Asset Managers and Financial Fragility

Conference on Non-bank Financial Institutions and Financial Stability

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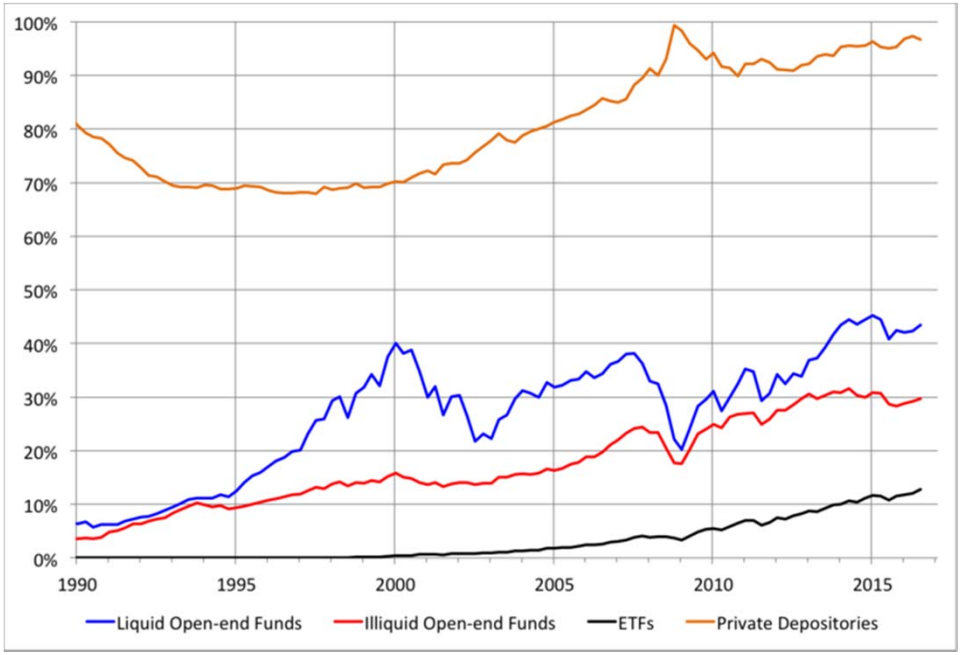
Domestic Financial Intermediation by Type of Intermediary (Cecchetti and Schoenholtz, 2017)



Outline

- Fragility in illiquid open-end mutual funds
  - Mechanism and evidence, based on my own past work
- Recent follow-ups
  - Cash and liquidity management
  - Market interactions
  - Broad implications for asset prices and real effects
  - Open-end mutual funds vs. exchange traded funds (ETFs)
- Concluding remarks

FRAGILITY IN ILLIQUID OPEN-END MUTUAL FUNDS

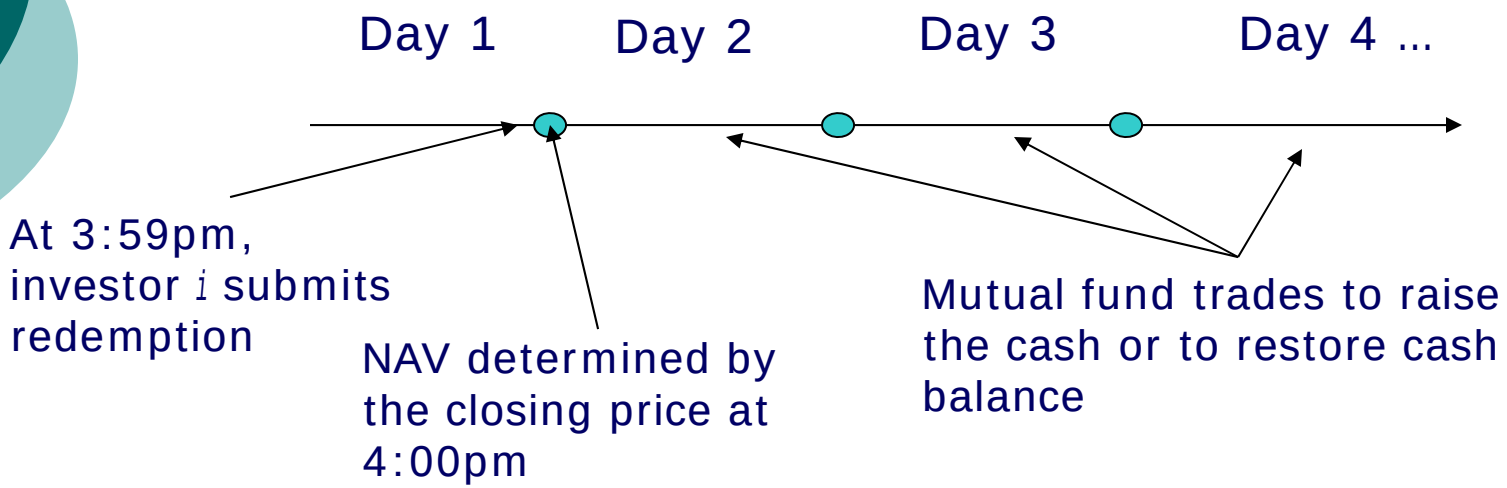
Fragility and Runs

- Liquidity transformation creates strategic complementarities in withdrawals, leading to potential runs
- Problem is well known in the context of banks
  - Banks finance illiquid assets with liquid liabilities (deposits)
  - If many depositors withdraw, the bank will have to liquidate assets at a loss, hurting those who stay
  - Run arises as a self-fulfilling belief: Depositors run because they think others will do so

How Does It Work in Mutual Funds?

- Open-end mutual funds are different from banks
  - They do not promise a fixed return, but rather pay according to a floating-NAV model
- Does this eliminate first-mover advantage and strategic complementarities?
- No!
  - In a floating-NAV environment, investors can redeem shares and get the NAV as of the day of redemption
  - But, their redemptions will affect fund trading going forward, hurting remaining investors in illiquid funds

Mutual Funds Redemptions

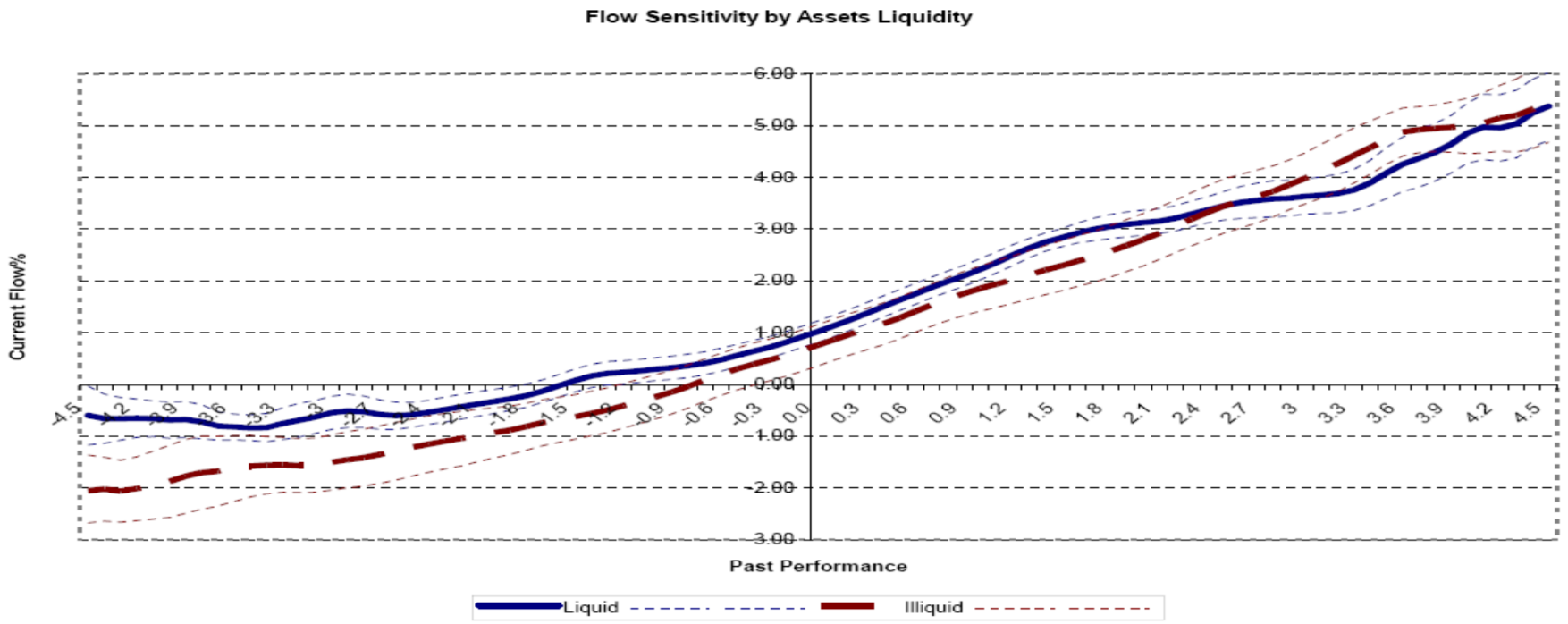


- Key point: redemptions impose costs – commissions, bid-ask spread, price impact, forced deviation from desired portfolio, liquidity-based trading – on remaining investors

Empirical Analysis of Flows in Equity Mutual Funds

- Chen, Goldstein and Jiang (2010)
  - Study flows in 4,393 actively-managed equity funds from 1995-2005
  - Find stronger sensitivity of outflows to negative performance in illiquid funds
    - These funds generate stronger complementarities
    - Illiquid funds are: small-cap & mid-cap equity funds (domestic or international), or single-country funds excluding US, UK, Japan and Canada.
      - Or continuous measure of liquidity of portfolio

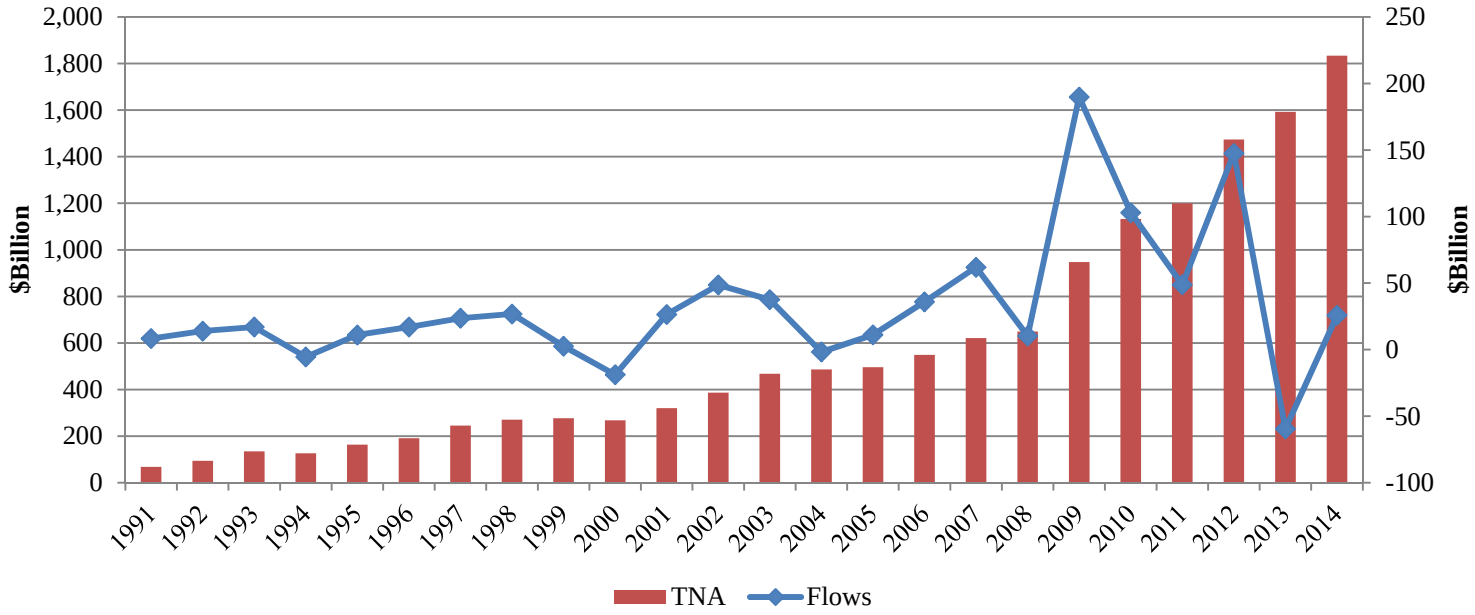
Evidence from Chen, Goldstein, and Jiang (2010)



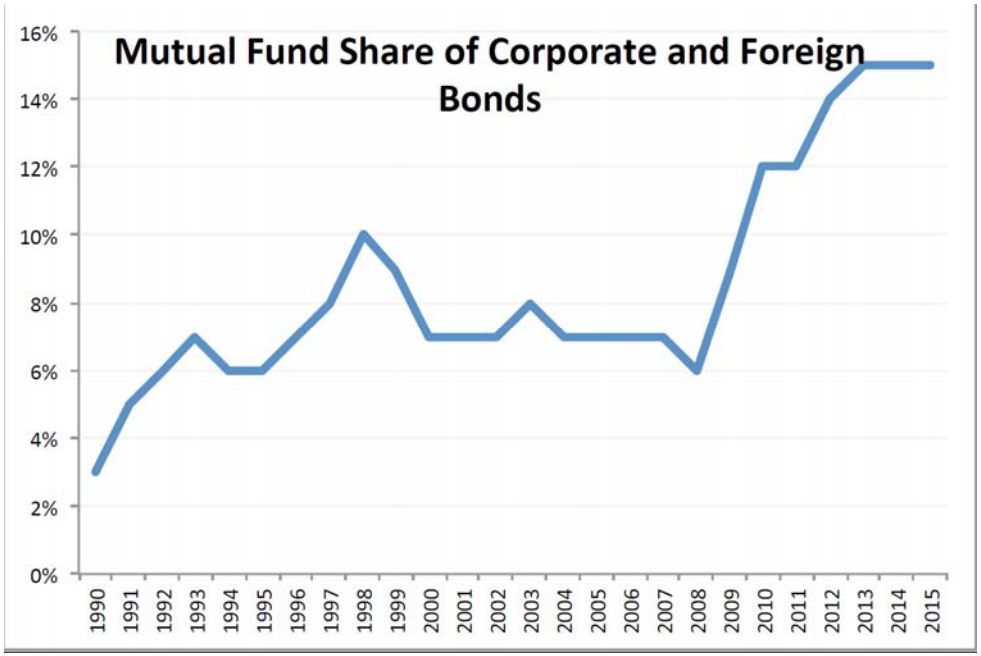
Corporate Bond Funds: Goldstein, Jiang, and Ng (2017)

- Following the crisis, massive inflows into corporate bond funds
  - Largely as a response to changes in investment opportunities and regulation elsewhere in the financial system
- Concerns mentioned about potential fragility mounting in the corporate bond funds sector, e.g., Feroli, Kashyap, Schoenholtz, and Shin (2014)
  - Concerns are stronger due to greater illiquidity of underlying asset

Total Net Assets and Flows of Active Corporate Bond Funds



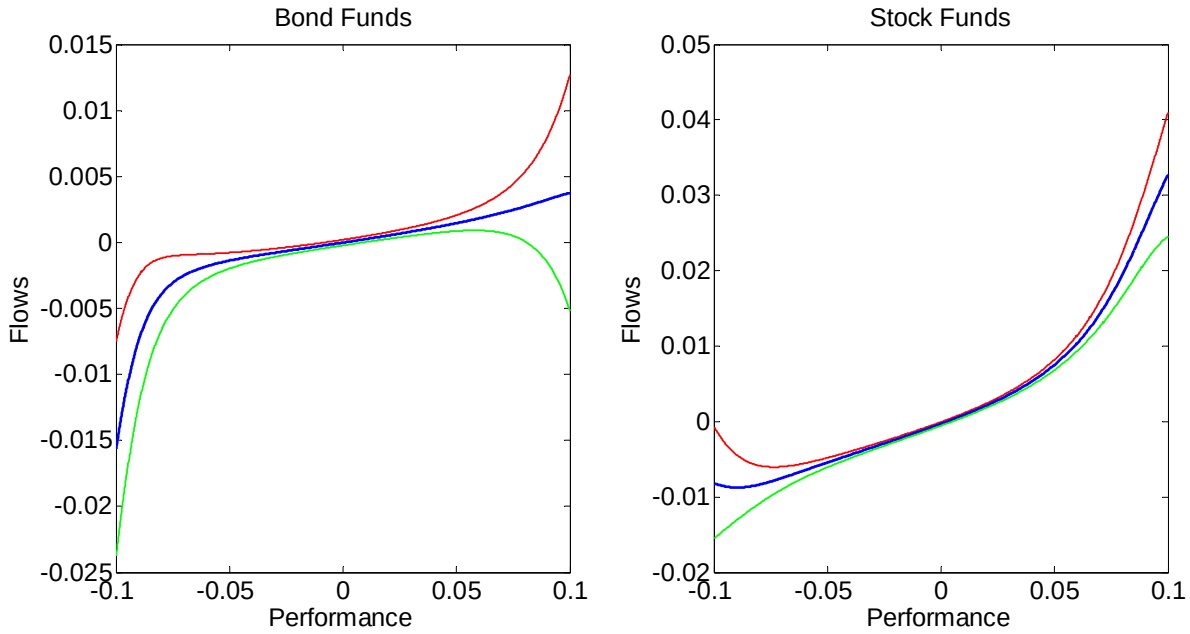
Mutual-Fund Share of the Corporate-Bond Market



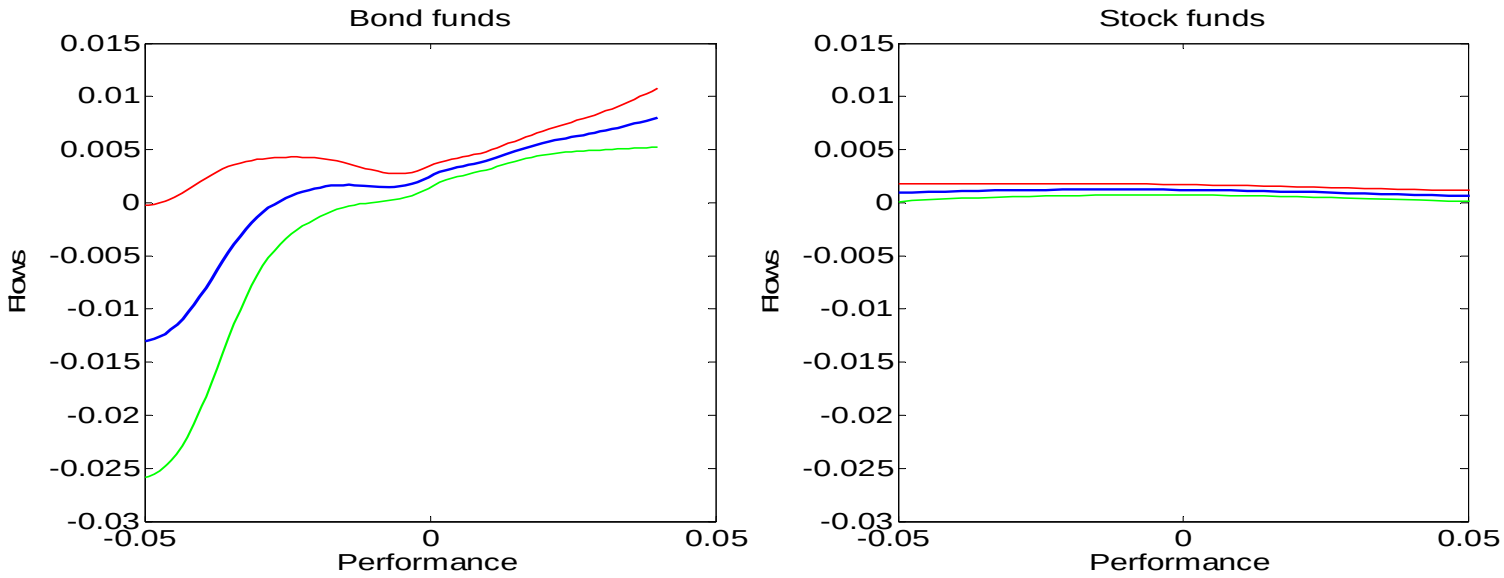
Empirical Analysis of Flows in Corporate Bond Mutual Funds

- Goldstein, Jiang and Ng (2017) study flows in 1,660 actively-managed corporate bond funds from 1992-2014
- Large literature on the flow-to-performance relation in equity funds, finding convex relation
- We find that corporate bond funds are different:
  - Flow-to-performance relation tends to be concave
  - Pattern strengthens with illiquidity across funds and over time

Flow Performance Relation of Corporate Bond Funds vs. Equity Funds



Does Redemption Sensitivity Disappear in Aggregation?



Empirical Results: Corporate Bond vs. Stock Funds

	(1)	(2)
	Corporate Bond Funds	Stock Funds
Alpha	0.238***	0.994***
	(2.71)	(34.23)
Alpha× (Alpha<0)	0.621***	-0.575***
	(4.34)	(-14.70)
Alpha<0	-0.00979***	-0.00723***
	(-18.45)	(-25.06)
Lagged Flow	0.152***	0.118***
	(21.47)	(29.90)
Log(TNA)	0.000728***	0.000459***
	(5.74)	(5.46)
Log(Age)	-0.0157***	-0.0183***
	(-32.08)	(-70.95)
Expense	-0.200***	-0.0522
	(-2.59)	(-0.77)
Rear Load	-0.00280***	-0.134***
	(-3.68)	(-5.51)
Observations	307,242	1,578,506
Adj. R2	0.0646	0.0583

Flow-Performance in Underperforming Funds in Illiquid Times

	(1) VIX	(2) TED	(3) DFL	(4) MOVE
Alpha	-0.131	-0.121	-0.746***	-0.0909
	(-0.77)	(-1.11)	(-3.22)	(-0.73)
Alpha*IlliqPeriod	0.753***	0.749***	1.412***	0.639***
	(3.89)	(5.37)	(5.21)	(4.58)
IlliqPeriod	0.00690***	0.00148**	0.00745***	0.00252***
	(9.81)	(2.44)	(8.11)	(4.19)
Lagged Flow	0.121***	0.123***	0.152***	0.123***
	(15.37)	(15.47)	(14.90)	(15.50)
Log(TNA)	0.000552***	0.000558***	0.000533***	0.000544***
	(3.78)	(3.82)	(2.98)	(3.75)
Log(Age)	-0.0134***	-0.0136***	-0.0124***	-0.0135***
	(-26.78)	(-26.70)	(-17.88)	(-26.70)
Expense	-0.175**	-0.185**	-0.284**	-0.183**
	(-1.98)	(-2.10)	(-2.45)	(-2.08)
Rear Load	-0.00294***	-0.00285***	-0.00611***	-0.00291***
	(-3.40)	(-3.29)	(-5.87)	(-3.36)
Observations	171,006	171,006	100,215	171,006
Adj. R^2	0.0339	0.0330	0.0429	0.0329

Asset Liquidity and Flow-Performance Relation

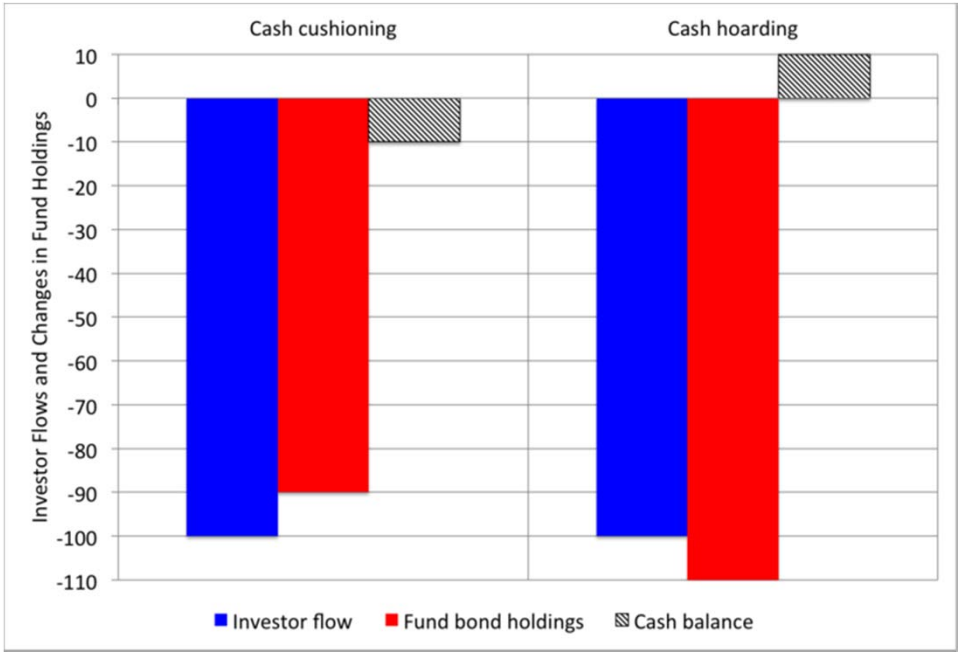
Alpha<0	Low Cash	Low (Cash + Government Bonds)	Low NSAR Cash	Illiquid Corporate Bond Holdings 1	Illiquid Corporate Bond Holdings 2
Alpha	0.554***	0.567***	0.631***	0.688***	0.662***
	(6.42)	(6.17)	(6.09)	(3.20)	(3.16)
Alpha×IlliqFund	0.814***	0.647***	0.767***	1.305***	1.174***
	(3.21)	(2.74)	(3.82)	(3.02)	(2.82)
IlliqFund	-0.000288	0.00113	0.00211*	0.00472***	0.00435***
	(-0.38)	(1.51)	(1.73)	(2.89)	(2.74)
Lagged Flow	0.131***	0.132***	0.121***	0.180***	0.179***
	(12.50)	(12.52)	(7.15)	(10.67)	(11.11)
Log(TNA)	0.000561***	0.000555***	0.000470*	0.000831***	0.000928***
	(3.18)	(3.15)	(1.80)	(2.58)	(2.86)
Log(Age)	-0.0140***	-0.0140***	-0.0142***	-0.0153***	-0.0157***
	(-20.26)	(-20.22)	(-14.61)	(-12.59)	(-12.95)
Expense	-0.443***	-0.449***	-0.521***	-0.0281	-0.0158
	(-3.99)	(-4.02)	(-3.10)	(-0.14)	(-0.08)
Rear Load	-0.00485***	-0.00482***	-0.00221	-0.00474**	-0.00482**
	(-4.78)	(-4.74)	(-1.45)	(-2.49)	(-2.50)
Observations	108,745	108,745	49,759	25,389	25,370
Adj. R^2	0.0500	0.0498	0.0473	0.0732	0.0750

CASH AND LIQUIDITY MANAGEMENT

Different Patterns in the Data

- A key aspect for understanding fragility in mutual fund outflows is how the funds manage cash and liquidations
- Different evidence emerged in different studies:
  - Chernenko and Sunderam (2016): Funds use cash to accommodate flows reducing the need to trade underlying illiquid assets (cash cushioning)
  - Morris, Shim, and Shin (2017): Funds sell more assets than required to cover outflows (cash hoarding)
  - Jiang, Li, and Wang (2016): Fund behavior differs between tranquil times and times of high uncertainty

Illustration of Cash Policies (Cecchetti and Schoenholtz, 2017)



Challenges Going Forward

- First challenge is to sort out the empirical evidence and understand general patterns
- Theoretically, understanding cash hoarding is more challenging
  - Dig deeper into fund managers' motives and potential for amplifying effects
- Different effects of policies on fragility:
  - Cash cushioning contributes to strategic complementarities in redemptions (Zeng, 2017)
  - Cash hoarding contributes to fire-sale amplification effects (Morris, Shim, and Shin, 2017)

MARKET INTERACTIONS

Interactions with Other Funds and Market Participants

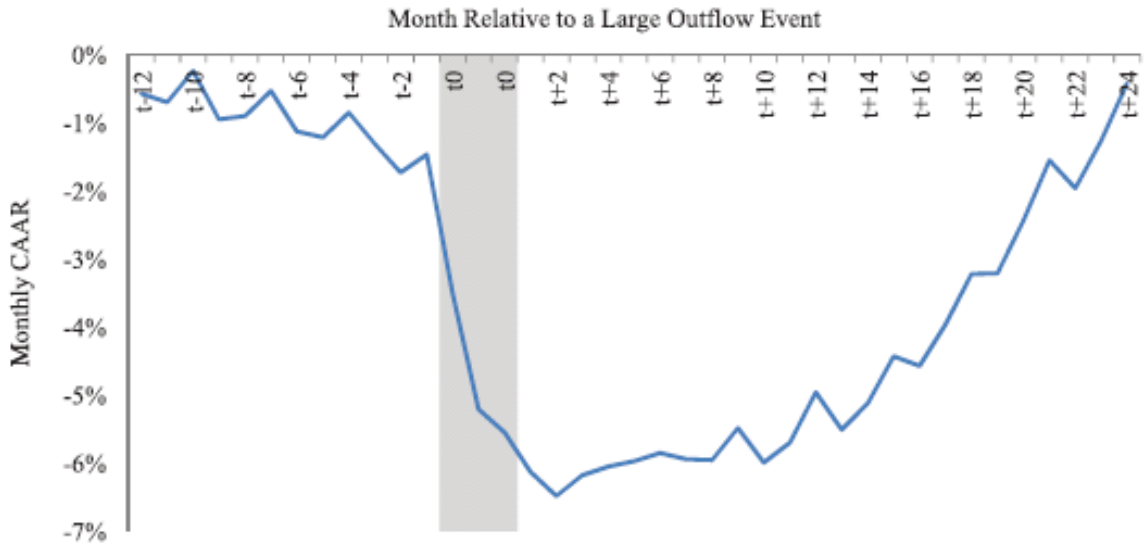
- When thinking about the impact of fund fragility, it is important to understand how funds interact with each other and with others
- There is significant evidence pointing in the direction of amplification for funds operating in fixed-income markets:
  - Feroli, Kashyap, Schoenholtz, and Shin (2014): relative performance evaluation pushes funds to act like each other
  - Falato, Hortacsu, Li, and Shin (2017): Flows in a fund are positively linked to flows in its peers
  - Anand, Jotikasthira, and Venkataraman (2018): Mutual funds tend to be liquidity demanders rather than liquidity suppliers
- We need a better understanding of underlying objective functions and interaction structure

BROAD IMPLICATIONS FOR ASSET PRICES AND REAL EFFECTS

Fire Sales, Asset Prices, and Real Effects

- Does fragility in mutual fund redemptions matter for asset prices and the real economy?
- Coval and Stafford (2007): Fire sales induced by mutual fund outflows tend to depress asset prices for long periods
- Edmans, Goldstein and Jiang (2012):
  - Address endogeneity problems by looking at hypothetical sales (instead of actual sales) induced by extreme outflows
  - Show a real effect and demonstrate that likelihood of affected firms to become takeover targets increases

Evidence from Edmans, Goldstein and Jiang (2012) on Asset Price Implications



Recent Evidence

- More recently, others have shown a real effect in different contexts:
  - Hau and Lai (2013): Firms, whose stocks are subject to fire sales by distressed equity funds during the financial crisis, decrease investment and employment
    - Stronger effect for financially constrained firms
  - Dessaint, Foucault, Fresard, Matray (2018): Firms reduce investment following non-fundamental drops (based on fire sales) of product-market peers' stock prices
    - Based on faulty information effect
  - Zhu (2018): Flows in corporate-bond funds affect new issuance decisions by underlying firms

OPEN-END MUTUAL FUNDS VS. EXCHANGE TRADED FUNDS

ETFs and the First-Mover Advantage

- In ETFs, investors who want to withdraw are not guaranteed to get the NAV
  - They sell their shares in the secondary market
  - An arbitrage process is meant to keep the share price close to the NAV
    - Authorized participants trade in secondary market and create and redeem shares against the fund
- This limits the first-mover advantage
- From the FSB 2017 report:
  - “As a result of using in-kind redemptions, the transaction costs associated with redemptions from an ETF are imposed on redeeming shareholders rather than the fund and its remaining shareholders”

ETFs Fragilities

- But, mounting evidence suggests that ETFs create their own instabilities:
  - Ben-David, Franzoni, and Moussawi (2018): ETFs increase volatility of the underlying stocks, especially when they are illiquid
  - Dannhauser and Hoseinzade (2018): Outflows from ETFs have greater effect on underlying bond prices than outflows from open-end mutual funds
  - Pan and Zeng (2017): Conflicts of interest by authorized participants interfere in the arbitrage process, opening gaps between secondary-market price and NAV
- Lessons:
  - When the underlying asset is illiquid, it is hard to have a smooth arbitrage process
    - Perhaps we should expect gaps, similarly to the closed-end fund model
    - But, investors seem to demand the liquidity, creating excessive volatility and price effects
  - Better understanding of the arbitrage process is needed: what drives the authorized participants? What is the market structure?

CONCLUDING REMARKS

Concluding Remarks

- Liquidity transformation creates fragility
  - Problem is usually considered for banks
  - But, regulation of banks makes it re-emerge in other forms
  - For example, open-end mutual funds
- Research in the context of mutual funds makes progress in understanding:
  - Channels of fragility
  - Cash management
  - Market interactions
  - Price impacts and real effects
- There are still puzzles and open questions

Concluding Remarks – Cont'd

- Various measures can reduce fragility:
  - Restriction on redemption frequency
  - Redemption in kind
  - Forward looking NAV calculation, e.g., swing pricing
- More work (theory, empirical) to understand their effect:
  - Sometimes, other problems emerge
    - For example, ETFs implement redemption in kind, but create other fragilities
  - Sometimes, design can be quite complicated
    - For example, in the case of swing pricing
- Maybe we need better understanding of the key issue:
  - Why is liquidity transformation so desirable and at what cost?