865***
	(0.136)	(0.132)	(0.138)	(0.134)
$\text{Loan}_{it-1} \times \text{VIX}_t$			-0.109***	-0.066*
			(0.028)	(0.034)
Flow_{it-1}	0.041*	0.041*	0.041*	0.041*
	(0.023)	(0.023)	(0.023)	(0.023)

- Relationship robust to:
  - Differences in investors' risk aversion (VIX*Loan control);
  - Inclusion of other two surprise factors;
  - Using only high-yield or all corporate bond funds as "control" group

Monetary policy and loan fund flows

Hp 3: Asymmetric relationship. Interest rate channel dampened by renegotiation channel for positive MP surprises

	Flow_{it}			
	(1)	(2)	(3)	(4)
$\text{Loan}_{it-1} \times \text{FG Factor}_{\ t} > 0$	-0.453	-0.332	-0.548	-0.426
	(0.543)	(0.565)	(0.543)	(0.549)
$\text{Loan}_{it-1} \times \text{FG Factor}_{\ t} < 0$	1.796***	1.603***	1.713***	1.572***
	(0.358)	(0.315)	(0.359)	(0.320)
$\text{Loan}_{it-1} \times \text{VIX}_t$			-0.110***	-0.072**
			(0.028)	(0.033)
Flow_{it-1}	0.041*	0.041*	0.041*	0.041*
	(0.023)	(0.023)	(0.023)	(0.023)

Monetary policy and loan fund flows

Hp 4: Non-linear relationship in *level* of interest rates.

	Flow_{it}							
	(1) LIBOR $< 1.5\%$	(2) LIBOR $> 1.5\%$	(3) LIBOR $< 1.5\%$	(4) LIBOR $> 1.5\%$	(5) LIBOR $< 1.5\%$	(6) LIBOR $> 1.5\%$	(7) LIBOR $< 1.5\%$	(8) LIBOR $> 1.5\%$
$\text{Loan}_{it-1} \times \text{FG Factor}_t$	0.730***	2.064***	0.730***	1.227***	0.627***	2.061***	0.615***	1.155***
	(0.145)	(0.202)	(0.146)	(0.201)	(0.150)	(0.202)	(0.155)	(0.201)
$\text{Loan}_{it-1} \times \text{VIX}_t$					-0.115***	-0.057	-0.100**	0.085**
					(0.033)	(0.041)	(0.041)	(0.043)
Flow_{it-1}	0.033	0.005	0.033	-0.001	0.033	0.005	0.033	-0.001
	(0.022)	(0.020)	(0.022)	(0.020)	(0.022)	(0.020)	(0.022)	(0.020)

	Flow_{it}							
	(1) ZLB	(2) post-ZLB	(3) ZLB	(4) post-ZLB	(5) ZLB	(6) post-ZLB	(7) ZLB	(8) post-ZLB
$\text{Loan}_{it-1} \times \text{FG Factor}_t$	0.704***	1.319***	0.753***	0.907***	0.495***	1.218***	0.449**	0.917***
	(0.161)	(0.230)	(0.164)	(0.217)	(0.168)	(0.217)	(0.177)	(0.212)
$\text{Loan}_{it-1} \times \text{VIX}_t$					-0.226***	-0.105***	-0.261***	0.022
					(0.045)	(0.038)	(0.046)	(0.041)
Flow_{it-1}	0.026	0.051**	0.026	0.049**	0.026	0.051**	0.026	0.049**
	(0.023)	(0.024)	(0.023)	(0.024)	(0.023)	(0.024)	(0.023)	(0.024)

Conclusions

- Significant growth of NBFIs as financial intermediaries
- Dominant role by OEFs
- Among OEFs, Bank Loan Funds
  - Fastest growth in recent years
  - Closest proxy to “textbook banks” (but no backstops)
  - Key suppliers in leveraged lending

Conclusions

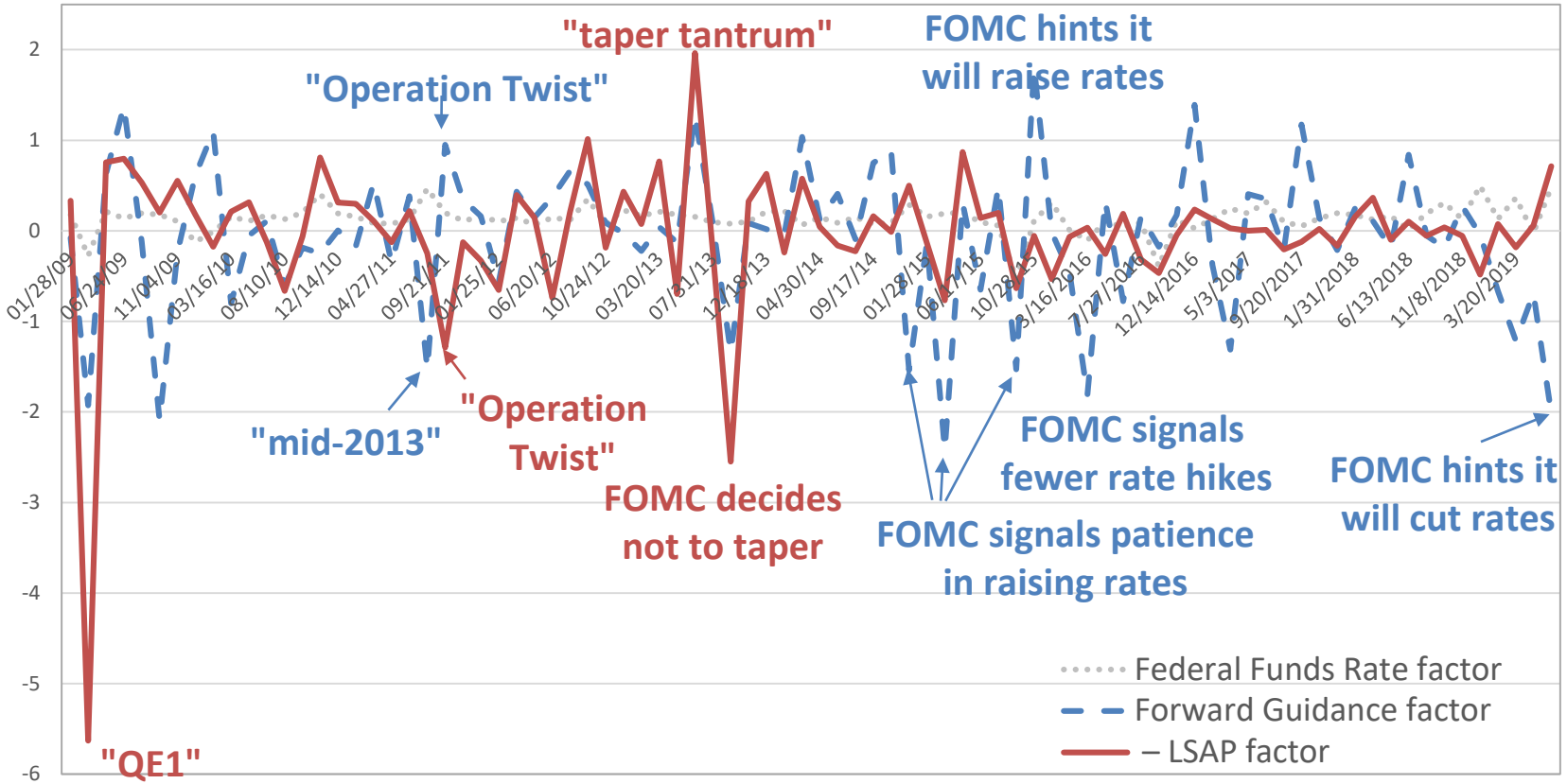
- Loan funds exposed to enhanced run risk
- Monetary policy key factor driving loan funds' flows
  - Positive response to monetary policy shocks
  - Relationship is asymmetric (stronger for negative shocks)
  - And relationship non-linear in the level of the interest rate

Conclusions

- Institutional details matters as financial intermediation system grows in complexity
- New channel of transmission of monetary policy. Procyclical impact through leveraged lending segment
- Potential implications for financial stability
  - Signaling effect to broader corporate borrowing sector
  - Fire sale dynamics

Monetary policy and loan funds

Use Swanson (JME 2021) 3-factor surprises. Focus on 2010-2019



FG factor our main indicator – directly capturing surprises about path of reference rates

FF factor very small (actual FF changes very predictably over sample period)

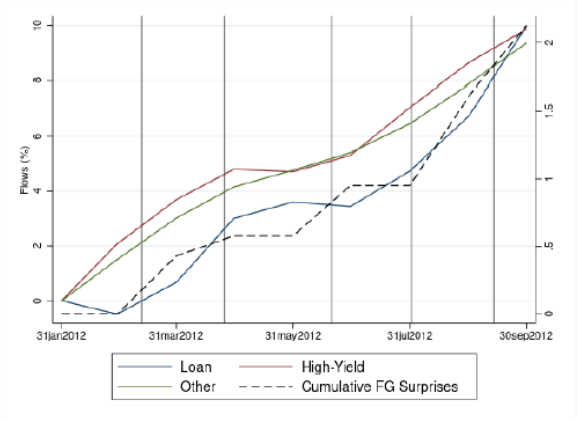
LSAP factor not meant to capture changes in reference rates

Monetary policy and loan fund flows

Hp 3. Asymmetric relationship.

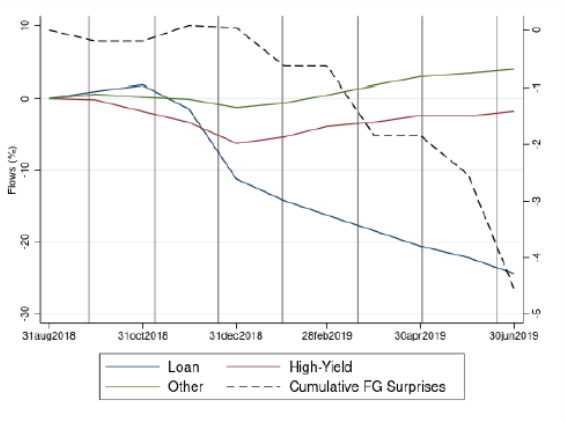
Interest rate channel dampened by renegotiation channel for positive MP surprises

Positive surprises



(a) February-September 2012

Negative surprises



(b) September 2018-June 2019