



Mutual Fund Fragility

Non-bank Runs and Financial Crises
CME GROUP-MSRI SEMINAR

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Overview

- The way investors get paid upon redemption in open-end mutual funds might create a **first-mover advantage** or **strategic complementarities**
- This can amplify redemptions following adverse shocks
- The problem gets more severe when the fund holds more **illiquid assets**
- Implications for fund policies and possibly also for regulation



Bank Runs

- 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 System, etc.



Economic Force behind Runs

- Basic economic force behind runs is based on (Diamond and Dybvig, 1983):
 - 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
 - Run arises as a self-fulfilling belief: People run because they think others will do so



What about Non-Bank Institutions?

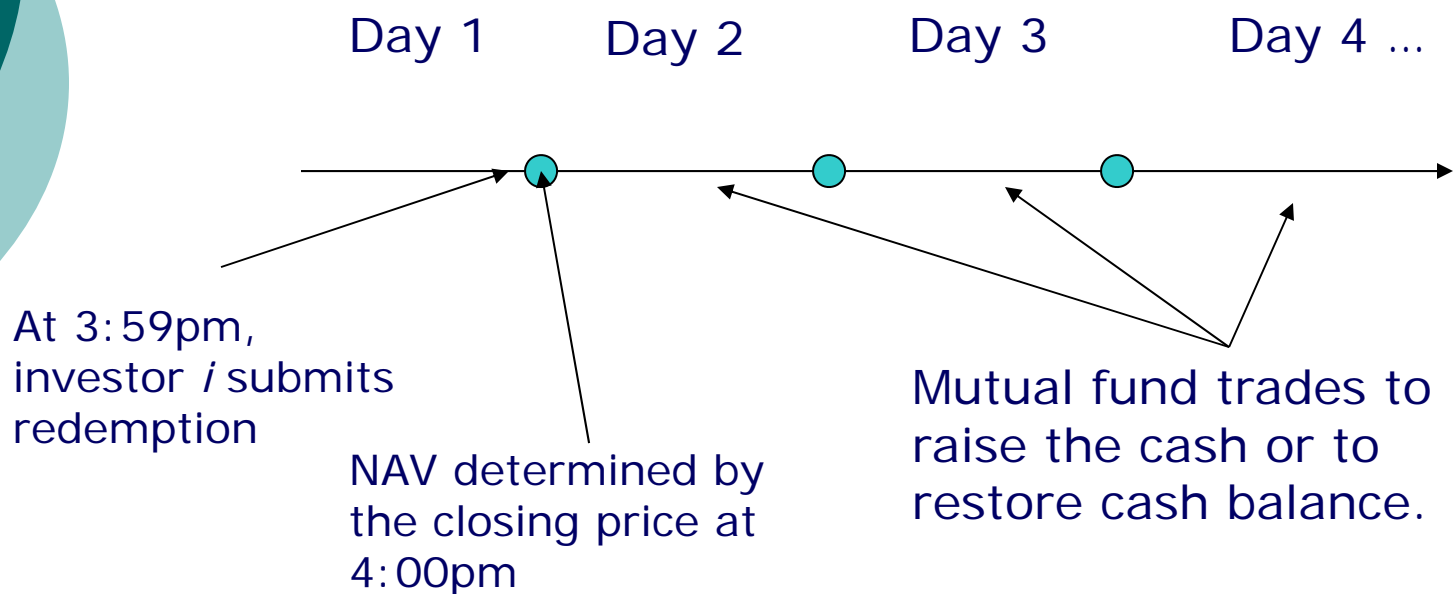
- Strategic complementarities and run-type behavior are not limited to banks
- Recent Example provided by money-market funds
- One feature that is common to money-market funds and banks is that they have fixed claims
- This clearly enhances the first-mover advantage contributing to run dynamics
- New 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 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
- This is the source of the first-mover advantage (or strategic complementarities)

Complementarities in Mutual Funds Redemptions



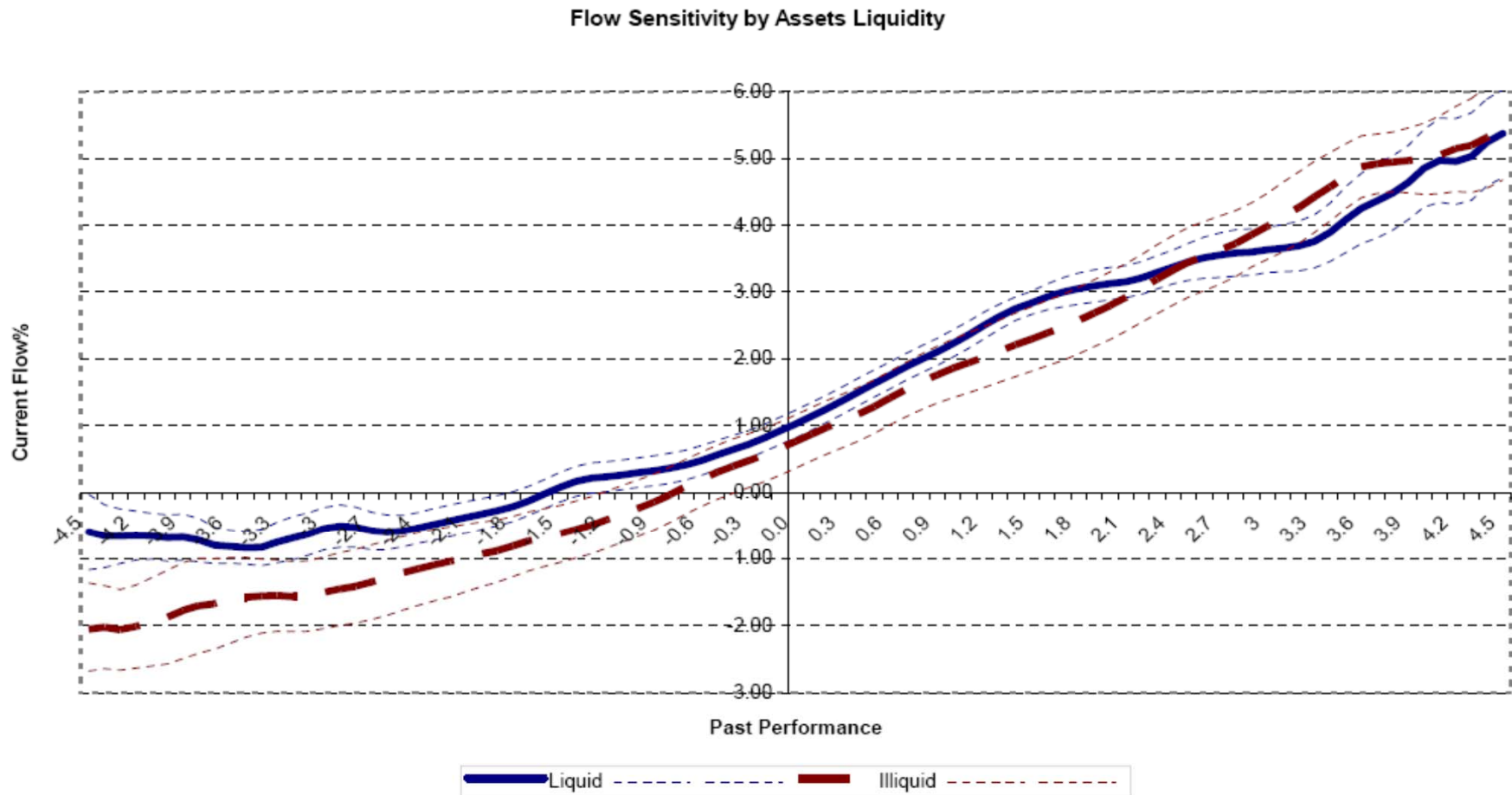
- Source for complementarities:
 - Redemptions impose costs on remaining investors:
 - Costs include: commissions, bid-ask spread, price impact, forced deviation from desired portfolio, liquidity-based trading.



Empirical Analysis of Flows in Equity Mutual Funds

- Chen, Goldstein and Jiang (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 (2010)

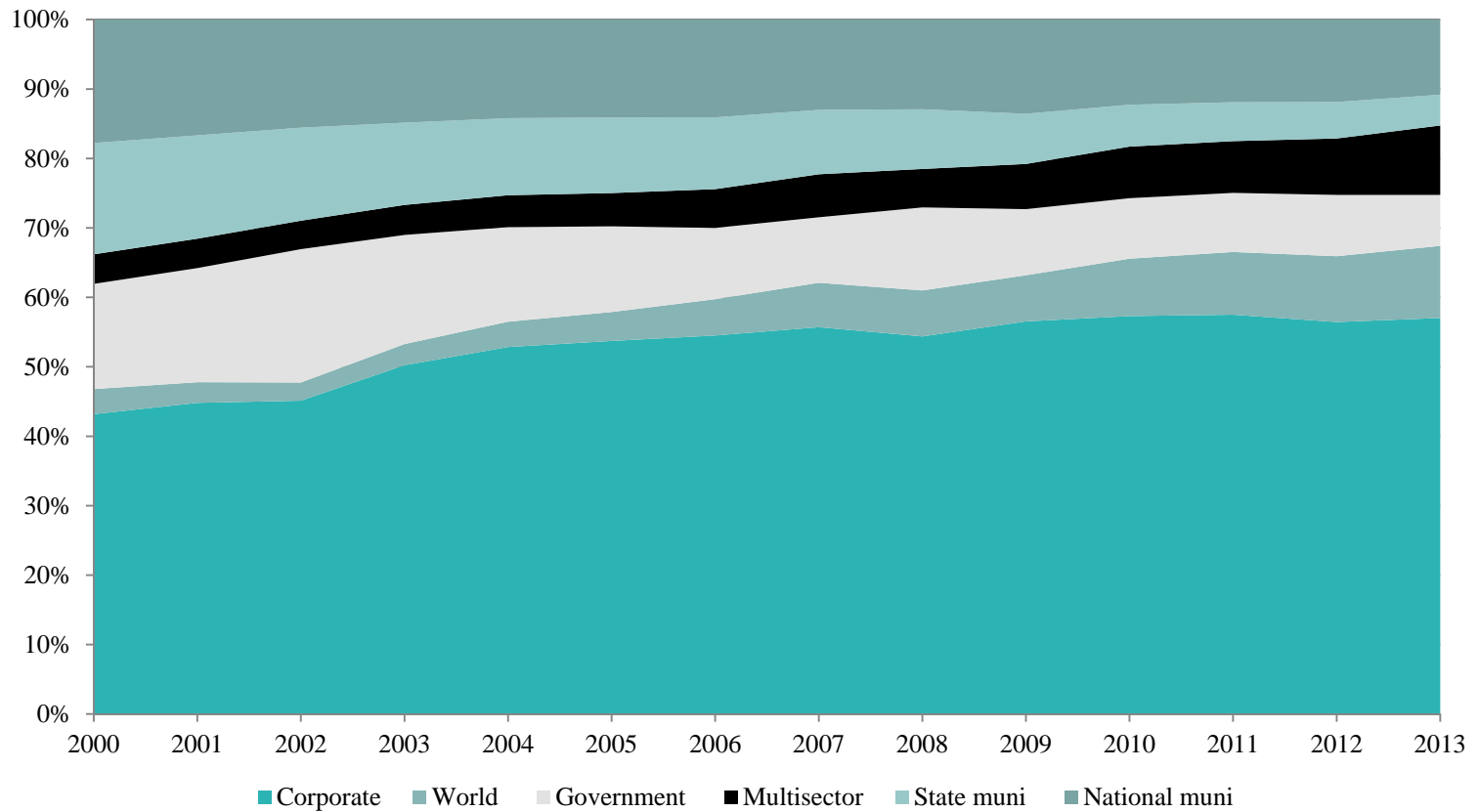




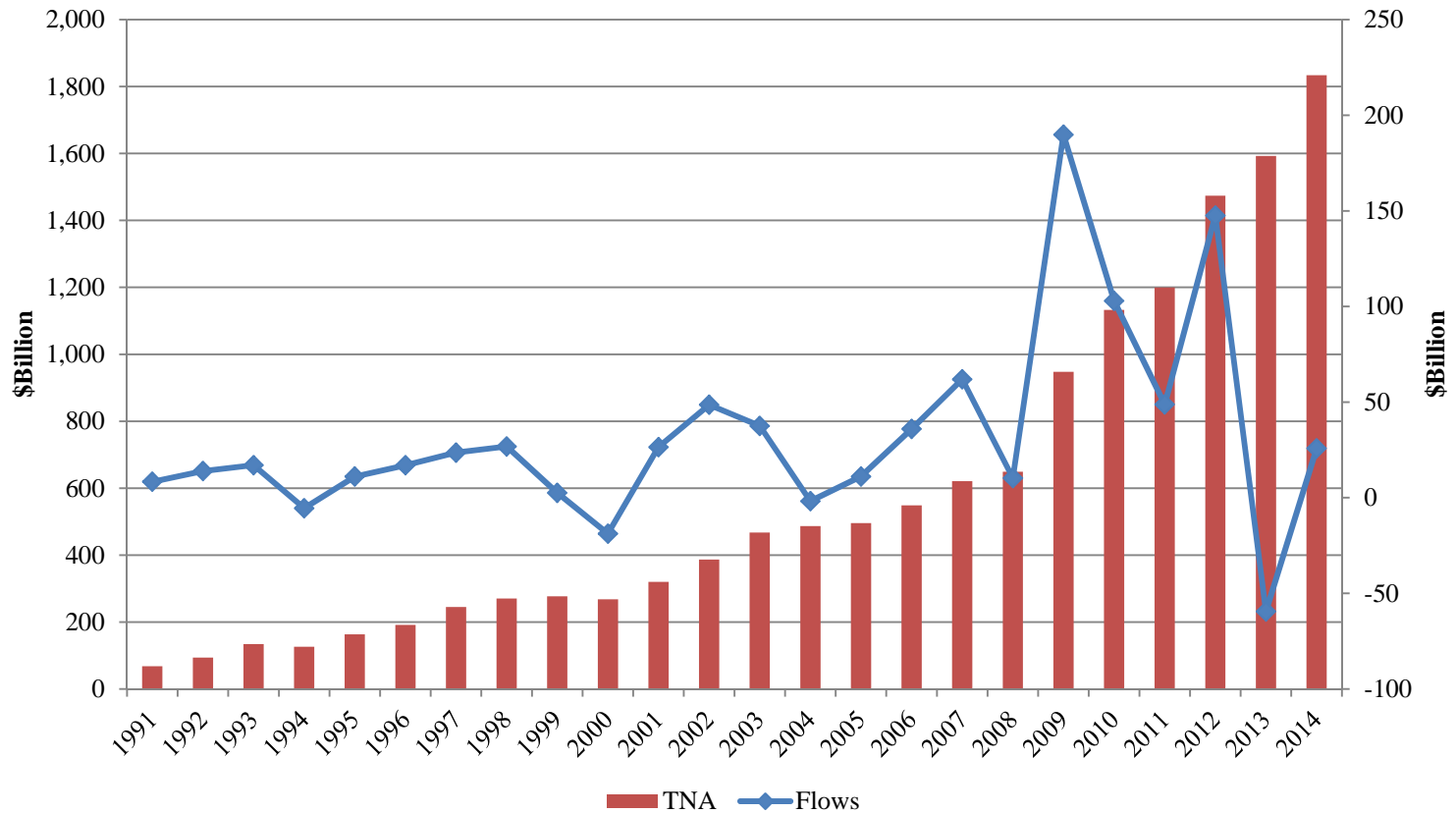
Corporate Bond Funds

- Recently, there is growing interest in Corporate bond mutual funds in this context
 - They are growing fast
 - Their assets can be very illiquid and so they generate stronger complementarities
 - Concern for fragility: Investors will pull their money out following signs of bad performance, amplified by the strategic complementarities

Distribution of Bond Fund Assets



Total Net Assets and Flows of Active Corporate Bond Funds

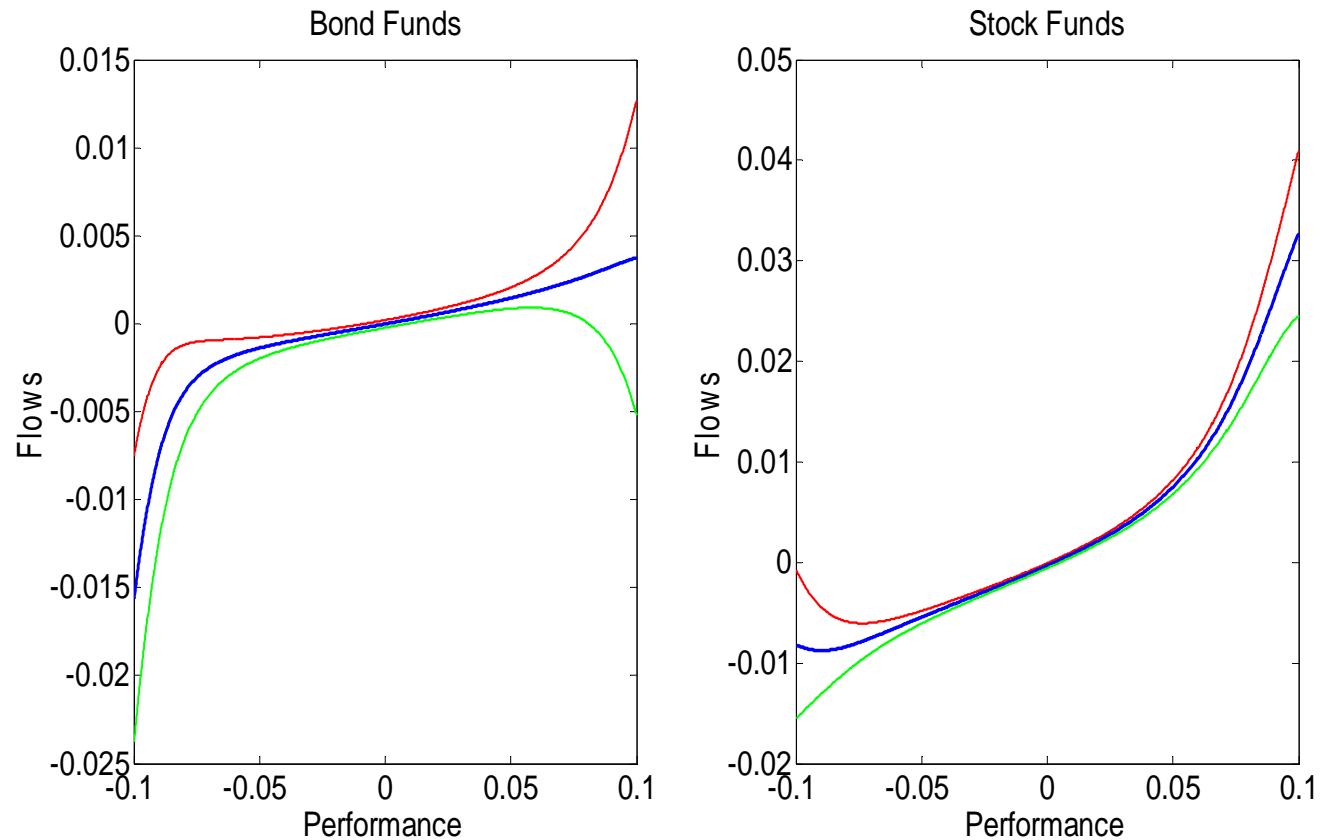




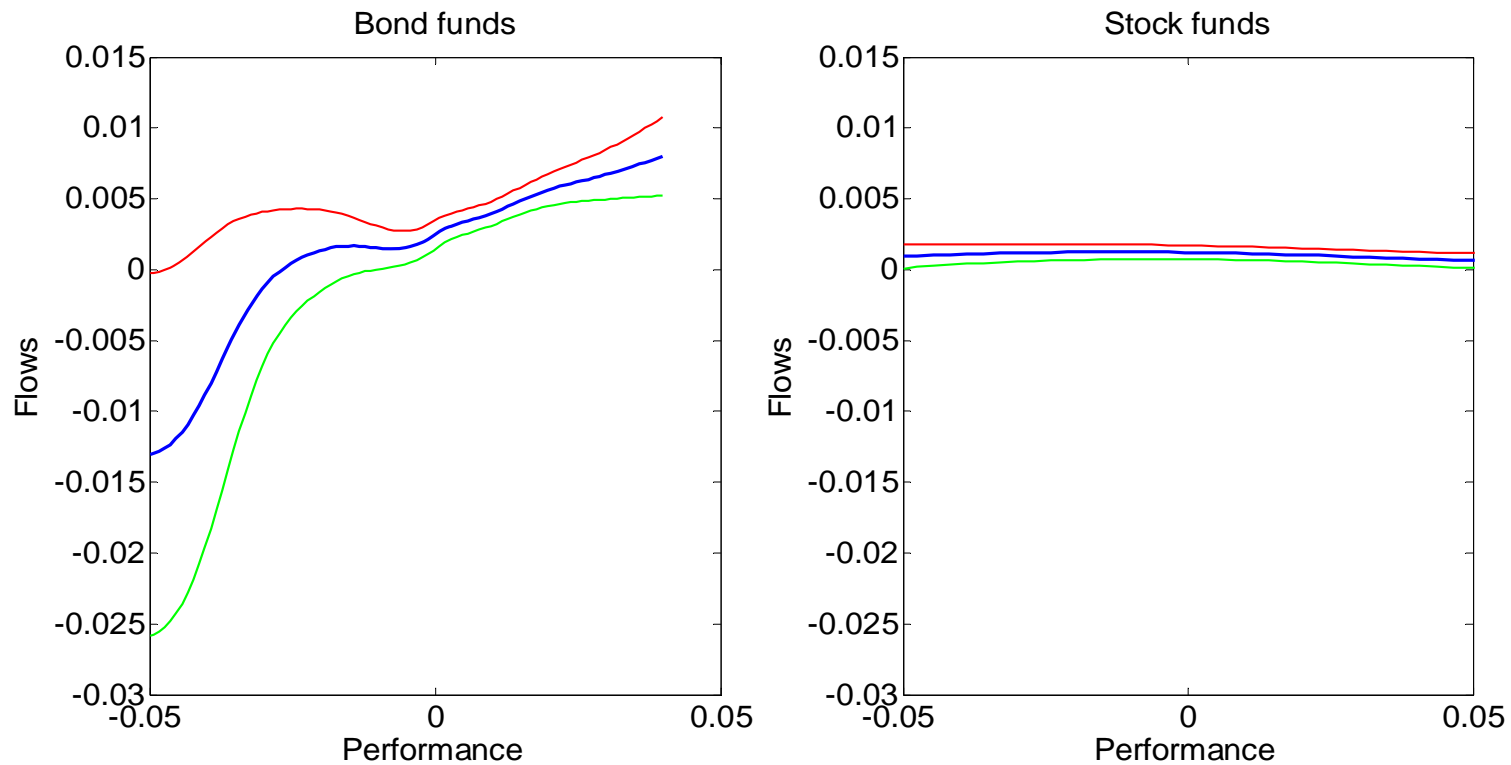
Empirical Analysis of Flows in Corporate Bond Mutual Funds

- Goldstein, Jiang and Ng (2015)
 - Study flows in 1,660 actively-managed corporate bond funds from 1992-2014
 - Compare the pattern with that of equity funds
 - Link pattern to illiquidity
- Large literature on the flow-to-performance relation in equity funds, finding convex relation (greater sensitivity on upside than on downside)
- We find that corporate bond funds are different:
 - flow-to-performance relation tends to be concave (greater sensitivity on downside than on upside)
 - Pattern strengthens with illiquidity
 - Funds that hold less cash or periods with greater aggregate illiquidity

Flow Performance Relation of Corporate Bond Funds vs. Equity Funds



Does redemption sensitivity disappear in aggregation?

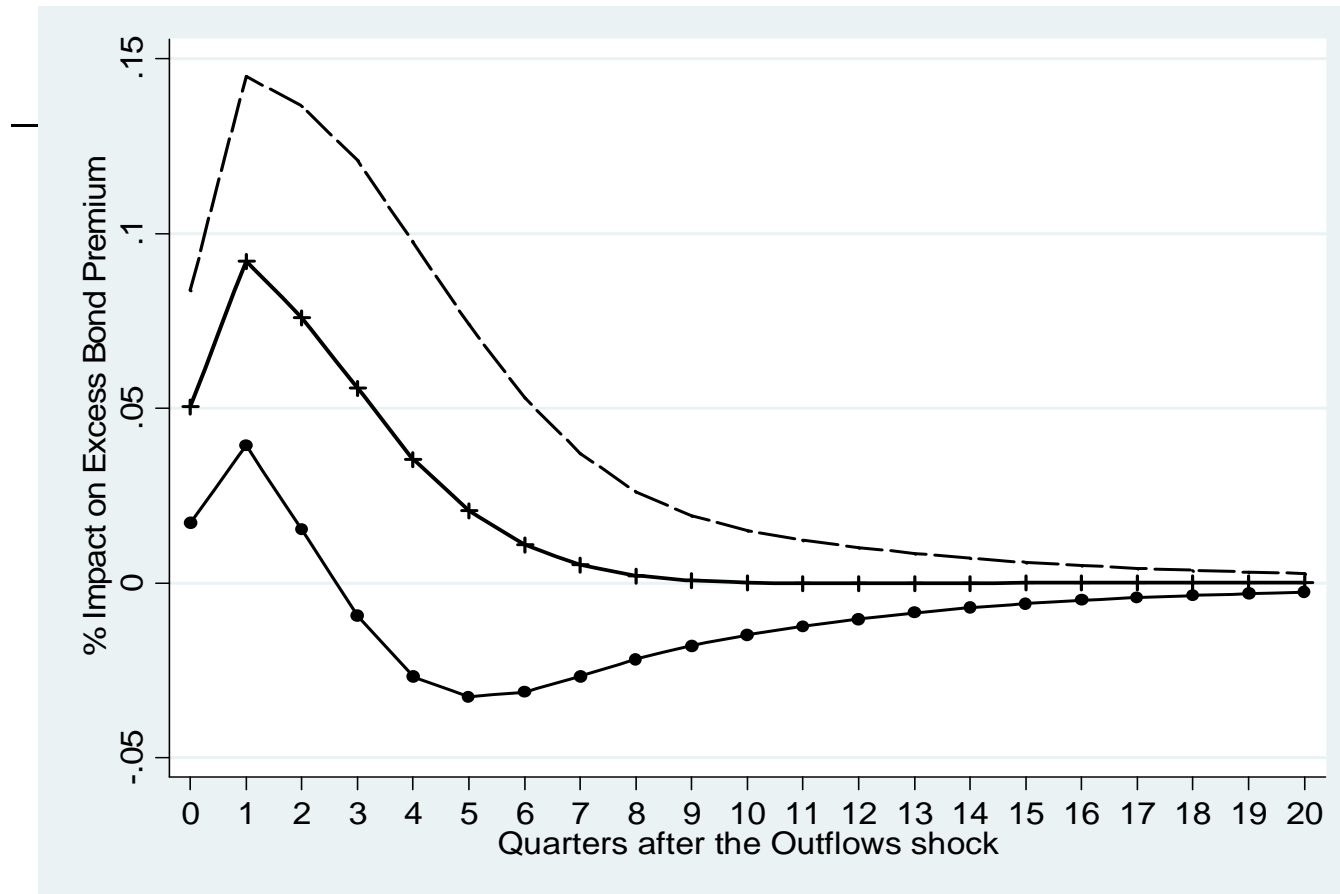




Economic impact of Corporate Bond Fund Flows

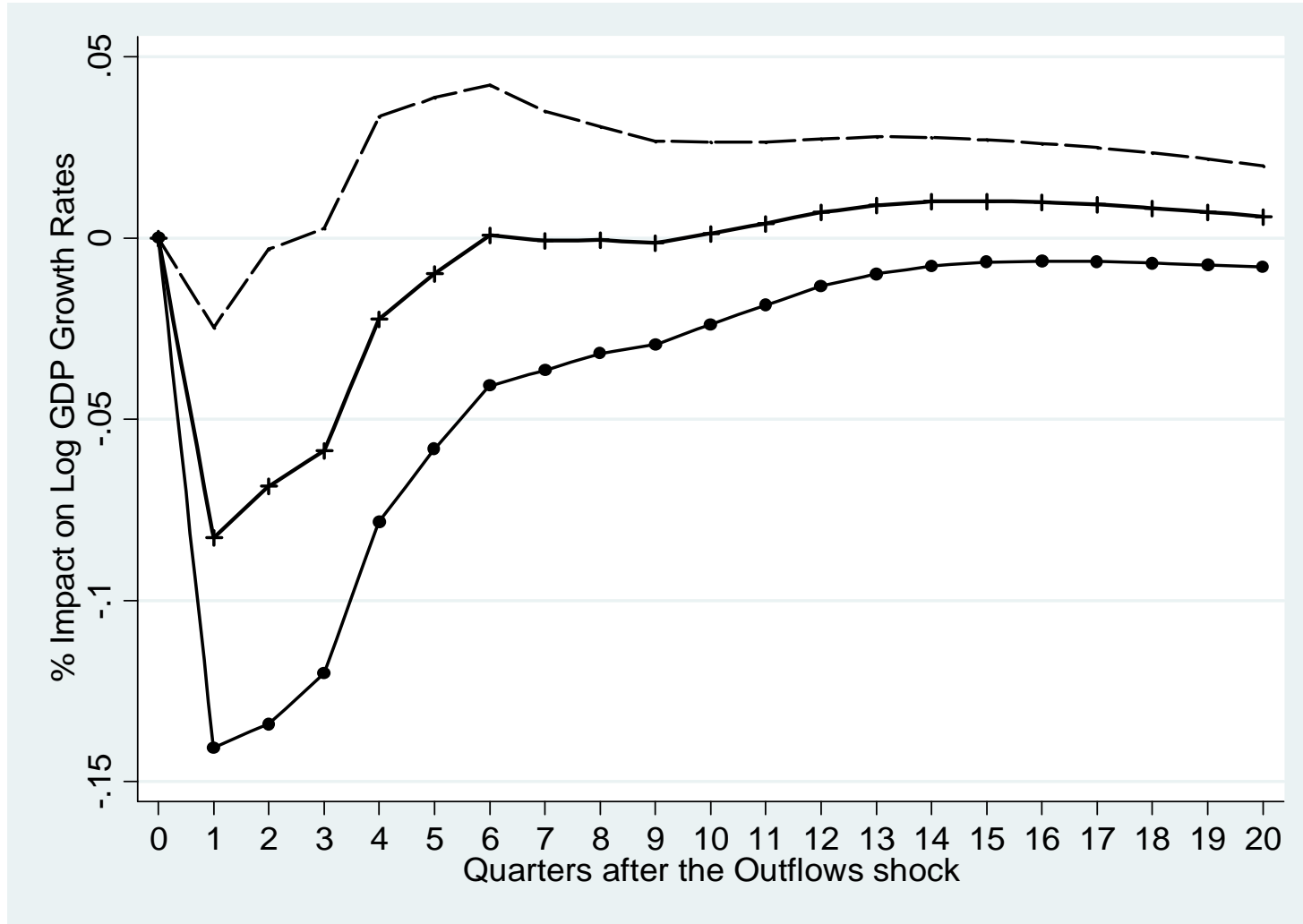
- Do outflows in bond funds have significant implications on market prices and the real economy?
- Exploratory evidence
 - Evaluate how corporate bond fund flows are related to Gilchrist and Zakrajsek (2012)'s excess bond premium.
 - Conduct a bivariate VAR with quarterly corporate bond fund outflows and excess bond premium on a quarterly basis, and estimate the response of EBP to shocks to the corporate bond fund outflow.
 - Estimate the effect of corporate bond fund outflows on real-economy variables.
 - Sample period is from 1991Q1 to 2010Q3 with two lags of the endogenous variables.

Impact of Corporate Bond Fund Outflows on Excess Bond Premium



Following 1% increase in corporate bond fund outflows during a quarter, the excess bond premium rises during the contemporaneous quarter, and jumps up further by 9.2 and 7.6 basis points in next two quarters.

Impact of Corporate Bond Fund Outflows on GDP growth





Some Lessons

- We need to pay attention to the liquidity mismatch created by 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, e.g., swing pricing (but, hard to implement)



Some Lessons – Cont'd

- Regulation may be needed if there are externalities going beyond the individual fund
 - Fire-sale pricing leading to real implications
- 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