MONETARY POLICY AND CORPORATE BOND MUTUAL FUND FRAGILITY

JINYUAN ZHANG
INSEAD

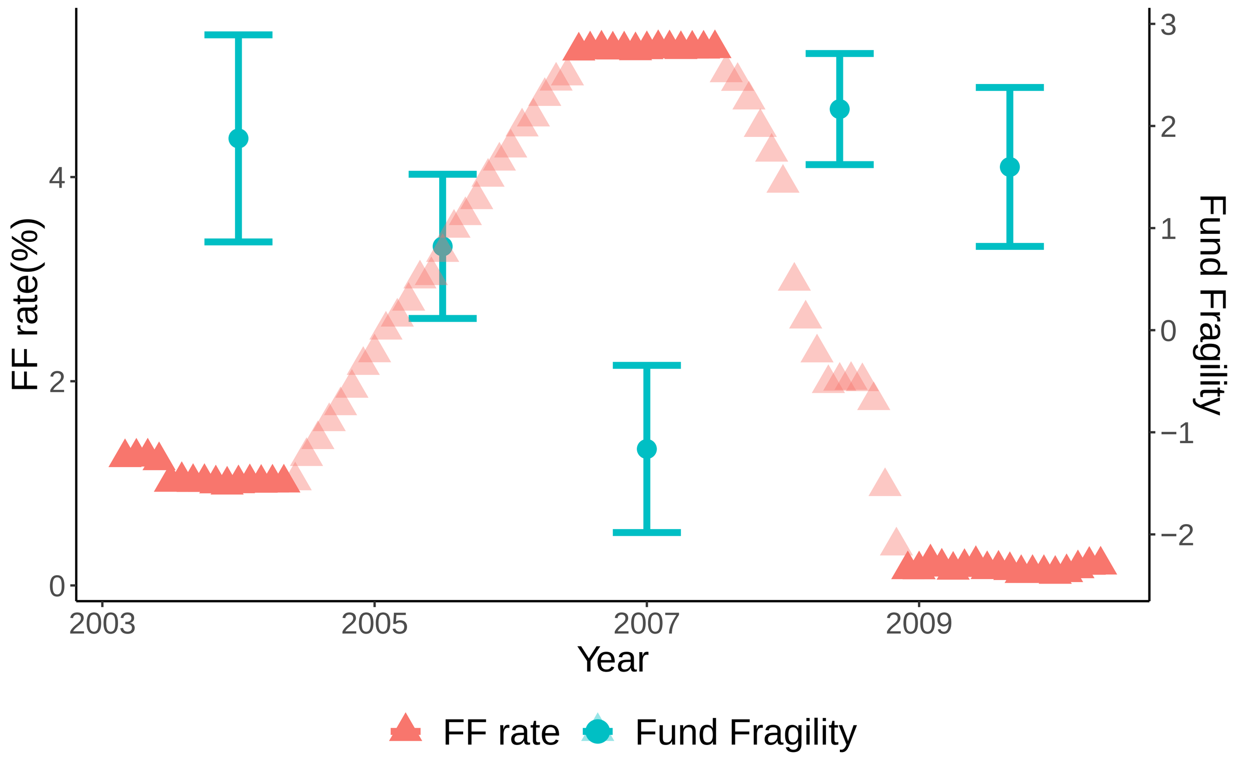
QUESTION

How does monetary policy (level and uncertainty) affect corporate bond mutual fund fragility?

- In a **liquid** market, loose monetary policy or high monetary policy uncertainty exacerbates the fragility of corporate bond mutual funds

MOTIVATING EVIDENCE

Federal Fund Rate and Corporate Bond Mutual Fund Fragility



- Fund fragility is approximated by fund flow-to-past-performance sensitivity

KEY INTUITION

- Fund fragility arises from **first-mover-advantage** of early-withdrawal investors
- Fund investors tradeoff 1) complementarity discounted fund return for 2) bank return
- When market is liquid, complementarity discount is weak $\Longrightarrow$ (1) > (2)
- Loose monetary policy reduces positive gap between (1) and (2), incentivising investors' withdrawal (high fund fragility)
- High monetary policy uncertainty raises the likelihood that (2) bypasses (1), incentivising investors' withdrawal (high fund fragility)

CONTRIBUTIONS

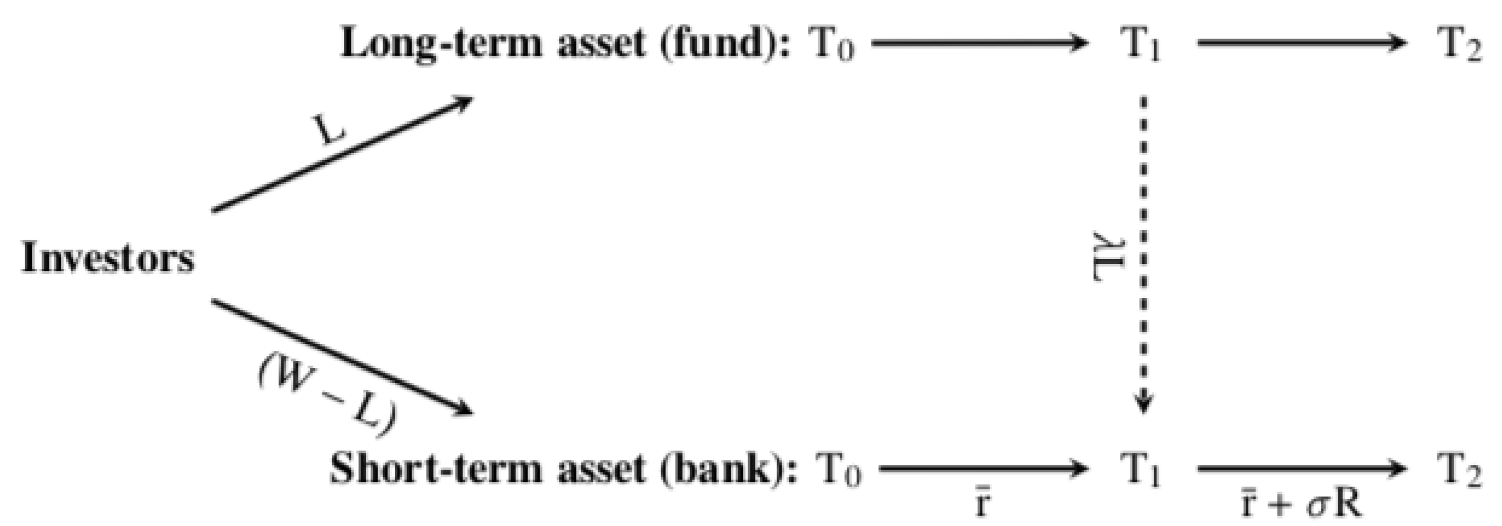
- New evidence on the impacts of monetary policies on non-banking financial intermediary's stability
- Highlight the interaction effects between monetary policy and market liquidity on the mutual fund industry through asset allocations

ALTERNATIVE EXPLANATION

- Because fund fundamental performance is worse under loose monetary policy such that flow-performance sensitivity is higher?
- NO! fund performances are better in the cases with higher fund fragility!

Condition	$Alpha_{i,t}$	t-stats	$Alpha_{i,t}$	t-stats
Low FF rate	-0.20%			
High FF rate	-0.46%			
Diff	0.26%	68.81***		
	High VIX		Low VIX	
Low MPU	-0.38%		-0.25%	
High MPU	-0.42%		-0.21%	
Diff	-0.04%	-13.42 ***	0.04%	37.94***

MODEL



- T_0: Atomic investors with measure W, each has 1 unit of capital to invest in fund or bank
  - ⋆ Fund manages **a long-term asset** with **expected yield $r_L(L)$ over T_0 to T_2**
  - ⋆ Bank offers **a short-term asset** with a **known return $\bar{r}$ over T_0 to T_1**, and an **uncertain return $\bar{r}+\sigma R$ over T_1 to T_2**, where $R \sim F(\cdot)$
- T_1: 1) Each investor receives a signal $s_i = R + \sigma_\varepsilon \varepsilon_i$ and decides to withdraw from the fund;
  2) Fund manager liquidates the long-term asset at **a discount price** α to repay withdrawal investors
- T_2: Payoffs are revealed

Payoff structure when λ proportion of investors withdrawing

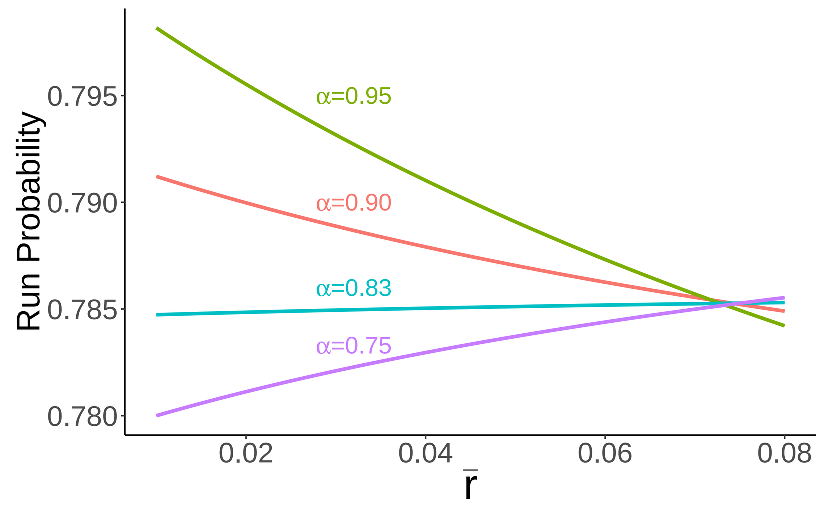
	$0 \le \lambda L \le \alpha L$ (liquid)	$\lambda L > \alpha L$(illiquid)
Withdraw (π^W)	$(1+\bar{r})(1+\bar{r}+\sigma R)$	$\frac{\alpha L(1+\bar{r})}{\lambda L}(1+\bar{r}+\sigma R)$
Stay (π^S)	$\frac{L-\frac{\lambda L(1+\bar{r})}{\alpha(1+\bar{r})}}{(1-\lambda)L}(1+r_L(L))$	0

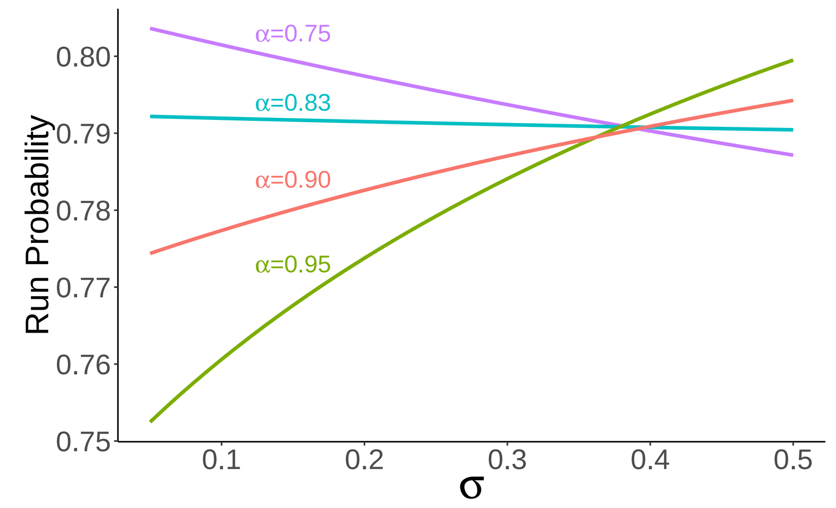
- Investors adopt the same threshold-strategy: $\begin{cases} \text{Withdraw} & s_i > R^* \\ \text{Stay} & s_i \le R^* \end{cases}$
- Fund fragility is the likelihood of fund runs: $Pr(R > R^*) = 1 - F(R^*)$

$$R^* = \frac{1}{\sigma}\Big(\underbrace{\frac{1+r_L(L)}{g(\alpha)(1+\bar{r})}}_{\text{discounted fund return}} - \underbrace{(1+\bar{r})}_{\text{bank return}}\Big) \qquad g(\alpha)\text{: complementarity discount}$$

$$\underbrace{1+r_L(L)-(1+\bar{r})^2}_{\text{Excess return of the fund}} = \underbrace{\Big((1+\bar{r})^2 - \alpha(1+\bar{r})^2\Big)}_{\text{Liquidity cost}} \times \underbrace{\frac{1-F(R^*)}{F(R^*)}}_{\text{Illiquid risk}} - \underbrace{\alpha(1+\bar{r})\sigma\frac{\int_{R^*}^{\infty} RdF(R)}{F(R^*)}}_{\text{option value of running}}$$

PREDICTIONS





- H1: The more **liquid** the market is, the looser monetary policy exacerbates the fund fragility
- H2: The more **liquid** the market is, the higher monetary uncertainty exacerbates the fund fragility

DATA

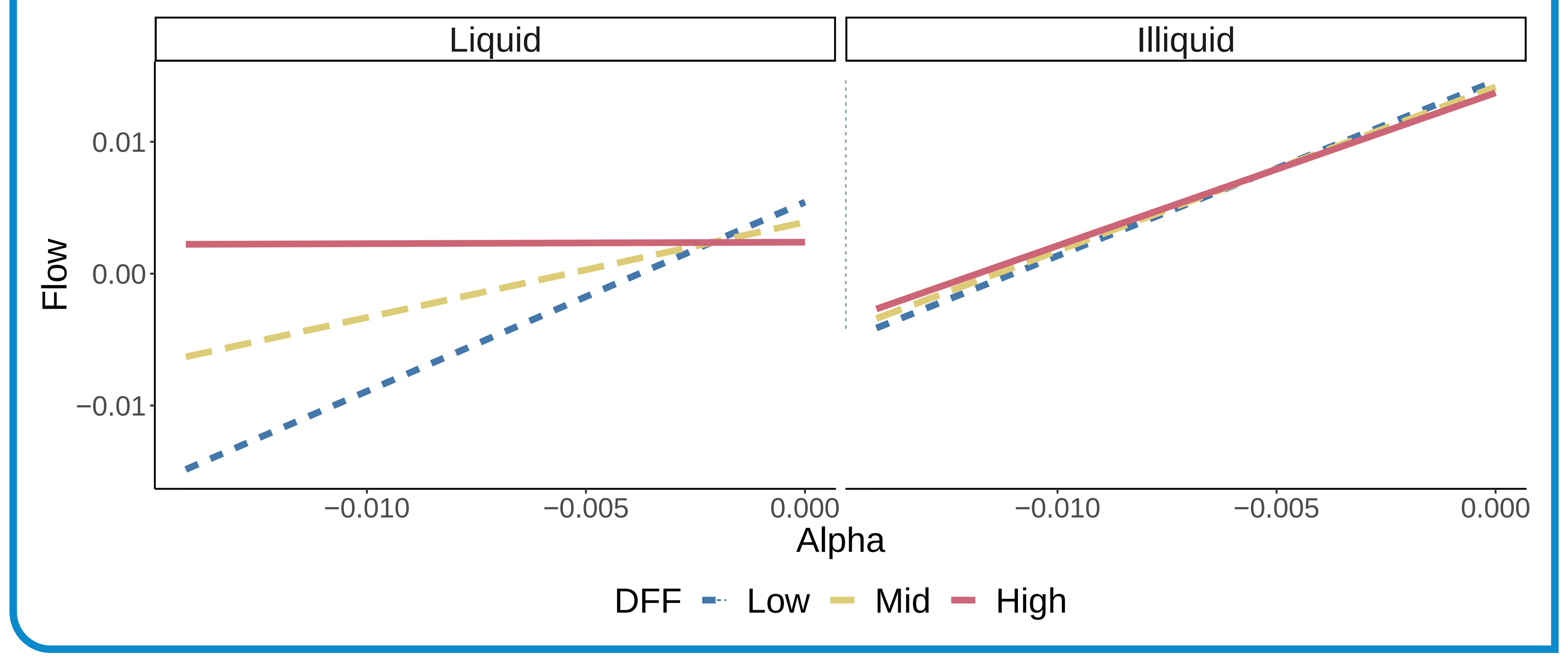
- Corporate bond mutual funds in CRSP survivor-bias-free US mutual fund Database
- Bond market illiquidity: VIX, TED spread, DFL bond illiquidity index (Dick-Nielsen, Feldhutter, and Lando 2012)
- Monetary policy uncertainty: MPU (Husted, Rogers, and Sun 2017)
- Fund performance: $Alpha_{i,t-1}$ (Chen, Goldstein, and Jiang 2010)

$$R^e_{i,\tau} = Alpha_{i,t-1} + \beta_1 R^e_{B,\tau} + \beta_2 R^e_{M,\tau} + \varepsilon_{i,\tau}, \quad \tau \in (t-12, t-1)$$

RESULT – H1

$$Flow_{i,t} \sim Alpha_{i,t-1} * \mathbb{1}(\text{High FF}) + Controls$$
$$Flow_{i,t} \sim Alpha_{i,t-1} * FF_t * \mathbb{1}(\text{High Illiquidity}) + Controls$$

Illiquidity	VIX	TED	DFL
$Alpha_{i,t-1} * \mathbb{1}(\text{High FF})$	-0.996		
	-5.395***		
$Alpha_{i,t-1} * FF_t * \mathbb{1}(\text{High illiquidity})$	0.281	0.031	0.392
	2.994***	0.265	2.930***



RESULT – H2

$$Flow_{i,t} \sim Alpha_{i,t-1} * \mathbb{1}(\text{High MPU}) + Controls$$
$$Flow_{i,t} \sim Alpha_{i,t-1} * MPU_t * \mathbb{1}(\text{High Illiquidity}) + Controls$$

Illiquidity	VIX	TED	DFL
$Alpha_{i,t-1} * \mathbb{1}(\text{High MPU})$	-0.978		
	-7.044***		
$Alpha_{i,t-1} * MPU_t * \mathbb{1}(\text{High illiquidity})$	−1.473	−1.082	−0.766
	−4.728***	−3.840***	−1.770*