Motivation: The asset management sector grows and becomes more concentrated


Question 1: Investment funds’ contribution to systemic risk

- What we do:
  - Macroprudential stress-test with (i) funding fragility and (ii) fire sales
  - Application to the U.S. domestic equity mutual fund sector during 2003-14

- What we find:
  - Aggregated vulnerabilities are small compared to banks

Towards a macroprudential stress test for mutual funds

4-step stress test:
1. Initial shock on the value of funds’ asset holdings, \( F_1 \)
2. Investors withdraw money w.r.t. past fund returns with sensitivity \( \gamma_E \) (flow-performance relationship)
3. Asset liquidation decision of funds for liquidity generation and leverage targeting
4. Asset liquidations have price impact according to asset liquidity, \( L \)

Investment Fund

- Assets: Equity, Debt
- Liabilities: Equity, Debt
- Initial asset price shock: \( R_0 \)
- Assets related to redemptions
- Assets related to leverage targeting
- Asset price shock related to fire-sale

Vulnerabilities to fire-sale dynamics in the fund sector

Aggregated vulnerabilities: Aggregated effect of initial asset price shock on sector-wide fire-sales relative to initial equity.

\[
AV = \frac{1}{N_i} R_0 - \frac{1}{N_i} A_i MLM (\|F_1^E \| + \|D_1^E \|) R_0 + A_i BR_0
\] (1)

Systemicness: Fund’s individual contribution to system wide fire-sales.

\[
S_i = \frac{1}{N_i} A_i MLM \delta_{ij} (\|F_1^E \| + \|D_1^E \|) R_0 + A_i BR_0
\] (2)

Indirect vulnerabilities: Fund is vulnerability to other funds’ asset liquidations.

\[
IV_j = \frac{1}{N_j} A_j MLM (\|F_1^E \| + \|D_1^E \|) R_0 + A_j BR_0
\] (3)

Finding: Small aggregated vulnerabilities in the fund sector

1. Small vulnerabilities in the U.S. domestic equity fund sector
   - 5% initial shock (Step 1) corresponds to a fire-sale of less than 1bp of funds’ AuM (0.001bp)
2. Vulnerabilities covary with price impact measures
3. Results robust to several price impact measures:
   a) Price impact time-varying and asset-specific (Scenario 1)
   b) Homogeneous price impact of 4.77x10^{-6} for all assets in all quarters (Scenario 2)

Motivation: U.S. equity sector reveals comparable pattern to global developments

Question 2: Fund characteristics associated to systemic risk

- What we do:
  - Fund characteristics determining systemic risks
  - Discuss the role of different portfolio liquidity measures

- What we find:
  - Fund-specific vulnerabilities depend on their business models
  - Liquidity transformation crucial for systemic risk contribution
  - Dissent between micro- and macroprudential regulators how to evaluate fund specific risk

Findings: Determinants of Fund Sector Vulnerabilities (Price Impact Time-Varying and Asset-Specific)

- Size measures:
  - log(TNA(t-1))
  - log(NAV(t-1))

- Illiquidity measures:
  - log(MeanOverlap(t-1))
  - log(MeanOverlap(t-1))

- Analysis:
  - log(NAV(t-1))
  - log(TNA(t-1))

Interpretation of findings

1. Implications for Policy Makers: Heterogeneous interpretation of stress test results according to policy objective (Micro- vs. Macroprudential)

2. Implications for stress-test set-up:
   - Include further fund types to achieve a system-wide stress-test
   - Liquidity assumption essential for accurate vulnerability estimation

Distortion effect of homogeneous price impact assumption

Homogeneous price impact (\( IV_0 = S_0 \)) results in economic meaningful lower vulnerabilities of the least liquid funds (Decile 10), compared to vulnerabilities derived from time-varying price impact parameters

- Least liquid funds (Decile 10) above solid line
- Most liquid funds (Decile 5) below solid line