



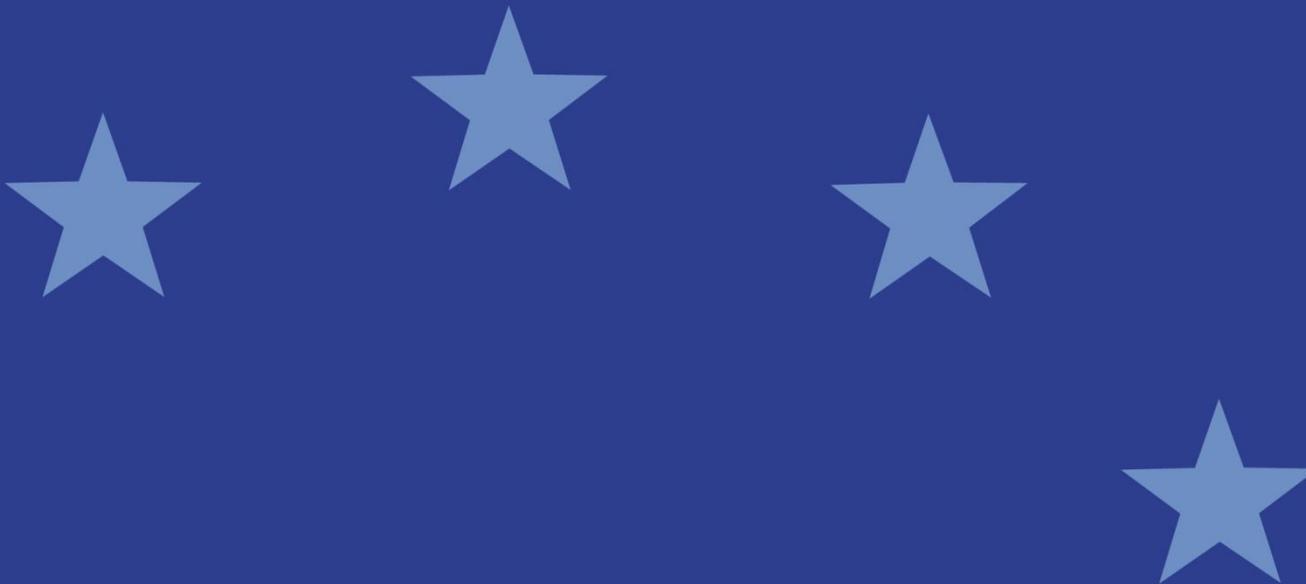
European Securities and
Markets Authority

ESMA REGULAR USE

Stress simulation for investment funds

European University Institute, 11 December 2019

Christian Winkler



Outline

ESMA approach to stress testing

Fund stress simulation – case study: Impact of severe redemption shocks on the EU fund industry

Three-pillar approach

Project

ESMA investment fund stress testing

	Workstream I	Workstream II	Workstream III
	Supervisory convergence	ST simulation	MMFR
Activity	<ul style="list-style-type: none"> Supervisory convergence on entity-level ST practices 	<ul style="list-style-type: none"> Simulation-based ST on fund industry and wider system 	<ul style="list-style-type: none"> Sectoral entity ST
Scope	<ul style="list-style-type: none"> UCITS, AIFs 	<ul style="list-style-type: none"> UCITS, AIFs 	<ul style="list-style-type: none"> MMFs
ST actor	<ul style="list-style-type: none"> Fund manager 	<ul style="list-style-type: none"> ESMA 	<ul style="list-style-type: none"> ESMA (consulting ESRB), NCAs
Deliverable	<ul style="list-style-type: none"> Liquidity stress test Guidelines 	<ul style="list-style-type: none"> Stress simulation (Economic report) 	<ul style="list-style-type: none"> MMF stress testing Guidelines
Objective	<ul style="list-style-type: none"> Promotion of good industry practices, effective risk management Progress on FSB Rec 6 	<ul style="list-style-type: none"> Sector-wide view of risks, systemic repercussions Progress on FSB Rec 9 	<ul style="list-style-type: none"> Promotion of good industry practices, effective risk management Assessment of MMF sector based on granular data Progress on FSB Recs 6, 9

STRESI: Market-level stress simulation

Different types of stress exercise for different purposes

- Fund-level: Entity-level stress testing as part of risk management; UCITS and AIFMD Guidelines on liquidity stress testing
- Sectoral stress test: Market-level, coordinated stress tests, based on dedicated reporting data; MMF stress testing
- Sectoral stress simulation: Market-level simulation of stress scenarios, based on commercial data; ESMA Stress Simulation (STRESI)

STRESI objectives

- Assess resilience of EU fund industry: Identify potential vulnerabilities in funds
- Estimate ability of the fund industry to amplify shocks to the financial system: Measure spillovers from the fund industry
- Risk monitoring: Inclusion in ESMA risk monitoring framework
- Supervision: Results, methods for NCAs to prioritise entity-level supervision

Sample and calibration of stress simulation

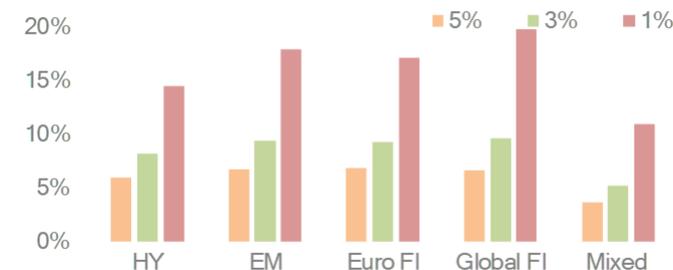
Scope and rationale

- **Sample:** 6,000 UCITS bond funds and mixed funds
- **Volume:** EUR 2,490bn (90% of the universe)
- **Rationale:** Potential liquidity mismatch

Calibration of the shock and liquidity

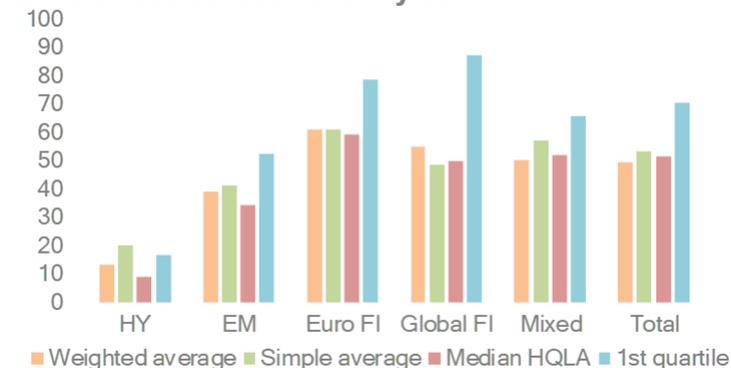
- **Redemption shock:** Severe but plausible loss of ~10% of NAV within one week
- **Liquidity buckets:** HQLA approach
- **Observation:** Liquidity varies across fund styles

Redemption shock
Weekly shock by fund style
25%



Note: Weekly redemption shock calibrated using the expected shortfall at different levels (5%, 3%, 1%), based on the homogeneity assumption (all fund flows by fund styles).
Sources: Morningstar Direct, ESMA.

HQLA measure
Differences across fund styles



Note: HQLA measure by fund style, in % of NAV.
Sources: Morningstar, ESMA.

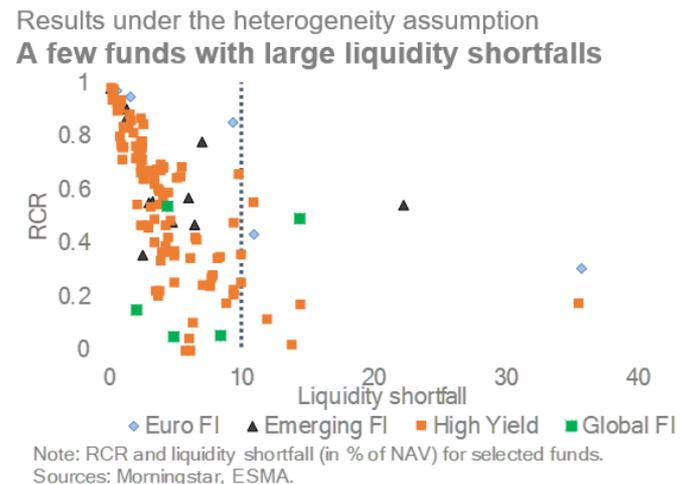
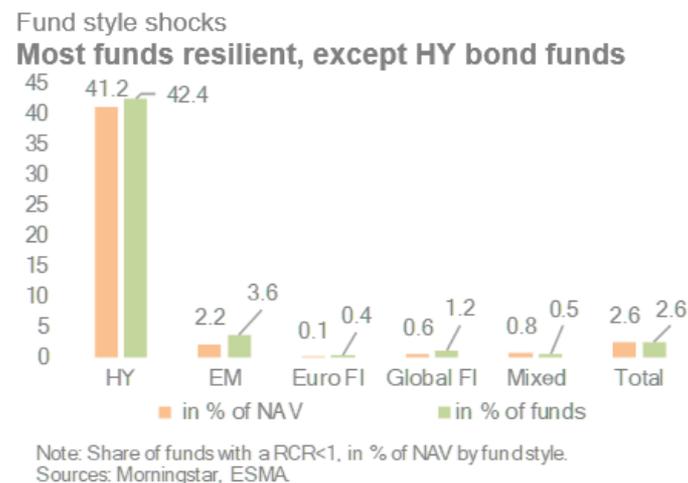
Simulation results: HY funds vulnerable

Step 1: Identical shock across fund strategies (homogeneity assumption)

- Homogeneity assumption: Same shock by fund strategy
- Impact: Most funds resilient except HY funds
- Liquidity: Liquidity shortfall limited

Step 2: Shocks differ across funds (heterogeneity assumption)

- Heterogeneity assumption: Shock calibrated on fund-by-fund basis
- Impact: Most funds resilient except HY funds
- Liquidity: Few funds with liquidity shortfall >10% NAV



Simulation results: Impact on markets and prices

Step 3: Market impact when funds sell by portfolio shares (slicing)

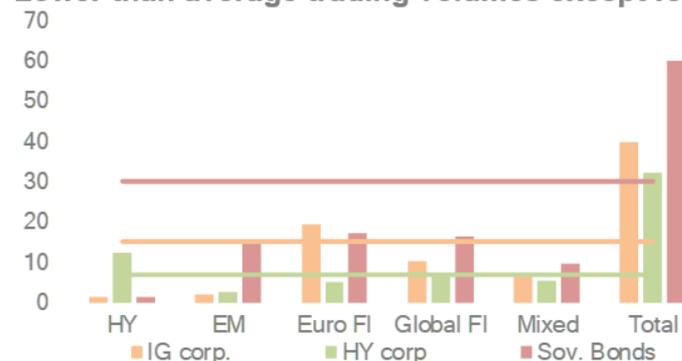
- Slicing approach: Assets sold in proportion to share in portfolio
- Impact: Selling pressure below average trading volumes, except HY
- Price effect: <50bps except for HY and EM debt (>150 bps)

Step 4: Market impact when funds sell by liquidity (waterfall)

- Waterfall approach: Managers sell most liquid assets first
- Impact: Selling pressure lower and below average trading volumes
- Price effect: <50 bps across asset classes

Selling pressure under the slicing approach

Lower than average trading volumes except for HY

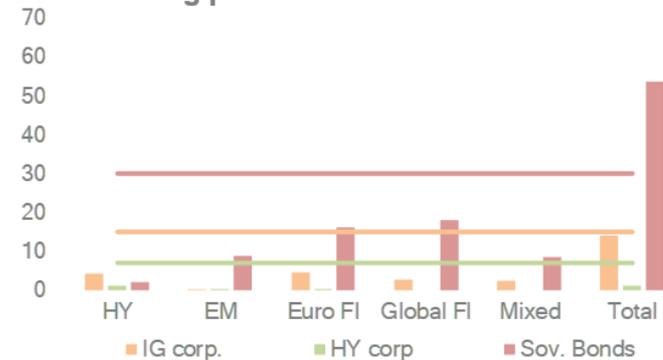


Note: Selling pressure in EUR bn. The lines correspond to the average daily trading volume for each asset class.

Source: ESMA.

Selling pressure under the waterfall approach

Lower selling pressure



Note: Selling pressure in EUR bn. The lines correspond to the average daily trading volume for each asset class.

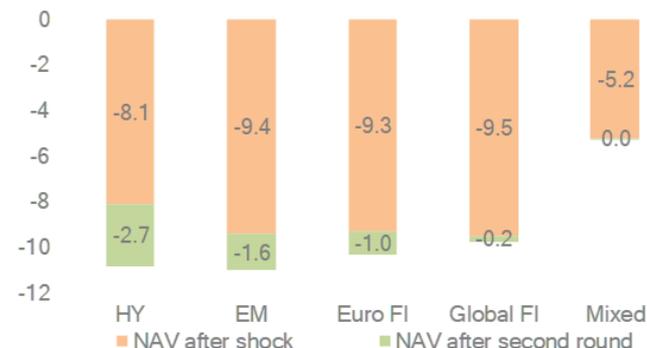
Source: ESMA.

Simulation results: Second-round impact on markets, prices

Step 5: Second-round effects on markets and prices

- Impact: Second round further reduces NAV
- Rounds 1 vs 2: Initial redemption shock is key driver for NAV decline and outflows
- Slicing vs waterfall: Larger effect under slicing, waterfall close to zero
- Liquidation strategies: Large impact on composition of asset sales; mixed and waterfall strategies result in lower sales of less liquid assets (mixed strategy uses cash first and then slicing)

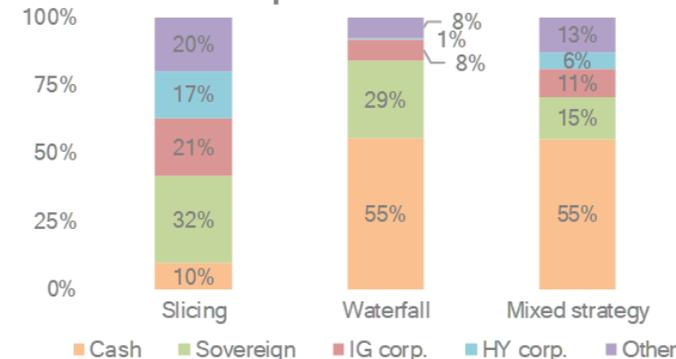
Decline in NAV under the slicing approach
Second round effects larger for HY



Note: Change in NAV by fund style resulting from the redemption shock and second round effects.
 Sources: Morningstar, ESMA.

Composition of sales

Differences in composition



Note: Composition of asset sales by liquidation strategy.
 Sources: ESMA.

Keys takeaways, and way forward

Funds: Most EU bond and mixed funds largely resilient to severe redemption shocks

- Most funds have enough liquid assets to meet redemptions
- Vulnerabilities, esp. funds exposed to less liquid assets (HY, EM)

Markets: Selling pressure from funds can generate sizeable market impact

- Under slicing approach, impact of 50 to 150 bps on most markets when shocks used in isolation, cumulative impact up to 400 bps for HY bonds
- Liquidation strategy determines size of market impact

Future enhancements: Specific shocks, extreme scenarios, wider impact

- Specific shocks: Model as basis for dedicated analysis of specific shocks (e.g. downgrade of BBB-rated bonds or CLOs, real estate price collapse)
- Extreme scenarios: Option of simulating more extreme scenarios, across markets or asset-specific (e.g. monthly, rather than weekly shocks)
- Wider impact: System-side impact simulation on basis of macro scenario



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