

Financial stability

Fund stress simulation in the context of COVID-19

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Summary

During the COVID-19-related market stress in 1Q20, investment funds faced a significant deterioration of liquidity in some segments of the fixed income markets combined with large-scale investment outflows from investors. In May, the ESRB issued a recommendation to ESMA requesting a focused supervisory engagement with investment funds exposed to asset categories that were affected by the liquidity stress. This joint supervisory exercise between ESMA and the NCAs took the form of a data-driven assessment of the impact of the liquidity crisis on funds, and an assessment of funds' preparedness for future shocks, involving STRESI exercises under several assumptions. This article presents the results of the stress simulation: while funds have been resilient to the market stress, the fund simulation also highlights existing vulnerabilities. In its response to the ESRB, ESMA concluded that funds needed to enhance their preparedness.

Introduction

The COVID-19 related market stress in 1Q20 led to large market corrections, high volatility and a sudden increase in liquidity risk across the financial system, including in some segments of the investment fund sector. The market stress also brought out inherent valuation issues in asset markets. While the financial system has been resilient during this period, in part thanks to the actions of central banks and regulators around the world, it is prudent to assess the preparedness of the investment fund sector for further liquidity stress episodes.

Against this background, the ESRB issued a recommendation to ESMA suggesting that ESMA and the relevant NCAs across Europe undertake a focused supervisory engagement with investment funds exposed to asset categories that were affected by the liquidity stress, such as corporate debt and real estate (ESRB, 2020). The main objective of this exercise was to assess the preparedness of EU investment funds in case of a resumption of liquidity stress.

ESMA published the results of this supervisory engagement in November (ESMA, 2020). The

report includes an analysis of the impact of the liquidity crisis on funds at the onset of the COVID-19 pandemic, between 17 February and 31 March 2020. The report also contains an assessment of the current preparedness and resilience to a future shock.

This article specifically presents ESMA's (2019) assessment of the resilience of funds exposed to corporate bonds, based on ESMA's STRESI framework. In this context, the quantitative information reported by asset managers was used as input to simulate the impact of liquidity stress similar to the COVID-19 related stress in 1Q20.

Background

COVID-19 related market stress

In 1Q20, the EU investment fund industry faced a significant deterioration of liquidity in some segments of the fixed income markets combined with large-scale investment outflows from investors. Redemption demands were significant for most fund categories, with outflows of up to 4 % for bond funds and especially those exposed

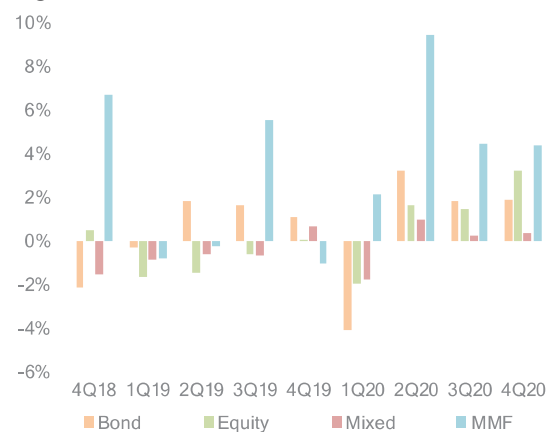
¹³³ This article was written by Naima Asmane-Boudali, Massimo Ferrari and Jean-Baptiste Haquin.

in less-liquid assets, such as corporate HY bonds, which faced cumulative redemptions of 5 % in a deteriorating liquidity environment.

RA.1

Fund flows

Significant outflows in 1Q20



Note: EU-domiciled funds' quarterly flows, in % of NAV.
Sources: Refinitiv Lipper, ESMA.

As market liquidity plummeted in some segments of the fixed income markets during the market turmoil in March and April, some asset classes were subject to high valuation uncertainty. Considering the deterioration in market liquidity and rising redemption requests, asset managers used tools such as gates and swing pricing, although there is significant variation in the availability of those tools across EU jurisdictions. A small number of funds resorted to suspensions of redemptions. Suspensions of redemptions increased especially for UCITS in March, mainly for bond funds exposed to corporate bonds (around EUR 22 bn of NAV).

ESRB Recommendation on investment fund liquidity

Against this background, the ESRB Recommendation suggested focusing on two market segments.

- Bond and mixed funds with significant exposure to corporate debt: Redemption pressures from open-ended funds with short redemption periods could result in fund managers selling less-liquid assets quickly, thereby contributing to a deterioration in liquidity of the underlying assets, and adverse spillover effects on other financial institutions.

- Real estate funds: Future redemptions could contribute to downward pressure on real estate valuations if accompanied by real estate asset sales in an environment of low transaction volumes. This could have adverse implications for other financial institutions that have exposures to real estate, including those that use real estate as collateral for lending.

In response, ESMA coordinated a data collection exercise with the NCAs¹³⁴. They collected data from asset managers on the first episode of the crisis (from 17 February to 31 March 2020) and on the situation at the end of June 2020:

- quantitative information on their portfolios, their compositions by rating and asset classes, the type of asset sold to meet redemption and the liquidity profile by maturity;
- qualitative information on the use of LMTs and the difficulties encountered over the reporting period, especially regarding valuation.

To assess the resilience to future shocks, ESMA used the quantitative information collected as input to its stress simulation (STRESI) framework. Since this approach is based on the availability of high-quality liquid assets (HQLA), it was not deemed appropriate for real estate funds (while they can hold significant amounts of cash, assessing the redemption shock against this cash position only would have had less added value). Instead, ESMA used the data collected on real estate funds' portfolio liquidity profiles (i.e. percentage of the fund's portfolio that is capable of being liquidated over a certain period) and redemption profiles (i.e. the shortest period within which the invested funds could be withdrawn or investors could receive redemption payments) to assess the impact of a redemption shock on the portfolio (RA.2).

RA.2

Assessment of real estate investment funds Real estate investment funds exposed to liquidity mismatches

NCAs collected data on open-ended real estate investment funds with a threshold set EUR 500 m of AuM. In jurisdictions where more than 10 funds were above EUR 500 m of AuM, the reporting threshold was set at EUR 1 bn. The resulting sample consists in 92 real estate AIFs from 13 jurisdictions with a total of EUR 294 bn AuM, representing 31 % of the EU sector in February 2020.

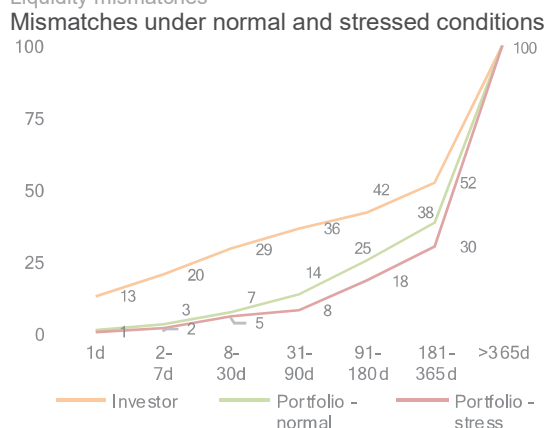
¹³⁴ Based on the reporting criteria, 13 NCAs reported data for funds exposed to corporate debt.

To analyse potential liquidity mismatches due to a redemption shock, managers reported data on the portfolio liquidity and the investor liquidity profiles, as defined in the AIFMD guidelines, under both normal and stressed market conditions.

- **Investor liquidity:** Managers divided the NAV of the AIF into time periods, depending on the shortest period within which the invested funds could be withdrawn or investors could receive redemption payments, taking into account gates when applicable.
- **Portfolio liquidity:** This means the percentage of the fund portfolio that can be liquidated and settled within each of the liquidity periods specified while the fund remains in compliance with its investment objective and policy, and other applicable rules, including treating remaining investors fairly.

This analysis pointed to a potential liquidity mismatch: at the aggregate level, investors can redeem up to 20 % of the NAV within a week, while less than 2 % of the assets can be liquidated within this time frame. This especially holds for real estate investment funds offering daily redemption, which should be able to redeem 38 % of their investors within 1 day on average, while less than 4 % of their portfolio can be liquidated within this timeframe. This assessment is valid under both normal and stressed conditions: owing to the illiquid nature of the assets, the difference between the normal and stressed assessments is limited overall (RA.3).

RA.3
Liquidity mismatches



Note: Investor and portfolio liquidity profiles of real estate funds, in % of NAV. Funds offering daily to annual redemptions. x-axis: time to liquidate portfolio assets (portfolio liquidity) and delay for investors to redeem their fund shares (investor liquidity); y-axis: % of fund NAV. Sources: NCAs, ESMA.

different buckets representing different degrees of liquidity.

RA.4
STRESI HQLA
Liquidity weights by asset type

Asset type	CQS1	CQS2	CQS3 < CQS3
Government bonds	100	85	50
Corporate	85	50	50
Securitized	75	0	0
Equities	50	50	50
Cash	100	100	100

Note: CQS1 refers to AAA to AA ratings, CQS2 to A ratings, CQS3 to BBB ratings and < CQS3 any rating below BBB-. Sources: European Banking Authority, ESMA.

ESMA uses liquidity weights from the Basel Committee, according to which liquidity is based on the asset type (cash, corporate bond, equity etc.) and the credit rating, although other types of weights could be used. The HQLA measure can be applied at the security level (i.e. each security is given a liquidity weight) or by broad asset class.

When liquidity is measured through the bucketing approach, the amount of liquid assets is compared with stressed outflows through a redemption coverage ratio (RCR). If $RCR > 1$ then the fund is resilient, since it has enough liquid assets to cover the redemption shock. If $RCR < 1$, the fund needs to sell less-liquid assets to meet redemption demands from investors.

Redemption shock

ESMA and the NCAs used two sets of redemption shocks to assess the resilience of the funds in the sample. ESMA staff calibrated a redemption shock on the basis of the data collected and assumptions derived from the observation of what happened during the COVID-19 related market stress in February and March 2020. The stressed outflows used in the scenario are based on the data reported. This is the highest of:

- the historical shock based on data collected on redemption requests;
- the historical shock, defined as the highest redemption rate experienced over the period 2017–2019;
- fund redemptions between February and March 2020 as a consequence of the COVID-19-related market stress;

ESMA STRESI: EU funds more vulnerable

HQLA approach

The ESMA STRESI approach is to assess resilience based on liquidity buckets (RA.4). Assets in the portfolio of funds are classified in

— the hypothetical level of redemptions assumed by fund managers in their internal stress simulation, if available.

When none of these data are available, a redemption shock of 20 % is considered. Unlike previous STRESI exercises, this takes into account gating arrangements, when applicable. For example, the redemption shock will be limited to 5 % if there is a gating arrangement that limits the redemptions accepted on the fund valuation to 5 %.

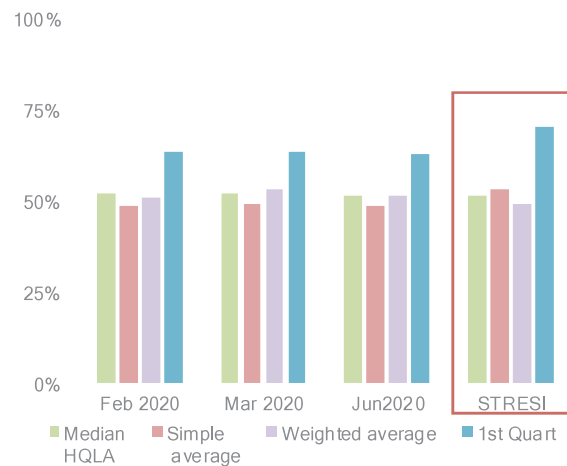
A second redemption shock scenario was defined by NCAs considering fund characteristics, such as the type and the composition of the investor base or the type of portfolio assets, or based on the comparison with other funds.

Characteristics of the sample

NCAs collected data on funds with more than EUR 1 bn of exposure to corporate debt. The resulting sample consists of 367 UCITS and 174 AIFs.

- UCITS in the sample are multi-asset funds (e.g. more than 5 % equity on average) predominantly exposed to corporate debt (68 %) with a significant proportion of BBB (19 %) and HY (20 %) corporate bonds.
- AIFs in the sample hold around 50 % of corporate debt. The proportion of HY bond holdings (5 %) was significantly smaller than that of UCITS.

At the starting point of the simulation, in June, the level of HQLA was significantly higher in AIFs (69 %) than in UCITS (53 %). As a comparison, ESMA's 2019 STRESI report found HQLA measures above 50 % for all types of UCITS except HY and EM bond funds.



Note: HQLA distribution of UCITS funds, in % of investment. Sources: NCAs, ESMA.



Note: HQLA distribution of AIFs, in % of investment. Sources: NCAs, ESMA.

When differentiating HQLA levels by the redemption frequency of the funds in the sample, most funds analysed, and in particular funds offering daily redemptions, show HQLA levels above 50 % of the respective investments.

RA.5
Levels of HQLA
High levels of HQLA on average
UCITS

RA.6
HQLA vs redemption frequency (%)
Potential liquidity mismatches

HQLA

Redemption frequency	< 25 %	25–50 %	50–75 %	> 75 %
UCITS				
Daily	21	24	42	12
Weekly	0	0	0	—
Other	0	—	—	—
Total	21	24	42	12
AIFs				
Daily	7	16	37	18
Weekly	1	—	1	3
Fortnightly	1	—	—	—
Monthly	6	1	2	3
Quarterly	1	1	1	—
Annually	1	—	—	—
Other	—	1	1	—
Total	16	18	42	24

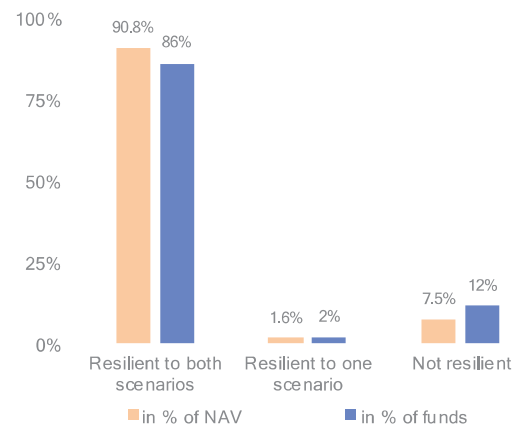
Note: Distribution of funds by redemption frequency, HQLA buckets and fund type, as of June 2020.
Sources: NCAs, ESMA.

Results

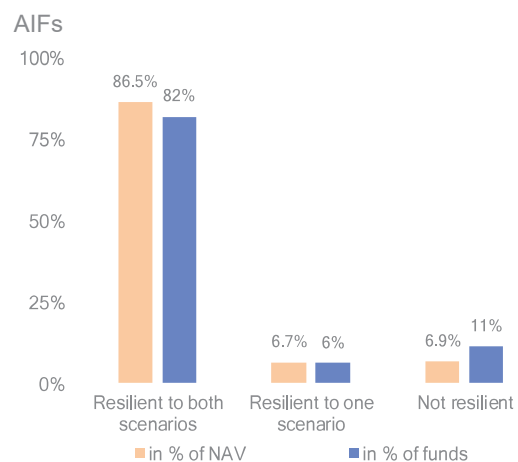
The average weekly redemption shock applied in this exercise by ESMA is around 22 %, while the shocks applied by NCAs varied across fund jurisdictions (27 % on average), thus reflecting NCA assessments.

Overall, we find that more than 86 % of AIFs and 90 % of UCITS are resilient to the shocks applied in both the ESMA and the NCA scenario.

However, for UCITS the share of funds with RCR < 1 (9 % in terms of NAV) is significantly higher than in the overall results of the 2019 STRESI exercise for all bond funds categories (3 % on average) except HY funds (41 %).



Note: Resilience of UCITS funds. RCR below one for potentially not-resilient funds.
Sources: NCAs, ESMA.



Note: Resilience of AIFs. RCR below one for potentially not-resilient funds.
Sources: NCAs, ESMA.

Interpretation of the liquidation strategy

The assumption underlying the stress simulation is that the liquidity stress is so severe that the manager can only sell the most liquid assets at their market value. Based on the simulation results, 14 % of AIFs and 9 % of UCITS would have to suspend redemption or to liquid assets with a discounted price. This is known as the ‘waterfall approach’: assets are liquidated in descending order based on their liquidity weights. Funds use cash first to meet redemptions, then IG sovereign bonds and IG corporate bonds, and then HY bonds. However, the data collected pointed to a ‘vertical slicing’ approach, with funds saving cash on average and maintaining the composition of their portfolio by selling assets pro rata (RA.8).

RA.7
STRESI results
Funds overall resilient
UCITS

RA.8

Liquidation strategy

Evidence suggests vertical slicing

Comparing portfolio composition between mid-February and end-June shows that for both UCITS and AIFs portfolio composition remained broadly stable.

During the market stress in February and March, both UCITS and AIFs increased their cash positions, while decreasing especially their portfolio shares in sovereign, IG and HY (especially UCITS) bond positions. In particular, sales of portfolio positions also occurred in less-liquid asset classes. This behaviour suggests a 'vertical slicing' liquidation strategy, which makes it possible to retain the desired level of liquidity following the redemption requests and leave the characteristics of the portfolio unchanged following the sales. These portfolio changes reversed between end-March and end-June.

RA.9

Portfolio changes (%)

Portfolio composition stable

	UCITS	AIFs
Cash	1.0	1.8
Sovereign bond	-3.8	-1.4
AAA-AA corporate	-1.1	-0.9
A corporate	-1.4	-0.7
BBB corporate	-2.9	-1.3
HY corporate	-4.2	-0.7
Equity (regulated market)	-1.5	-1.5
Equity (unregulated market))	0.0	0.0
Collective investment undertakings liquid in 7 days	0.1	-0.6
Loans	-0.2	-1.2
Other corporate	-1.4	-0.1
Unrated corporate	-0.7	-0.1

Note: Portfolio rebalancing across types of instruments (%).
Sources: NCAs, ESMA.

From a fund perspective, vertical slicing is generally the preferred option, as it is in line with the equal treatment of investors laid down in the Regulation. Otherwise, leaving investors would be repaid through the sale of HQLA and remaining investors would keep the less-liquid part of the portfolio.

In contrast, STRESI generally assumes a worst-case scenario in which the possibility of redeeming less-liquid assets is limited and a vertical slicing strategy is not possible. In the S framework, this can nevertheless be analysed in combination with another scenario, in which ESMA assumes that funds maintain vertical slicing and sell less-liquid assets under very stressed market conditions, thus contributing to the market impact through fire sales.

Conclusion

One objective of the STRESI framework was to use the outcome of supervisory stress simulations to inform asset managers and supervisors, as part of their supervisory analysis, to assess the potential need for mitigating actions.

In the context of the ESRB's Recommendation, supervisors collected a large set of data to analyse the impact of the liquidity stress on funds in the sample: STRESI was used to complement this stocktaking exercise, and contribute to the assessment of funds' preparedness for a potential new stress episode.

The results of the ESMA 2020 STRESI exercise show the overall resilience of the sample to liquidity stress, although the proportion of funds facing liquidity issues is higher than at the onset of the COVID-19 related market stress.

This can be explained by the fact that the COVID-19-related market stress was concentrated over a short period of time, amid significant government and central bank interventions that provided support to the markets in which these funds invest.

Finally, this exercise was an opportunity to review some assumptions and especially the liquidation strategy. Data reported indicate a vertical slicing approach, which is generally considered favourable for investor protection but may not be possible in all market conditions.

References

ESMA (2019), [Stress Simulation For Investment Funds](#), ESMA, Paris.

ESMA (2020), [Report – Recommendation of the European Systemic Risk Board \(ESRB\) on liquidity risks in investment funds](#), November.

ESRB (2020), [Recommendation 2020/4 on liquidity risks in investment funds](#), May.