

Runs and Fragility in the Financial System

**The Intended and Unintended
Consequences of Financial Reform**

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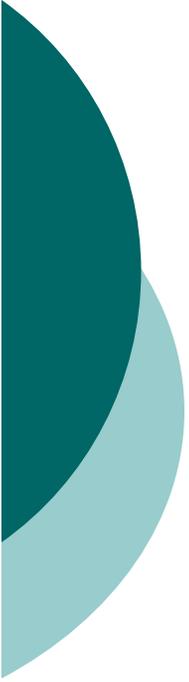
Overview

- Runs are among the most basic concerns in designing financial regulation
- Traditionally, they have been the focus of attention in banking regulation
- But, the underlying forces operate more generally in other financial institutions
- Regulation of traditional banks may push more activity to the other institutions and make problem more severe
- Regulators need to think of the problem addressing the system as a whole

Classic Runs

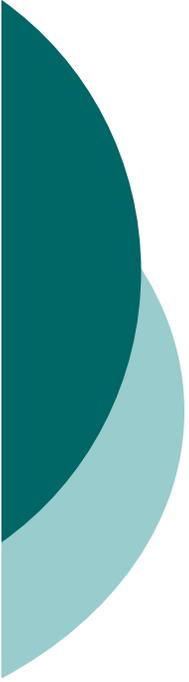


A run on American Union Bank, 1931



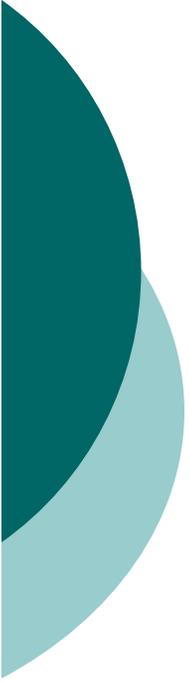
Classic Runs – Cont'd

- Bank runs have plagued the financial system for many years
- The concern of bank runs is a source of vast government intervention and regulation
 - Deposit insurance
 - Bank regulation (capital, liquidity, etc.)
 - Various government authorities involved: FDIC, Federal Reserve Banks, etc.



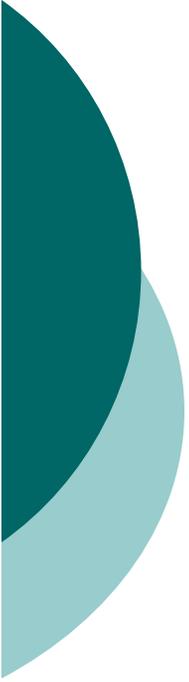
Economic Force behind Runs

- Basic economic force behind runs is based on:
 - First-mover advantage
 - Strategic complementarities
 - Banks create liquidity by holding illiquid assets and liquid liabilities (deposits)
 - Depositors are promised a fixed amount if they want to withdraw
 - If many withdraw, the bank will have to liquidate assets at a loss, hurting those who don't withdraw



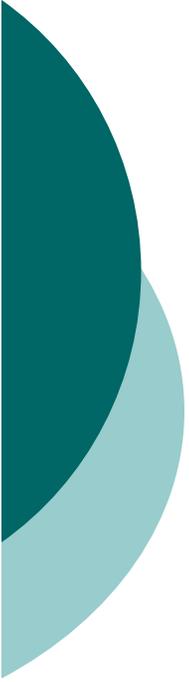
What about Non-Bank Institutions?

- First-mover advantage and run-type behavior are not limited to banks
- Recent Example provided by money-market funds
 - Major runs experienced by money-market funds in September 2008
 - Funds held illiquid assets with money-like liabilities
 - One fund “breaking the buck” triggered massive outflows across other funds
 - Detailed empirical analysis provided by Schmidt, Timmermann, and Wermers (WP, 2014)



The Role of Fixed Claims

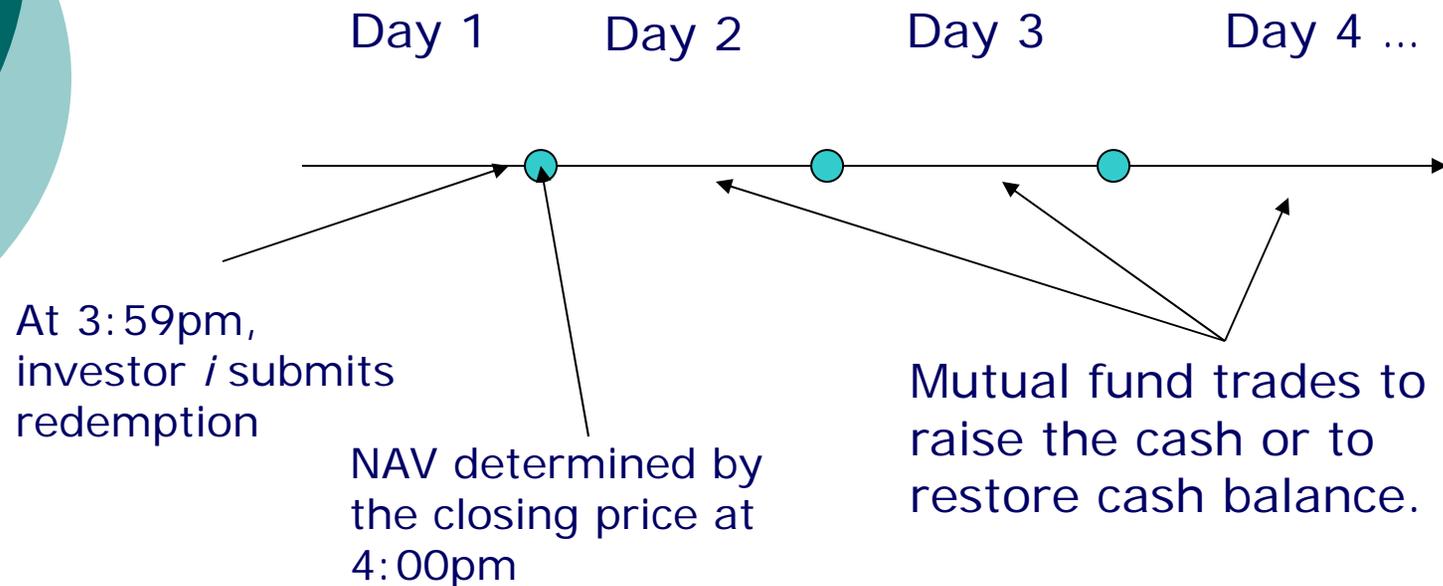
- One feature that is common to money-market funds and banks is that they have fixed claims
 - Bank depositors are entitled to a fixed deposit amount if they wish to withdraw
 - Investors in money-market funds enjoy a fixed Net Asset Value (NAV)
- This clearly enhances the first-mover advantage contributing to run dynamics
- New thinking following the crisis involves moving away from the fixed-NAV model to a floating-NAV model as in other mutual funds



Run Dynamics in a Floating-NAV Model

- However, moving to a floating-NAV model does not eliminate the first-mover advantage and the potential for run-like behavior
- In a floating-NAV framework, 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
- This is the source of the first-mover advantage (or strategic complementarities)

Complementarities in Mutual Funds Redemptions



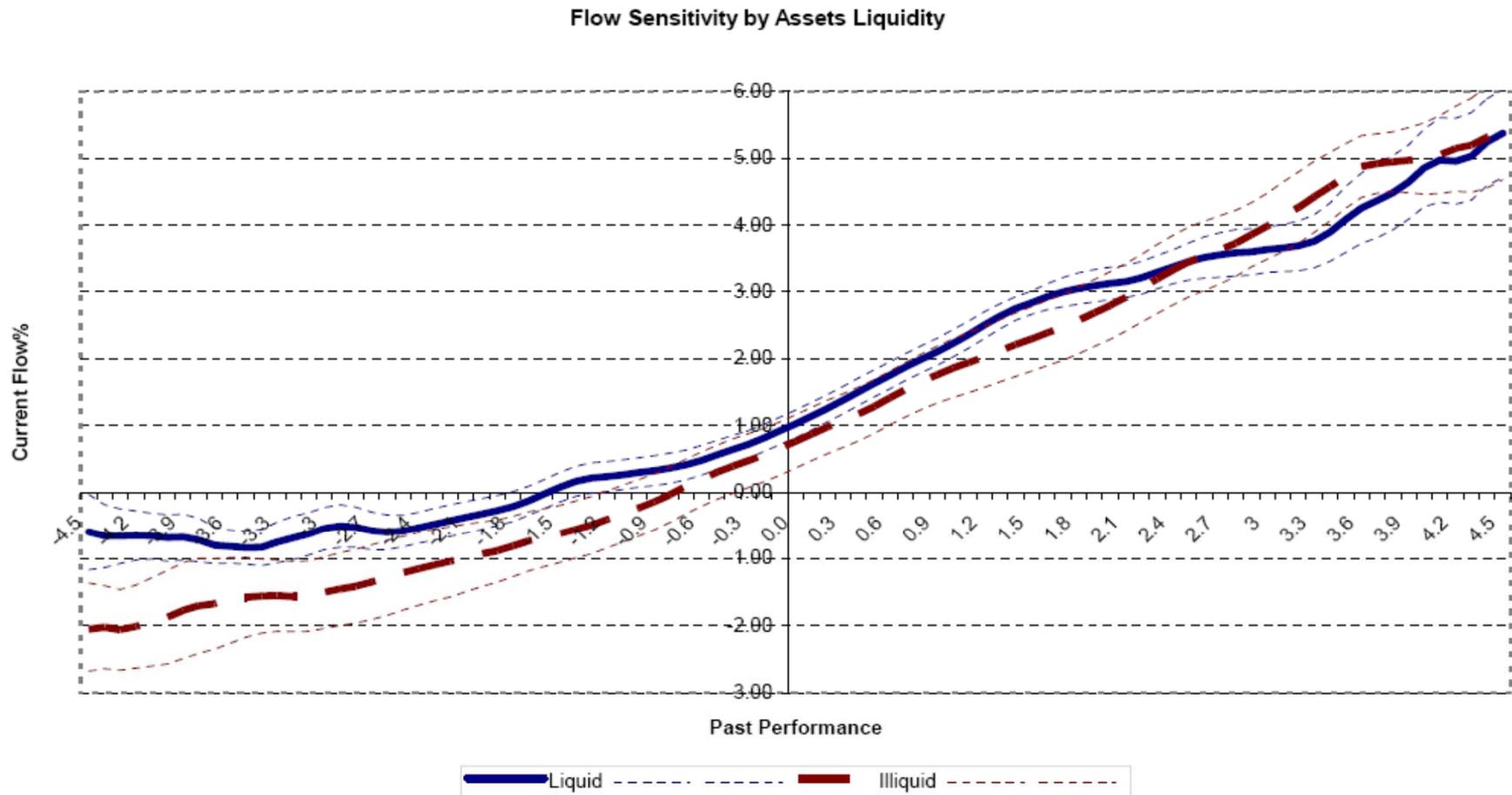
- Source for complementarities:
 - Redemptions impose costs on remaining investors:
 - Costs include: commissions, bid-ask spread, price impact, forced deviation from desired portfolio, liquidity-based trading.



Empirical Analysis of Flows in Equity Mutual Funds

- Chen, Goldstein and Jiang (JFE, 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 greater 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
 - Pattern is weaker in funds that are mostly held by institutional investors
 - Externalities are better internalized

Evidence from Chen, Goldstein, and Jiang (JFE, 2010)

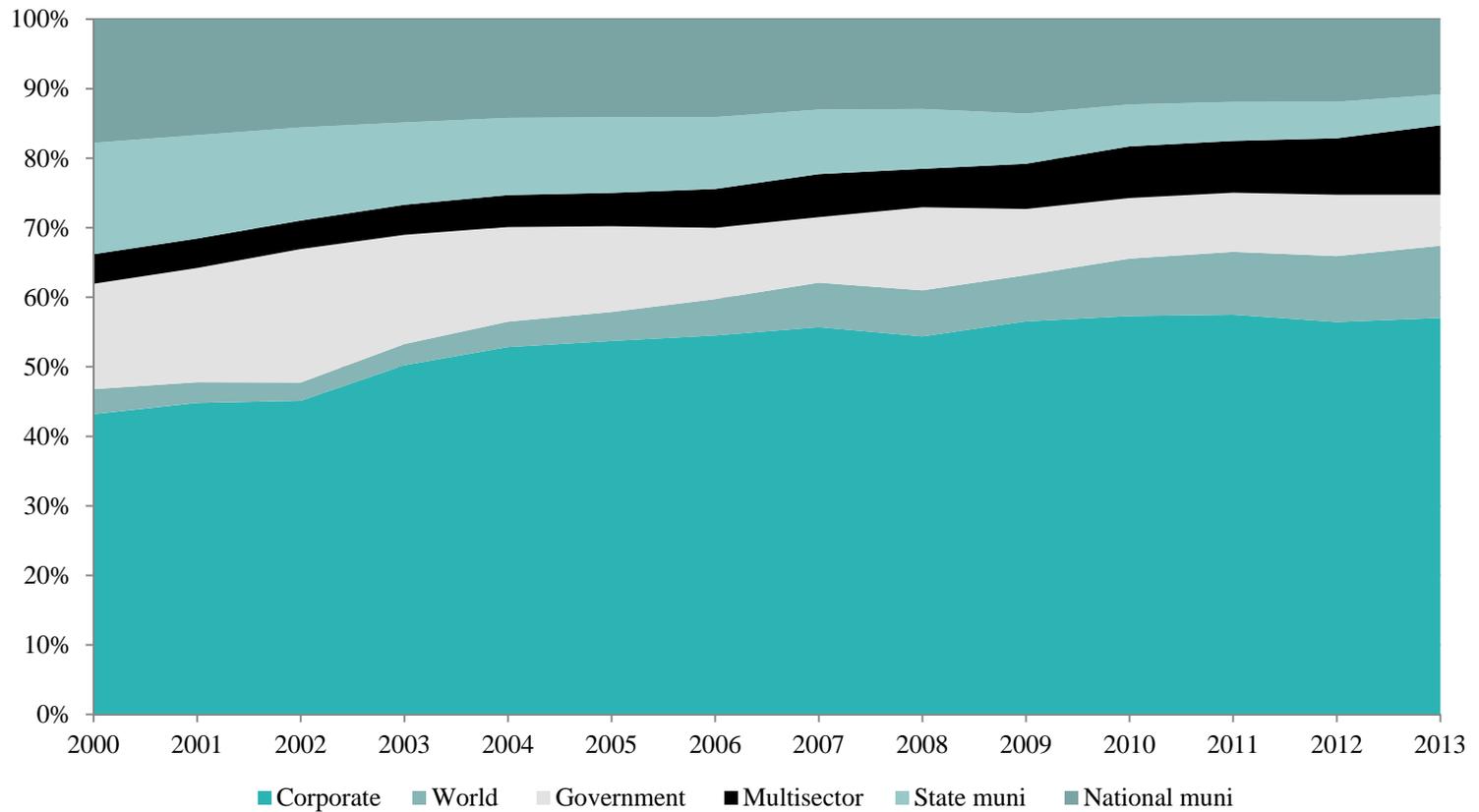




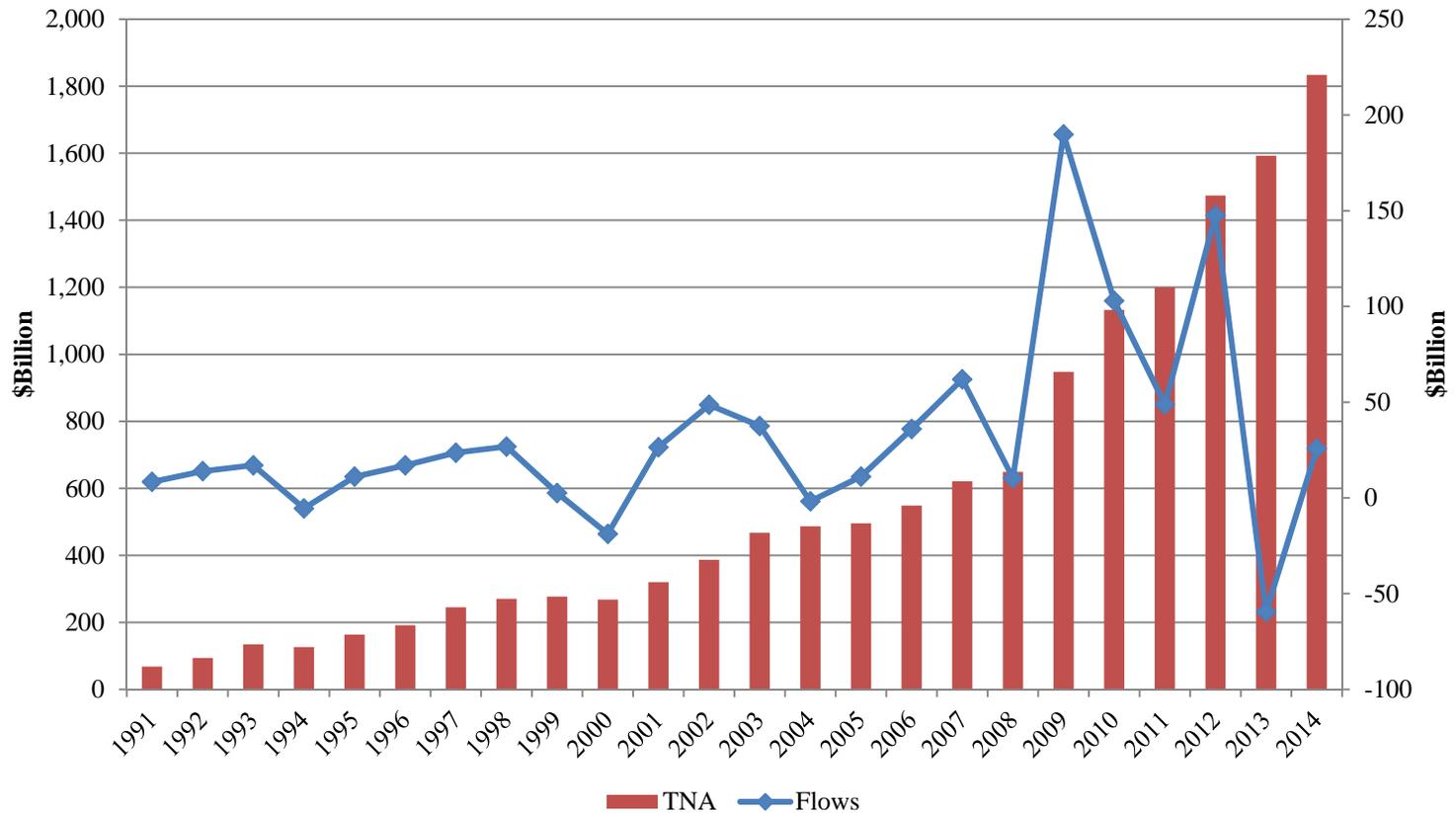
Bond Funds

- Recently, there is growing interest in bond mutual funds in this context
 - Bond funds are growing fast:
 - In 2008-2013, fixed income funds have attracted multiple times more inflows compared to equity, money market, allocation and other funds combined
 - Over this period, their assets roughly doubled
 - Their assets are much more illiquid and so they generate stronger complementarities
 - Consider corporate bonds:
 - They trade infrequently
 - It is more difficult to get an up-to-date price for them
 - Price impact and other illiquidity costs are high
 - They have a more direct effect on the real economy as firms rely on bonds for financing needs

Distribution of Bond Fund Assets



Total Net Assets and Flows of Active Corporate Bond Funds

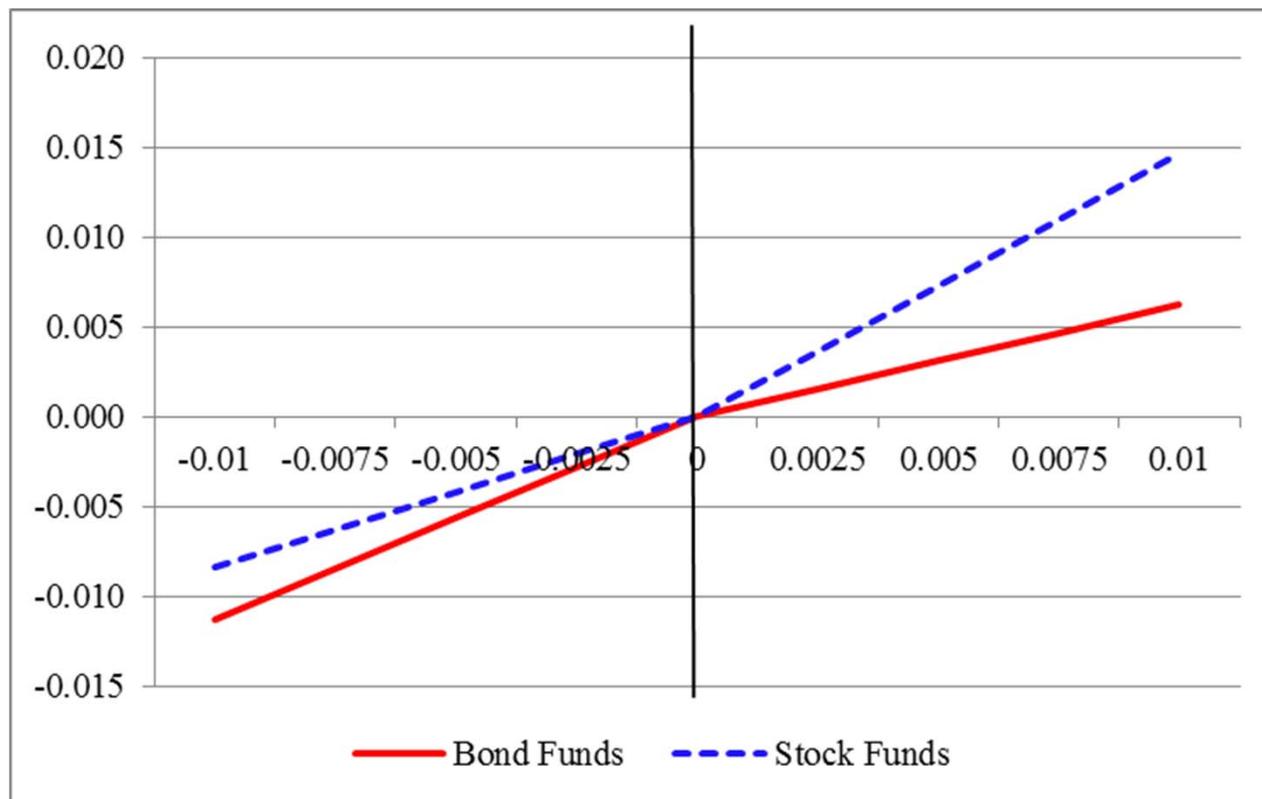




Empirical Analysis of Flows in Corporate Bond Mutual Funds

- Goldstein, Jiang and Ng (WP, 2015)
 - Study flows in 1,660 actively-managed corporate bond funds from 1992-2014 and compare the pattern with that of equity funds
 - A well-known pattern in equity funds is the convexity of flow to performance relationship, which is confirmed here
 - See recent review by Christoffersen, Musto, and Wermers (ARFE, 2014)
 - Actively-managed corporate bond funds exhibit an opposite pattern: concave flow to performance relationship
 - Consistent with greater complementarities due to greater illiquidity

Evidence from Goldstein, Jiang and Ng (WP, 2015)





Empirical Analysis of Flows in Corporate Bond Mutual Funds – Cont'd

- Moreover, Goldstein, Jiang and Ng (WP, 2015)
 - Show that sensitivity of outflow to negative performance is greater when funds have less liquid assets
 - Measured by cash holding
 - Show that sensitivity of outflow to negative performance is greater when aggregate illiquidity is higher
 - Measured by VIX, the TED spread, or the Federal Funds rate
 - Patterns are weaker in institutional-oriented funds
- All results are consistent with illiquidity-driven complementarity



Broader Effects of Funds Fragility

- One view may be that this is just a secondary market and so it should not generate wide concerns
- But, complementarities and fragility in corporate-bond funds might generate broader concerns due to various channels:
 - Abnormal flows can cause long-lasting price impact: Coval and Stafford (JFE, 2007); Manconi, Massa and Yasuda (JFE, 2012), and Ellul, Jotikasthira and Lundblad (JFE, 2012)
 - These price impacts can have real effects on firms' activities: Edmans, Goldstein and Jiang (JF, 2012) and Hau and Lai (JFE, 2013)



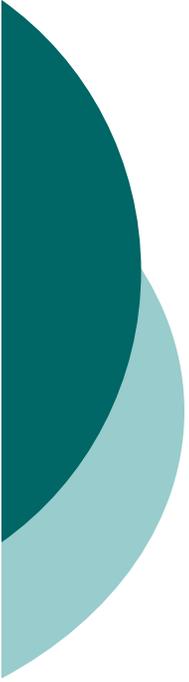
Broader Effects of Funds Fragility – Cont'd

- The effects are likely magnified in the context of bond funds (relative to equity funds) due to their greater illiquidity and the direct reliance of firms on bond financing
- Gilchrist and Zakrajcek (AER, 2012) show an effect of market-driven credit spread on real economic outcomes
- Fragility can amplify real shocks due to tightening of monetary policy: Feroli, Kashyap, Schoenholtz, and Shin (WP, 2014)



Some Lessons

- We need to pay attention to the liquidity mismatch created by bond mutual funds
- Measures to reduce 'first-mover advantage' should be considered/implemented more prominently:
 - Fund holding more liquidity/cash reserves (but, costly to performance)
 - Restriction on redemption frequency (but, compromising liquidity to investors)
 - Emergency rules: suspension of redemption; redemption in kind...(but, seldom used, hard to implement)
 - Forward looking NAV calculation (but, hard to implement)



Some Lessons – Cont'd

- More broadly, regulating one part of the financial system will change the operation of other parts and create new risks
 - Money market funds were largely a response to tightened bank regulation
 - Large activity in bond markets and bond funds is also motivated by the need that cannot be easily filled by traditional banks
 - 'Shadow banking' more generally
- This is an unintended consequence of financial regulation...
- Thus, regulation should consider the system as a whole