



European Securities and  
Markets Authority

# Report

## Recommendation of the European Systemic Risk Board (ESRB) on liquidity risk in investment funds



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# 1. Executive Summary

## Reasons for publication

On 6 May 2020, the European Systemic Risk Board (ESRB) published a recommendation to address liquidity risk in investment funds (the “ESRB recommendation”<sup>1</sup>). The ESRB recommendation requests that ESMA:

1. coordinates with the National Competent Authorities (NCAs) to undertake a focused piece of supervisory exercise with investment funds that have significant exposures to corporate debt and real estate assets to assess the preparedness of these two segments of the investment funds sector to potential future adverse shocks, including any potential resumption of significant redemptions and/or an increase in valuation uncertainty; and
2. reports to the ESRB on its analysis and on the conclusions reached regarding the preparedness of the relevant investment funds.

This report sets out ESMA's analysis and conclusions on the preparedness of the investment funds that were reviewed and presents five priority areas identified to enhance the preparedness of funds that have significant exposures to corporate debt and real estate assets to potential future adverse shocks.

## Background

In the wake of the initial impact of the COVID-19 outbreak on markets, the EU investment fund industry faced a significant deterioration in liquidity in some segments of the fixed income markets combined with large-scale investment outflows from investors. Redemption demands in a deteriorating liquidity environment were particularly challenging for funds that were invested in less liquid assets, such as corporate HY bonds and EM bonds. EU MMFs were particularly affected due to heightened redemptions on the liability side, as part of the ‘dash for cash’, while on the asset side the liquidity of commercial paper markets deteriorated quickly.

Some asset managers decided to suspend the redemption of their funds, mainly because of valuation uncertainty but in some cases also because of outflows. Between the second half of March and May around 140 EEA funds had to suspend redemptions temporarily. Some corporate bond exchange traded funds (ETFs) traded with unusually large discounts compared with the reference basket, reflecting liquidity issues in underlying assets in March. Since early April, the liquidity profile of funds has improved across fund types, with a surge in inflows and a general improvement in performance. The developments since early April have to be seen in the context of massive policy responses – fiscal, monetary and regulatory – in the EU and elsewhere which aimed to mitigate the economic impact of the COVID-19 pandemic.

Against this background, the ESRB has identified two segments as particularly high priority for enhanced scrutiny from a financial stability perspective – funds with significant exposures to

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<sup>1</sup> [Recommendation of the ESRB on liquidity risk in investment funds \(ESRB/2020/4\)](#)

corporate debt and real estate The ESRB is providing the following rationale in recital (7) and (8) of its recommendation:<sup>2</sup>

*“(7) The first of these segments is investment funds with significant exposures to corporate debt. Shortly following the onset of COVID-19 pandemic, there were significant redemptions from investment funds investing in corporate debt. In addition, investment funds hold a significant proportion of the stock of non-financial corporate bonds outstanding in the Union. Any future redemptions 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 conditions in corporate debt markets. This could have adverse spill over effects on other financial institutions that have exposures to these assets – such as insurance companies, pension funds or banks – or an adverse impact on the cost and availability of market-based financing for non-financial corporations.*

*(8) The second segment identified by the ESRB as a particularly high priority area for enhanced scrutiny from a financial stability perspective is investment funds with significant exposures to real estate. The public health restrictions necessary to contain the spread of COVID-19 could result in a reduction in the volume of real estate market transactions and an increase in valuation uncertainty. Real estate investment funds are estimated to hold approximately one-third of the Union’s commercial real estate market. Future redemptions from investment funds that have significant real estate holdings 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 to the ESRB Recommendation, ESMA coordinated a supervisory exercise which included NCAs collecting data on funds exposed to corporate debt and funds exposed to real estate and reporting the results to ESMA. On this basis, ESMA’s assessment is focussing on potential future redemptions and/or valuation uncertainty shocks and considers whether additional actions are needed. This assessment is based on individual data and is micro prudential in nature. However, similar to its Guidelines on liquidity stress testing<sup>3</sup>, ESMA considers that reducing the liquidity and valuation risks at the level of the investment fund may reduce the likelihood of funds disposing of assets at significant discounts in order to service redemptions (‘fire sales’). Fire sales by a material proportion of funds would be likely to move asset prices, potentially affecting financial stability.

## **Main results**

The funds exposed to corporate debt and real estate funds under review overall managed to adequately maintain their activities when facing redemption pressures and/or episodes of valuation uncertainty. The analysis of their behaviour during the market stress linked to the COVID-19 pandemic revealed that only a limited number of the analysed funds suspended subscriptions and redemptions while the vast majority was able to meet redemptions requests and maintain their portfolio structure.

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<sup>2</sup> Recommendation of the ESRB on liquidity risk in investment funds (ESRB/2020/4)

<sup>3</sup> Guidelines on liquidity stress testing in UCITS and AIFs (ESMA34-39-882)

However, these results should be interpreted with caution since the redemption shock linked to the COVID-19 pandemic was concentrated over a short period of time, amid significant government and central bank interventions which provided support to the markets in which these funds invest.

The answers to the data collection also show important areas with weaknesses which need addressing: (i) some funds presented potential liquidity mismatches due to their liquidity set up (e.g. a combination of high redemption frequency, no/short notice periods and no liquidity management tools ("LMTs") in the case of funds investing in asset classes either illiquid by nature or whose liquidity may recede during a period of market stress), and (ii) only a few funds have adjusted their liquidity set-up according to the pursued investment strategy and in light of the liquidity issues encountered (e.g., introduction of LMTs, adaptation of the redemption frequency and notice period)<sup>4</sup>.

Funds were broadly able to maintain their portfolio structure when meeting redemptions. This means that they also sold their less liquid portfolio assets; thus they were not creating a first-mover advantage for investors redeeming their fund shares early. However, from an aggregate perspective, many funds selling less liquid assets at the same time may lead or contribute to wider market disruptions.

Concerns around the valuation of portfolio assets have clearly emerged, especially for real estate funds for which the crisis could have a more significant impact over the longer term. Moreover, real estate funds do not frequently adopt LMTs in their liquidity set-up. Additional risks arise from loan covenants, i.e. contractual obligations relating to loans received by managers that may trigger fire sales and have a pro-cyclical effect. Asset valuation issues have also been reported for funds invested in corporate debt, which have impacted liquidity risk management and asset valuation processes of the management companies concerned.

Against this background, fund managers authorised under UCITS and AIFM Directives should enhance their preparedness to potential future adverse shocks that could lead to a deterioration in financial market liquidity and valuation uncertainty (valuation procedures, alignment of the liquidity profile and redemption policy, use of special arrangements, stress tests). Continued oversight by NCAs is also of utmost importance. In this respect, it is also important to continue promoting supervisory convergence at EU level on the way the compliance with the obligations arising from the relevant regulatory framework is supervised at national level.

The following priority areas have been identified to enhance the preparedness of the funds.

**Priority area 1 – Ongoing supervision of the alignment of the funds' investment strategy, liquidity profile and redemption policy.** Market participants are responsible for ensuring the alignment between the liquidity profile of funds' investments and their redemption policies. In order to supervise compliance with rules on liquidity risk management, NCAs should continue their active engagement with, and supervision of, their market participants. Misalignments between the liquidity profile of funds' investments and their redemption policies should be corrected in a timely

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<sup>4</sup> It should be underlined that the introduction of these measures may take some time, as national provisions may provide for different requirements to be satisfied prior to their adoption (e.g. informing investors, obtaining an authorisation by the regulator, etc.).

manner<sup>5</sup>. In the context of the ESRB recommendation, this applies in particular to the funds analysed in this exercise if potential misalignments are confirmed by further analyses carried out by NCAs. This monitoring should be taking into account all information at their disposal (in particular the fund liquidity profile established under the AIFMD reporting) and insights gained through their ongoing dialogue with management companies. Management companies should be able to justify the liquidity set-up of their funds, at the authorisation phase or during NCAs supervisory actions (surveillance of funds, thematic reviews, on-site and off-site inspections). Particular attention should be paid to funds investing in less liquid or illiquid assets.

**Priority area 2 – Ongoing supervision of liquidity risk assessment.** As part of their ongoing supervision of management companies, NCAs should supervise the liquidity risk assessment by management companies. Particular attention should be paid to supervising that management companies in their liquidity risk assessment comply with their obligation to take all factors into account that could have an impact on funds liquidity or that could trigger unwanted sales of assets, such as (i) margin calls which may increase cash needs in case of renewed heightened market volatility, and (ii) loan covenants in the REIFs. Furthermore, all relevant items on the liability side of the fund balance sheet, including items other than redemptions, should be subject to liquidity stress tests, as stated in the Guidelines on liquidity stress testing in UCITS and AIFs<sup>6</sup>.

**Priority area 3 – Fund liquidity profiles.** In the context of the AIFMD review, additional specifications on how liquidity profiles should be established and reported as part of the AIFMD reporting should be introduced. This includes (i) on the asset side how to determine a realistic and conservative estimate of which percentage of the fund portfolio can be liquidated (estimate for each asset class based on reliable methodology and data), and (ii) on the liability side, how to take into account arrangements with respect to gates and notice periods in the determination of investor liquidity profiles. These data are important to ensure necessary information on liquidity profiles and to support a risk-based approach in the supervision of liquidity risks mentioned in Priority area 1.

In its letter to the European Commission with regard to the review of the AIFMD<sup>7</sup>, ESMA called for "*greater harmonisation of the UCITS and AIFMD frameworks*", and in particular, the introduction of a UCITS reporting framework to support their risk-based supervision<sup>8</sup>. When such UCITS reporting is introduced, a consistent approach should be applied to both UCITS and AIFMD frameworks in particular in relation to the reporting of liquidity profiles. Therefore, this priority area 3 equally applies to UCITS.

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<sup>5</sup> The measures envisaged to remedy liquidity risks identified may require initiating an orderly process involving administrative milestones to inform and obtain the investors' consent, where applicable (e.g. introduction of LMTs, modification of the redemption frequency or adaptation of the fund's strategy).

<sup>6</sup> Guidelines on liquidity stress testing in UCITS and AIFs (ESMA34-39-882): "*Understanding liquidity risks - A manager should have a strong understanding of the liquidity risks arising from the assets and liabilities of the fund's balance sheet, and its overall liquidity profile, in order to employ LST that is appropriate for the fund it manages*" and "*Stress testing fund liabilities to determine the effect on fund liquidity - LST should incorporate scenarios relating to the liabilities of the fund, including both redemptions and other potential sources of risk to liquidity emanating from the liability side of the fund balance sheet*".

<sup>7</sup> Letter to the European Commission with regard to the review of the AIFMD (ESMA34-32-550).

<sup>8</sup> The ESRB recommendations on liquidity and leverage risks in investment funds (ESRB/2017/6) covers this topic in its Recommendation D on UCITS reporting, asking the European Commission to undertake a legislative initiative aiming to harmonise the UCITS reporting regime.

**Priority area 4 – Increase of the availability and use of liquidity management tools.** As indicated in the letter to the European Commission with regard to the review of the AIFMD<sup>9</sup>, ESMA reiterates its support for the ESRB recommendation<sup>10</sup> calling for a harmonised legal framework to govern the availability of additional liquidity management tools for fund managers in both the UCITS and AIFM frameworks. The legal framework should also include specifications on the required disclosures for the provision and use of LMTs to ensure greater protection and consistency for investors.

**Priority area 5 – Supervision of valuation processes in a context of valuation uncertainty.** As part of their ongoing supervision of management companies, NCAs should carry out further supervisory activities to ensure that management companies valuation procedures cover all market situations including valuation approaches for stressed market conditions.

The circumstances of delegated portfolio management should be taken into account to ensure that the team in charge of the valuation has sufficient expertise and access to information to analyse the reliability of the valuation sources it uses and establish a fair valuation of the portfolio.

## Contents

Section 2 explains the background to ESMA's work. Sections 3 details the scope of the exercise and section 4 the methodology used.

The results of the assessment for corporate debt funds and for real estate funds are detailed in sections 5 and 6 respectively. Section 7 presents the overall assessment.

## Next Steps

In response to the COVID-19 crisis, ESMA has reinforced its coordination role regarding investment fund supervision through the organisation of frequent exchanges with NCAs to discuss market developments and supervisory risks, in particular on liquidity issues. ESMA has also organised regular data collection on the use of LMTs by EEA UCITS and AIFs.

The actions related to the response to the ESRB recommendation to address liquidity risk in investment funds are part of this supervisory convergence work, with the aim to increase the preparedness of UCITS and AIFMs with significant exposures to corporate debt and real estate assets to potential liquidity and valuation shocks.

In particular, ESMA will follow-up with NCAs in relation to priority areas 1, 2, and 5, in order to foster supervisory convergence amongst NCAs in how they supervise firms' compliance with their obligations in this area. This will include sharing of experiences among NCAs in the areas of ongoing supervision of liquidity risk and valuation in stressed market conditions.

The increase of the availability of liquidity management tools in EU Member States (priority area 4) and further convergence in the establishment of liquidity profiles under the AIFMD (and future UCITS) reporting (priority area 3) are more fit to be taken forward in the context of the AIFMD

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<sup>9</sup> [Letter to the European Commission with regard to the review of the AIFMD \(ESMA34-32-550\)](#)

<sup>10</sup> [ESRB recommendations on liquidity and leverage risks in investment funds \(ESRB/2017/6\)](#)



review. The ESRB recommended to the European Commission to harmonise the legal frameworks for LMTs, which is supported by ESMA. Pending the recommended legislative harmonisation at EU level, some progress may already be achieved at national level on the availability and use of LMTs, in close coordination and cooperation with ESMA and NCAs. Moreover, on the establishment and reporting of liquidity profiles, additional specifications should be introduced in the context of any upcoming changes to the AIFMD reporting framework and extended to UCITS should a reporting regime be introduced for UCITS, as ESMA proposes.

From a financial stability perspective, ESMA considers that the above priority areas aiming at reducing the liquidity and valuation risks at the level of the investment fund should reduce the risk and the impact of collective selling by funds on the financial system. ESMA will continue to monitor this risk through regular assessments of the resilience of the fund sector. Stress simulations are one tool to assess the potential implications of correlated behaviour by funds beyond the individual level.

In this context, ESMA supports the development and operationalisation of the macroprudential framework for non-banks. This can especially build on the 2016 ESRB strategy paper on Macroprudential policy beyond banking and the ESRB Recommendation (ESRB/2017/6) on leverage and liquidity in investment funds. Actions taken in response to this Recommendation include the publication of Guidelines on Liquidity stress testing<sup>11</sup> in September 2019 and the ongoing work for the development of Guidelines on leverage limits under the AIFMD<sup>12</sup>. In this respect, ESMA also reiterates its support to the part of the said Recommendation calling for Union legislation to include « *measures to limit the extent to which the use of liquidity transformation in open-ended AIFs could contribute to the build-up of systemic risks or the risk of disorderly markets* ». Therefore, ESMA supports further initiatives to develop a macroprudential toolkit for investment funds which could be taken forward by the ESRB in conjunction with ESMA and NCAs.

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<sup>11</sup> [Guidelines on liquidity stress testing in UCITS and AIFs \(ESMA34-39-882\)](#)

<sup>12</sup> [Consultation Paper on Guidelines on Article 25 of Directive 2011/61/EU \(ESMA34-39-967\)](#)



## Abbreviations

ADL – Anti-Dilution Levies

AIF – Alternative Investment Fund

AIFM – Alternative Investment Fund Manager

AIFMD reporting: reporting defined under Articles 3(3)(d) and 24(1), (2) and (4) of the AIFMD

AUM – Assets Under Management – Total market value of investments that an entity manages

ETF – Exchange-Traded Fund

HQLA – High Quality Liquid Assets

HY – High Yield - Debt securities rated BB and below or equivalent minimum long term rating in Credit Quality Step 4 and below as set out in mapping tables in Annex III of <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02016R1799-20191224>

IG – Investment Grade - Debt securities rated BBB and above or equivalent minimum long term issuer rating in Credit Quality Step 3 and above as set out in mapping tables in Annex III of <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02016R1799-20191224>

LMTs – Liquidity management tools

LST – Liquidity Stress Testing

NAV – Net Asset Value – An entity's total assets less their liabilities

NCA – National Competent Authority

RCR – Redemption Coverage Ratio

REIFs – Real Estate Investment Funds

UCITS – Undertakings for Collective Investment in Transferable Securities

## 2. Background

1. This Report has been prepared in response to the recommendation by the ESRB for ESMA to assess the preparedness of investment funds that have significant exposures to corporate debt and real estate assets to potential future adverse shocks.
2. In particular, the ESRB recommends the following: “to allow for a targeted and timely exercise ESMA should coordinate with NCAs to:

*(a) identify the investment funds in the Union that have particularly large exposures to corporate debt and real estate markets and which are particularly important from a macroprudential perspective. By limiting the scope of the exercise to these funds this Recommendation seeks to ensure that the exercise can be carried out in the time available. ESMA may also want to consider other relevant characteristics in identifying funds, for example the redemption frequency and/or the degree of leverage;*

*(b) engage in a targeted way with the subset of investment funds identified under point (a) to help assess their current state of preparedness for an unexpected increase in redemptions and/or an increase in valuation uncertainty, including forming a view as to how these funds might respond to potential future adverse shocks in the short term;*

*(c) assess the preparedness of the corporate debt and real estate segments of the investment funds sector and consider whether any further actions are needed to enhance that preparedness. In particular, the assessment should focus on potential future redemption and/or valuation uncertainty shocks and consider whether additional action is needed – for example, additional guidance to either funds or supervisors regarding the use of liquidity management tools and/or dealing with valuation uncertainty.”*

## 3. Scope of the assessment

### **ESRB compliance criteria**

ESMA should coordinate with NCAs to identify the investment funds in the Union that have particularly large exposures to corporate debt and real estate markets and which are particularly important from a macroprudential perspective; in identifying funds, other relevant characteristics may be considered, for example the redemption frequency and/or the degree of leverage.

3. In order to identify a subset of investment funds in the Union that have particularly large exposures to corporate debt and real estate markets, and which are particularly important from a macroprudential perspective, ESMA and NCAs tested several combinations of thresholds in terms of exposures to those market segments. The objective was to strike a

balance between the coverage of the sample of funds and the sample size, in order to enable a targeted and timely exercise as recommended by the ESRB.

4. The coverage of the funds sample was measured by comparing the exposure to corporate debt and real estate assets of the funds in the sample with the exposure of all funds to these asset classes<sup>13</sup>.
5. ESMA and NCAs agreed on the following selection criteria<sup>14</sup>:
  - NCAs collected data on open-ended real estate funds with more than EUR 500 mn of assets under management (“AuM”) at the of end 2019 or as of 30 June 2020<sup>15</sup>, in jurisdictions where there were less than 10 funds above this threshold. Alternatively, in jurisdictions where more than 10 funds were above EUR 500 mn<sup>16</sup> of AuM, the reporting threshold was set at EUR 1bn;
  - open-ended corporate debt funds were selected if their exposure to corporate debt was above EUR 1 bn<sup>17</sup> at the end 2019 or as of 30 June 2020<sup>18</sup>;
  - Funds of funds<sup>19</sup> and MMFs were excluded from scope;
  - ETFs were included in scope.
6. ETFs were included in the scope of this exercise irrespective of their specificities (e.g. secondary market trading and the arbitrage mechanism). This allowed for a more comprehensive assessment of the impact of asset sales by corporate debt funds on the underlying market, including any aggravating or mitigating effects from ETFs.
7. However, ESMA acknowledges that ETFs also pose specific issues regarding liquidity, like the role of authorised participants or the interruption of the arbitrage mechanism. Such issues have been identified<sup>20</sup> but are outside of the scope of the ESRB Recommendation. More specifically, assessing ETFs’ specific features would require a dedicated data collection and methodology which would have to be considered separately.
8. ESMA and NCAs have developed a methodology based on a data collection and a questionnaire sent by NCAs to their market participants. On a practical level, NCAs were responsible for collecting data regarding UCITS domiciled in their country (“home UCITS”) and AIFs managed by AIFMs domiciled in the country of the NCA (“home AIFM”).

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<sup>13</sup> This methodology allows to take into account the assets acquired through leverage.

<sup>14</sup> The data collection was performed by the home NCA of UCITS/the home NCA of AIFMs.

<sup>15</sup> Please see the comments on practicalities below.

<sup>16</sup> Each EEA NCA made this assessment on the basis of the AuM of real estate funds managed by AIFMs domiciled their jurisdiction (see paragraph 8 for further details on the NCAs’ practical arrangements to identify funds for the purpose of the exercise).

<sup>17</sup> The exposure to corporate debt includes financial corporates and loans.

<sup>18</sup> Please see the comments on practicalities below.

<sup>19</sup> Defined, for the purposes of this exercise, as funds which assets invested in other funds exceed 50% of their assets.

<sup>20</sup> Can ETFs contribute to systemic risk? Report of the ASC, ESRB, June 2019.

9. The questionnaire sent to management companies of UCITS and AIFMs contained a first list of funds on which information had to be provided. NCAs had identified these funds based on the data collected through the AIFMD reporting at the end of 2019 and internal data on UCITS. Given the heterogeneity in the availability of UCITS data among NCAs and in order to take into account the latest data on AIFs, the management companies were asked to complete this first list of funds by including all funds which fulfilled the size criteria at the end of 2019 or as of 30 June 2020 (or at the most recent date before 30 June 2020 where the information was available).
10. The table below presents the global coverage of the subset of funds in the scope of this exercise, based on the detailed data by countries provided in the Annex.

**Table 1: Size of the sample**

	Real estate funds		Corporate debt funds	
		UCITS	AIFs	All corporate debt funds
<b>Total NAV (EUR bn)</b>	231.6	1251.9	815.4	2067.3
<b>Total AuM of AIFs (EUR bn)</b>	297.8	-	1319.9	1319.9
<b>Number of funds analysed</b>	92	367	174	541
<b>Number of NCAs involved</b>	13	12	9	13

Note: Coverage and size of the funds' sample analysed, NAV and AuM as of June 2020. NAV for both UCITS and AIFs in the sample. AuM for AIFs in the sample.  
Sources: NCAs, ESMA.

## 4. Methodology

### 4.1. Overview of the methodology

#### **ESRB compliance criteria**

ESMA should coordinate with NCAs to engage in a targeted way with the subset of investment funds identified to help assess their current state of preparedness for an unexpected increase in redemptions and/or an increase in valuation uncertainty, including forming a view as to how these funds might respond to potential future adverse shocks in the short term.

11. The assessment by ESMA and the NCAs with respect to the funds in the sample is covering the following topics:
- Topic A: analysis of how funds have reacted since the onset of the COVID-19 pandemic;
  - Topic B: analysis of the current situation;
  - Topic C: estimation of their resilience to a potential future shock;

- Topic D: conclusion on the assessment and on whether additional actions are needed to foster the asset managers industry preparedness
12. NCAs sent a questionnaire to the management companies of the funds under review to collect data and answers to relevant qualitative questions for UCITS and AIFs in the sample.
  13. NCAs provided their assessment on the four criteria explained above based on their analysis of the questionnaire and the insights from their supervisory monitoring in the context of the COVID-19 related market stress (e.g. *ad hoc* measures taken by asset managers, actions undertaken by NCAs during the market stress to foster the preparedness of the market participants)..
  14. In order to facilitate the collection of data, and to the extent possible, the questionnaire addressed to the management companies was drawn up on the basis of the AIFMD reporting.
  15. The following sections provide a detailed overview of the analysis performed for each topic.

#### **4.2. Information to assess how funds have reacted since the onset of the COVID-19 pandemic (Topic A)**

##### **ESRB compliance criteria**

##### **Information to assess for fund behaviour at the onset of the COVID-19 pandemic:**

- For funds with particularly large exposures to corporate debt this includes:
  - (i) the level of redemptions seen at the onset of the COVID-19 pandemic, when redemptions from a range of corporate bond funds were elevated;
  - (ii) how liquidity management tools were used at the time, including the specific tools activated by different fund types; and
  - (iii) what types of assets were sold to meet redemptions and in what manner (for example, by vertical slicing).
- For funds with particularly large exposures to real estate this includes:
  - (i) valuation uncertainty issues faced by real estate funds in different jurisdictions, if any;
  - (ii) the manner in which liquidity management tools have been used to date, including the specific tools activated; and
  - (iii) the size of redemption requests since the onset of the COVID-19 pandemic and the manner in which the funds identified have responded to these requests.

16. NCAs collected data to analyse fund behaviour during the period 17 February 2020 to 31 March 2020. The data cover the following areas:
  - evolution of portfolio composition between 17 February 2020 and 31 March 2020 (breakdown by ratings, asset classes, information on less liquid assets, positions in cash and cash equivalents);

- redemption levels compared to historical levels;
- availability, use and characteristics of special liquidity arrangements with a particular attention to suspensions;
- qualitative answers by fund managers on valuation issues and main drivers for redemptions; and
- cross-fund comparison by NCAs on the areas above.

17. In addition, for real estate funds the following information was requested:

- existence of material distortions with respect to incoming cash-flows (e.g. non-payment of rents); and
- existence of difficulties for the REIF in fulfilling significant covenants.

### 4.3. Information to assess the current state of preparedness (Topic B)

#### ESRB compliance criteria

##### Information to assess the current state of preparedness

- For funds with particularly large exposures to **corporate debt** this includes:
  - (i) the set of liquidity management tools available to the funds identified;
  - (ii) the manner in which fund managers themselves are preparing for any possible future adverse shocks;
  - (iii) the manner in which fund managers themselves would likely respond to a possible resumption in redemptions;
  - (iv) current liquid asset holdings of the funds identified; and
  - (v) the number and nature of investors in the fund (for example, retail versus institutional investors).
- For funds with particularly large exposures to **real estate** this includes:
  - (i) the structural characteristics of real estate funds (e.g. dealing frequency, notice periods, etc);
  - (ii) the set of liquidity management tools that is available to the funds identified;
  - (iii) the manner in which fund managers themselves are preparing for any possible future adverse shocks;
  - (iv) the manner in which fund managers themselves would likely respond to an increase in valuation uncertainty/increase in redemptions;
  - (v) the current liquid asset holdings of the funds identified; and
  - (vi) the number and nature of investors in the funds identified (for example, retail versus institutional investors).

18. In order to analyse the situation after the immediate COVID-19 related market stress, the following data were gathered by NCAs as of 30 June 2020, or the latest available date:

- fund portfolio composition as of 30 June 2020, including evolution since 31 March 2020;

- availability, use and characteristics of special liquidity arrangements as of 30 June 2020 and any changes or adjustments since 31 March 2020);
- fund liquidity risk management, including any changes or adjustments that occurred between 17 February and 30 June 2020;
- qualitative answers provided by the asset managers to qualitative questions (e.g. valuation issues, cash flows, any type of difficulties experienced and reported over the period of interest, etc.); and
- cross-fund comparison by NCAs on the areas above.

19. Likely responses by funds to a possible resumption in redemptions were also analysed through topic C.

#### 4.4. Estimation of resilience to a potential future shock (Topic C)

##### **ESRB compliance criteria**

(1) To allow for a targeted and timely exercise ESMA should coordinate with NCAs to:

(...) (c) assess the preparedness of the corporate debt and real estate segments of the investment funds sector and consider whether any further actions are needed to enhance that preparedness. In particular, the assessment should focus on potential future redemption and/or valuation uncertainty shocks and consider whether additional action is needed – for example, additional guidance to either funds or supervisors regarding the use of liquidity management tools and/or dealing with valuation uncertainty.

##### **Information to assess the current state of preparedness**

- For funds with particularly large exposures to **corporate debt** this includes:(...)
  - (iii) the manner in which fund managers themselves would likely respond to a possible resumption in redemptions; (...)
- For funds with particularly large exposures to **real estate** this includes:(...)
  - (iv) the manner in which fund managers themselves would likely respond to an increase in valuation uncertainty/increase in redemptions;

20. The assessment is conducted separately for real estate funds and funds exposed to corporate debts.

21. **Corporate debt funds:** resilience to a potential future shock was analysed by conducting stress simulations and stress scenarios calculated by NCAs and ESMA on the basis of the data on outflows and portfolio adjustments collected<sup>21</sup> and assumptions derived from the observation of what happened during the period of market stress in February and March 2020. As part of the assessment of the resilience to shocks, the quantitative information

<sup>21</sup> The data were collected at three different dates (17 February 2020, 31 March 2020 and 30 June 2020) to allow comparison between situations before, during and after COVID-19 related market stress.



collected was used as input to build indicators measuring the potential resilience to the resumption of outflows.

22. As part of the stress simulations, the High-Quality Liquid Assets (HQLA) approach has been applied to corporate debt funds in line with the framework developed for ESMA's fund stress simulation methodology (STRESI). The HQLA approach gives different weights to each asset type, which makes it possible to compute a liquidity index for each fund. This approach enables analytic handling of a combination of asset liquidity stress and redemption shocks – the situation observed during the first episode of the COVID-19 crisis.<sup>22</sup>
23. **Real estate funds:** potential liquidity mismatches are analysed by comparing the investor and portfolio liquidity profiles of REIFs. The investor and portfolio liquidity profiles provide an assessment of the liquidity of a fund on the liability and asset side respectively. The portfolio liquidity profile shows which percentage of the fund portfolio can be sold within predefined time periods. The investor liquidity profile indicates which percentage of fund shares can be redeemed by investors within the same time periods taking into consideration redemption dates, notice periods and gates where available. The comparison between the two liquidity profiles is a key indicator of potential liquidity mismatches.

#### **4.4.1. Corporate debt funds: HQLA approach and RCR**

24. Under the HQLA approach, portfolio assets are broken down into different buckets representing different degrees of liquidity. ESMA uses liquidity weights from the Basel Committee, where liquidity is based on the asset types (cash, corporate bond, equity etc.) and the credit ratings. ESMA is conscious that these weights<sup>23</sup> might be conservative, however, they allow a comparison between the positions as of 17 February 2020, 31 March 2020 and 30 June 2020.
25. The amount of liquid assets is compared with the stressed scenario on outflows (*redemption shock*) to estimate the Redemption Coverage Ratio (RCR). The RCR is calculated at the end of June 2020 to assess funds' resilience to a potential future shock:
- a)  $RCR > 1$ : an investment fund can be considered as resilient since it has enough liquid assets to cover the redemption shock;
  - b)  $RCR < 1$ : an investment fund may not have enough liquid assets to meet redemption demands from investors.

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<sup>22</sup> A more detailed description of the HQLA approach and is provided in ESMA's fund stress simulation report. See ESMA, "[Stress simulation for investment funds](#)", Economic Report, September, 2019.

<sup>23</sup> See ESMA, "[Stress simulation for investment funds](#)", Economic Report, September, 2019.

26. On the investor side, for each fund the weekly redemption shock tested is based on its redemption frequency and set equal to the maximum of<sup>24</sup> :

- the historical shock, defined as the highest redemption rate (expressed as percent of NAV) experienced over the period 2017-2019 (e.g. the highest cumulative 30 days redemption rate is considered for funds allowing for monthly redemptions);
- fund redemptions between February and March 2020 as a consequence of the COVID-19 related market stress;
- the hypothetical level of redemptions assumed by fund managers in their internal stress simulation, if available.

27. When none of these data are available, a redemption shock of 20% is considered.

28. A second redemption shock scenario is defined by NCAs considering fund characteristics, such as the type and the composition of the investor base, the type of portfolio assets or based on the comparison with other funds. The results of both ESMA and NCAs scenario are then compared.

29. Where information was available, gating arrangements were taken into account to limit the impact of the redemption shocks in the stress simulation.

#### **4.4.2. REIFs: Analysis of liquidity profiles**

30. For REIFs, potential liquidity mismatches due to a redemption shock were analysed by comparing the portfolio liquidity and the investor liquidity profiles.

31. These liquidity profiles were used to assess the impact of a redemption shock on REIFs.

**Table 2: Liquidity profiles**

Liquidity buckets	Percentage of portfolio capable of being liquidated and settled within:		Percentage of investor equity/share that can be redeemed within
	Normal market conditions	Stressed market conditions	
1 day or less			
2 – 7 days			
8 – 30 days			
31 - 90 days			
91 - 180 days			
181 – 365 days			
> 365 days			

32. Investor and liquidity profiles to be submitted (see Table 2 above) are defined based on the AIFMD guidelines<sup>25</sup>:

<sup>24</sup> For funds reporting daily redemption shocks the level of redemptions was multiplied by 5, with a cap at 20%. When managers report a scenario for weekly redemptions higher than 30%, the level is capped at 30%.

<sup>25</sup> See ESMA, “Guidelines on reporting obligations under Articles 3(3)(d) and 24(1), (2) and (4) of the AIFMD”.

- Investor liquidity: AIFMs should divide the NAV of the AIF among the periods indicated depending on the shortest period within which the invested funds could be withdrawn, or investors could receive redemption payments, as applicable. AIFMs should assume that they would impose gates where they have the power to do so but that they would not suspend withdrawals/redemptions and that there are no redemption fees;
  - Portfolio liquidity: The percentage of the fund portfolio which can be liquidated and settled within each of the liquidity periods specified (calendar days) whilst the fund remains in compliance with its investment objective and policy and other applicable rules, including treating remaining investors fairly <sup>26</sup>.
33. AIFMs have reported on behalf of the managed real estate funds the portfolio under both normal and stressed market conditions.
34. AIFMs should adopt a conservative approach when assessing portfolio liquidity under stressed market conditions, ensuring that the methodology used to report the data is aligned or more conservative than the one used in the risk management process and taking into account the time delay for having the proceeds of the sale available on a cash account if it has as a non-negligible impact on the liquidity profile of the fund.
35. An aggregate investor and portfolio liquidity profile for funds with similar redemption frequency is obtained as the weighted average of respective individual AIF investor and portfolio liquidity profiles <sup>27</sup>.

#### **4.5. Conclusion on the preparedness and consideration on whether additional actions are needed to foster the asset managers industry preparedness (Topic D)**

##### **ESRB compliance criteria**

ESMA should coordinate with NCAs to assess the preparedness of the corporate debt and real estate segments of the investment funds sector and consider whether any further actions are needed to enhance that preparedness. In particular, the assessment should focus on potential future redemption and/or valuation uncertainty shocks and consider whether additional action is needed – for example, additional guidance to either funds or supervisors regarding the use of liquidity management tools and/or dealing with valuation uncertainty.

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<sup>26</sup> Each investment should be assigned to one period only and such assignment should be based on the shortest period during which such a position could reasonably be liquidated at or near its carrying value.

<sup>27</sup> Relying on aggregate figures may hide individual risks, as funds with excess liquidity might compensate for funds with liquidity mismatch. To address this problem, in line with ESMA AIF ASR 2020, the liquidity profile does not allow for compensation. Where AIFs have excess liquidity, this is not taken into account when estimating the aggregate liquidity profile. See ESMA, Annual Statistical Report EU Alternative Investment Funds 2020.

36. To assess topic D, NCAs were invited to consider their assessment on topics A to C and the insights gained from their supervisory monitoring in the context of the COVID-19 related market stress (e.g. ad hoc measures taken by asset managers, and actions undertaken by NCAs during the crisis to foster the preparedness of market participants).

## 5. Assessment for funds with particularly large exposures to corporate debt

### **Key findings**

**Sample:** The analysis is based on 541 funds with large exposures to corporate debt. Funds are from 13 EU jurisdictions, with a total NAV of EUR 2.07tn at the end of June 2020.

**Flows:** Between February and March 2020 UCITS net outflows amounted to 5.9% of NAV. Outflows accounted for around one-third of the decrease in total NAV. Redemptions in UCITS are likely to have been driven by flight-to-safety behaviour. In contrast, the majority of AIFs with corporate debt exposures reported net inflows.

**Portfolio:** Investment grade corporate bonds represent around 40% of both UCITS and AIFs exposures. UCITS have increased their already sizable cash positions in the early phase of the COVID-19 crisis. Overall, the analysis of portfolio composition suggests that asset managers adjusted the size of their portfolio through vertical slicing, i.e. broadly keeping portfolio composition stable.

**LMTs:** Availability of LMTs differs across EU jurisdictions. Only a very limited number of UCITS funds suspended between February and March. Funds that used a swing pricing mechanism had on average a lower level of HQLA.

**Valuation uncertainty:** Some funds faced liquidity pressures accompanied by increased valuation uncertainty linked to stressed market conditions.

**Stress simulation:** The stress simulation identified pockets of vulnerability, i.e. some funds were not resilient to stress scenarios tested by ESMA and NCAs, with insufficient liquid assets to meet redemption requests. Weaknesses in stress testing procedures were identified, with some funds including no or too weak redemption shocks and/or no collateral stresses in their stress testing.

37. In accordance with the ESRB Recommendation, the current chapter presents the sample, describes how funds have reacted since the onset of the COVID-19 pandemic (Topic A),

assesses the current state of preparedness (Topic B), and presents an estimation of resilience to a potential future shock (Topic C).

## 5.1. Sample analysed by NCAs and ESMA

38. This section presents the characteristics of the sample and its relevance in the context of the ESRB Recommendation. NCAs collected data on open-ended UCITS and AIFs with more than EUR 1 bn of exposure to corporate debt. The resulting sample consists of 367 UCITS and 174 AIFs.
39. UCITS in the sample amount to a NAV of EUR 1.3tn in February 2020<sup>28</sup>, of which 7.8% related to ETFs (slightly above the average across the fund industry<sup>29</sup>). Most funds are very large (EUR 3.7bn NAV on average). They are multi-assets funds predominantly exposed to corporate debt (68%) with a significant part of BBB (19%) and HY (20%) corporate bonds<sup>30</sup>. Geographically, UCITS with large exposures to corporate debt are concentrated, with 80% of the funds (86% of NAV) in IE and LU.
40. AIFs in the sample have a total of EUR 1.3tn AuM in February 2020 (around 22% of fixed income and mixed AIFs) and a NAV of EUR 838bn<sup>31</sup>. They are holding around 50% of corporate debt. The portion of HY bond holdings (5%) was significantly smaller compared to UCITS. Most AIFs in the sample are not substantially leveraged (AuM to NAV ratio below 300% and low exposure to derivatives)<sup>32</sup>. The majority of AIF managers are domiciled in DE (62% of total AuM).

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<sup>28</sup> By comparison, the NAV of bond and multi-asset UCITS amounted to EUR 5tn at the end of 2019 according to the European Fund and Asset Management Association (EFAMA).

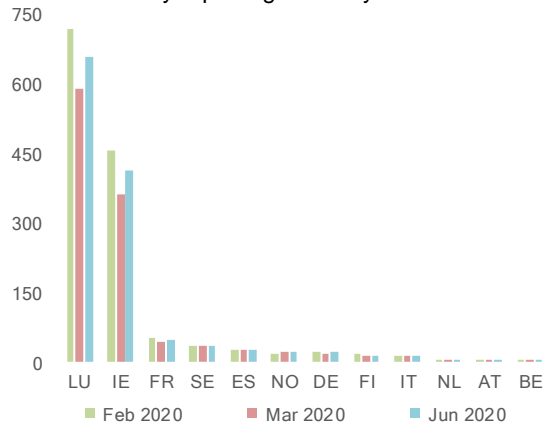
<sup>29</sup> ETFs represent 6.6% of EA funds NAV, Euro area investment funds statistics, second quarter of 2020, ECB.

<sup>30</sup> Together with IG and HY bonds also unrated corporate debt and structured products are considered.

<sup>31</sup> For AIFs both NAV and AuM are reported.

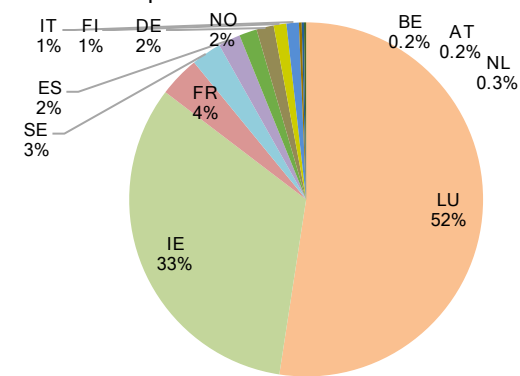
<sup>32</sup> While the regulatory definition of AuM under the AIFM Directive may differ from the exposures calculated under the commitment method, the combination of a AuM to NAV ratio lower than 300% and the low exposure to derivatives indicates that most of AIFs analysed are not substantially leveraged. An AIF with a leverage ratio calculated in accordance to the commitment method of less than three times its net asset value it is not considered as employing leverage on a substantial basis.

UCITS: NAV by reporting authority



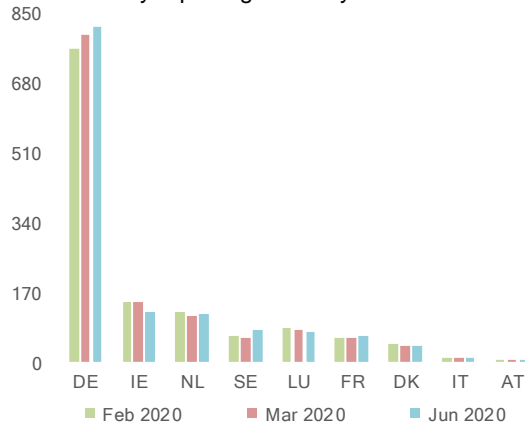
Note: NAV of UCITS funds exposed to corporate debt by reporting country. Sources: NCAs, ESMA.

UCITS: Composition in June 2020



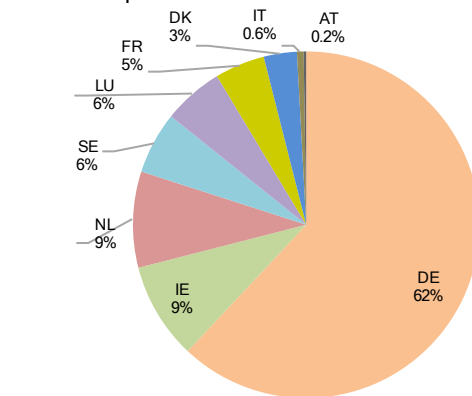
Note: NAV of UCITS exposed to corporate debt by authorising country in June 2020. Sources: NCAs, ESMA.

AIFs: AuM by reporting authority



Note: AuM of AIFs exposed to corporate debt by authorising country, in EUR. Sources: NCAs, ESMA.

AIFs: Composition in June 2020



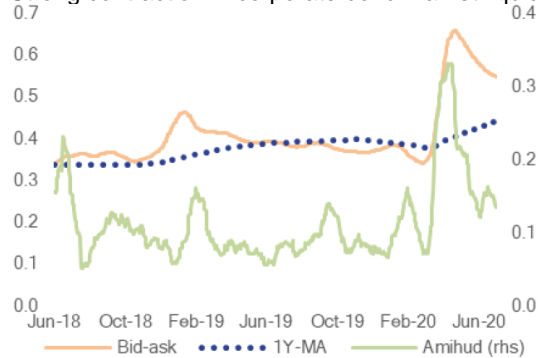
Note: AuM of AIFs exposed to corporate debt by authorising country in June 2020, in %. Sources: NCAs, ESMA.

## 5.2. Fund reaction to the market stress in February-March 2020 (Topic A)

### 5.2.1. Fund flows and portfolio composition

41. The COVID-19 related market stress in February and March 2020 was characterised by extremely volatile markets amid heightened risk aversion with increasing credit spreads, and a significant reduction in the liquidity of certain asset classes. Corporate bond market liquidity has been particularly affected –the bid-ask spread on corporate bonds increased by almost 20 basis points in March, with the Amihud coefficient following the same direction, partly reflecting forced sales from investors. As in other markets, the COVID-19 related market stress was concentrated over a short period of time, with sizable government and central bank interventions corporate bond liquidity improved significantly from April 2020 onwards.

Strong contraction in corporate bond market liquidity



Note: Markit iBoxx EUR Corporate bond index bid-ask spread, in %, computed as a one-month moving average of the iBoxx components in the current composition. 1Y-MA=one-year moving average of the bid-ask spread. Amihud liquidity coefficient index between 0 and 1. Highest value indicates less liquidity.  
Sources: IHS Markit, ESMA.

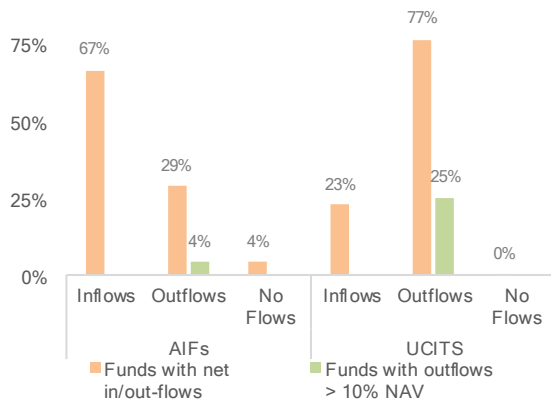
42. In this context, funds that invest in higher risk sectors, such as emerging markets and high-yield corporate bonds faced a combination of falls in asset valuation, low market liquidity and large-scale outflows from investors. This led to a decline of reporting UCITS NAV by 17% (EUR -238bn) and AIF NAV by 7% (EUR -62bn) from 17 February to 31 March 2020. Net outflows in UCITS represented 5.9% of the NAV (or around a third) of the NAV decline, with valuation effects explaining the remaining fall in NAV.
43. 25% of UCITS funds experienced net outflows above 10%. Flight-to-safety was the driver behind redemptions in 25% of the cases, while declining performance was also mentioned in 15% of the cases<sup>33</sup>. However, not all funds faced outflows and almost 40% of all funds in the sample experienced net inflows during this period<sup>34</sup>.
44. AIFs in the sample overall recorded small inflows, thus the overall decline in NAV of 7% is related to valuation effects. Only 4% of AIFs reported outflows higher than 10%. AIF managers experiencing redemptions reported liquidity needs of their clients as a potential driver.
45. Regarding performance, 90% of funds recorded negative returns, of which more than 60% below -5%<sup>35</sup>. Even though performance is generally not considered a decisive factor to explain redemptions in both UCITS and AIFs, we do not exclude that performance played a bigger role in redemptions than acknowledged by fund managers.

<sup>33</sup> The questions are separated, and the same fund may experience both redemption due to poor performance and flight to safety.

<sup>34</sup> As data quality issues are particularly important with flow data, the following assessment needs to be interpreted with some caution.

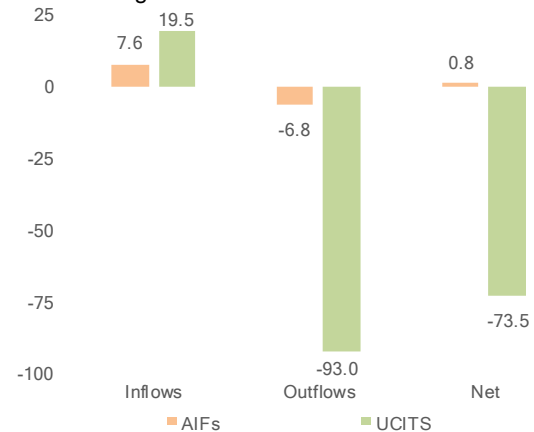
<sup>35</sup> Valuation uncertainty in corporate debt means that performance figures may need to be interpreted with caution.

Funds experiencing inflows and outflows  
100%



Note: Number of funds experiencing inflows and outflows between February and March 2020, in %.  
Sources: NCAs, ESMA.

Flows during the crisis



Note: Net redemption and subscription executed between 17 February and 31 March 2020, in EUR.  
Sources: NCAs, ESMA.

46. Funds investing in corporate debt generally hold part of their portfolio in liquid assets, including cash, and diversify their exposures to issuers in order to mitigate liquidity risk. In February, the main characteristics of the fund portfolio were:

- the proportion of sovereign debt varied between 18% for UCITS and 26% for AIFs;
- investment grade corporate debt represented around 37% of the portfolio for UCITS and 41% for AIFs;
- high yield corporate debt represents 20% of UCITS portfolio and 5% of AIFs;
- UCITS held significantly more cash than AIFs (5.7% versus 1.7%).

47. When analysing the portfolio composition of corporate debt funds between mid-February and the end of June 2020 the main conclusion is that funds experiencing outflows managed to maintain the composition of their portfolio broadly stable. This analysis suggests a liquidity management approach consistent with the “vertical slicing” of their portfolio, i.e. selling assets proportional to their investment allocation<sup>36</sup>. A vertical slicing approach reduces the risk of unfair treatment for remaining or redeeming investors. From a financial stability perspective, being able to sell less liquid portfolio assets also reduces the risk of creating a first-mover advantage for investors redeeming their fund shares early.

48. Initially, i.e. during February and March 2020, cash positions increased both for UCITS (+0.9%) and AIFs (+1.8%) experiencing outflows. The likely explanation is that, in a stress situation, funds build cash buffers while they can. They are also likely to hold cash due to a lack of investment opportunities. During February and March, funds also reduced their exposures to sovereign bonds, hence reducing funds’ exposures therein (-3.8% in UCITS and -1.5% in AIFs). On average, and despite HY market illiquidity issues, funds were able

<sup>36</sup> In contrast, horizontal portfolio slicing describes a situation where funds sell liquid holdings first to meet investor redemption requests.



to sell HY bonds to meet redemption requests. HY bonds positions decreased by 4.2pp in UCITS, suggesting an orderly selling of HY portfolio positions. Part of the decrease was also due to a valuation effect, although it is not possible to exactly determine the portion of valuation effects (see box below).

49. During the market recovery, between March and June, fund in the sample reverted to their pre-crisis portfolio allocation. Both UCITS and AIFs decreased their level of cash to their pre-crisis level. UCITS also globally re-invested in assets they previously sold. For example, UCITS which had suffered outflows, increased again their holdings of sovereign bonds (+ 1.4%) and BBB (+3.8%) and HY (+2.8%) corporate, thus making the overall impact of the crisis on their portfolio non-lasting. Behaviour of AIFs with outflows is comparable, except that they increased the relative weights of BBB corporate (+ 1.8%) compared to higher rated corporate bonds, possibly indicating a slight increase in risk-taking. Such an increase might also be related to rating downgrades in the corporate bond markets<sup>37</sup>.

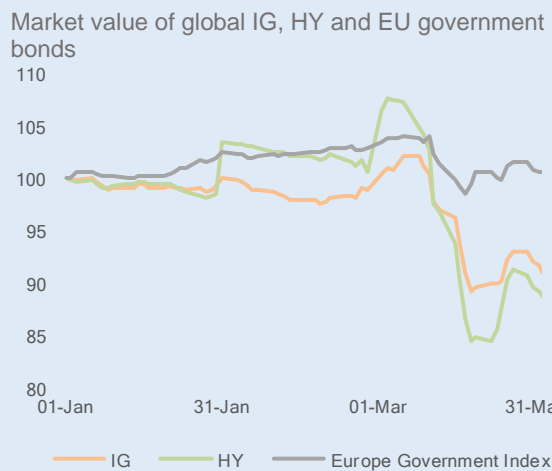
50. Details on the portfolio composition development are provided in the box below.

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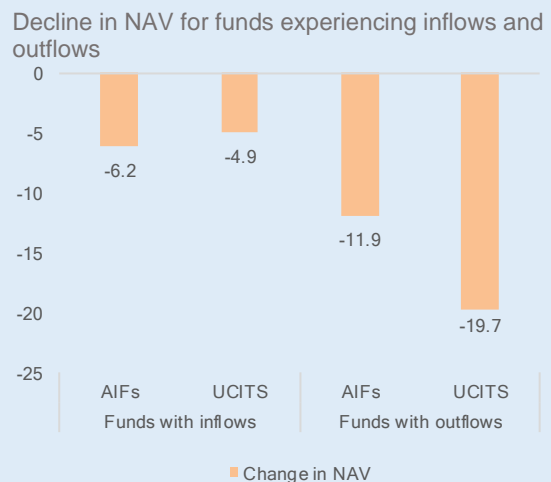
<sup>37</sup> See ESMA TRV 2/2020, p.24.

### Impact of outflows from corporate debt funds on portfolio composition

The corporate debt funds in our sample overall maintained a stable portfolio structure between mid-February 2020 and end-June 2020. As described above, from mid-February to end-March 2020 corporate debt funds in the sample registered a significant decrease in NAV. For UCITS funds in particular, around 1/3 of the 17% NAV decline is explained by outflows, with 2/3 of the decline related to lower asset valuations. Performance of portfolio assets of these funds varied significantly. Government bonds suffered very limited mark-to-market losses (-1%) in March 2020, both IG and HY bonds went instead through a large decline in market value by 7 and 11 percentage points respectively, while recovering thereafter. Comparing portfolio composition between mid-February and end-June shows that both for UCITS and AIFs portfolio composition remained broadly stable. However, during the market stress in February and March, both UCITS and AIFs increased their cash positions, while decreasing especially their portfolio share in sovereign, IG and HY (esp. UCITS) bond positions. These portfolio changes reversed between end-March and end-June. Combining information on portfolio composition with price developments, the observed initial decrease of sovereign bonds in fund portfolios is mostly attributable to sales. Overall, the portfolio reallocation process of funds facing redemption requests has been driven by the combined effects of asset liquidation and devaluation, resulting also in an increase of cash positions. It is important to note that sales of portfolio positions also occurred in less liquid asset classes. **This behaviour suggests a ‘vertical slicing’ liquidation strategy, which allow to retain the desired level of liquidity following the redemption requests and leave the characteristics of the portfolio unchanged following the sales.**



Note: Change in market value of BoAML global IG and HY corporate bond indices since 01/01/2020,=100.  
Sources:Refinitiv Datastream, ESMA



Note: Change in NAV of funds experiencing inflows and outflows between February and March 2020, in %.  
Sources: NCAs, ESMA.

#### Funds with outflows between February and March 2020

	UCITS		AIFs	
	Feb 20- Mar 20	Mar 20- Jun 20	Feb 20- Mar 20	Mar 20- Jun 20
Cash	0.9%	-1.7%	1.8%	-1.2%
Sovereign bonds	-3.8%	1.4%	-1.5%	1.0%
AAA-AA corporate bonds	-1.1%	0.3%	-0.9%	-0.3%
A corporate bonds	-1.3%	1.2%	-0.5%	-0.5%
BBB corporate bonds	-2.9%	3.8%	-1.3%	1.8%
HY corporate bonds	-4.2%	2.8%	-0.7%	0.8%
Equity bonds	-1.5%	0.6%	-1.5%	-0.3%
CIUs bonds	0.1%	0.3%	-0.6%	-0.1%
Loans bonds	-0.2%	0.0%	-1.2%	0.4%
Other corporate debt	-1.4%	0.5%	-0.1%	0.0%
Unrated corporate bonds	-0.7%	0.1%	-0.1%	0.0%

Note: Portfolio rebalancing across type of instruments, in %. Equity exchanged in regulated markets, CIUs liquidable in seven calendar days.  
Source: NCAs, ESMA.

### **Funds experiencing outflows managed to maintain the composition of their portfolio stable**

Funds in the sample generally managed to maintain the composition of their portfolio stable between mid-February and the end of June 2020 by equally selling liquid (e.g. sovereign bonds) and less liquid (e.g. HY corporate) assets. This reduces the risk of unfair treatment for remaining or redeeming investors. From a financial stability perspective, being able to sell less liquid portfolio assets also reduces the risk of creating a first-mover advantage for investors redeeming their fund shares early. Cash positions initially increased before returning to their pre-crisis levels.

However, the period of COVID-19 related market liquidity stress was short lived amid significant government and central bank interventions which provided support to the markets in which these funds invest. Therefore, in order to prepare for a renewed episode of stress, managers should include in their liquidity stress test scenarios the assumption of a longer stress on market liquidity.

**Priority Area 1** – Ongoing supervision of the alignment of the funds' investment strategy, liquidity profile and redemption policy

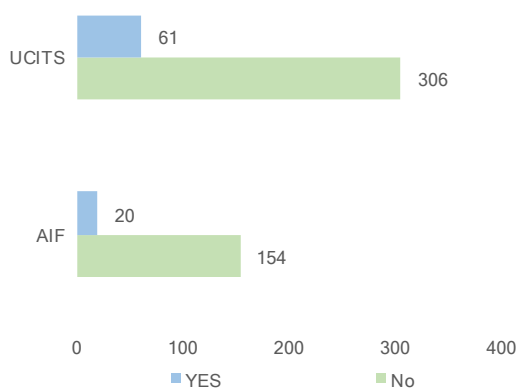
## 5.2.2. Difficulties in asset valuation

51. As market liquidity fell during the COVID-19 related period of market stress, some asset classes were subject to high valuation uncertainty. Asset valuation issues directly affect the ability of funds to meet redemption requests: fund share valuation uncertainty creates the risk of unfairly penalising remaining (redeeming) investors, by redeeming shares above (below) their fair price.

52. Against this background, only 15% of funds in the sample pointed explicitly to unusual difficulties in asset valuation (20 AIFs and 61 UCITS). However, a closer analysis of the data and descriptions provided by these management companies strongly suggests that valuation issues have been more widespread.

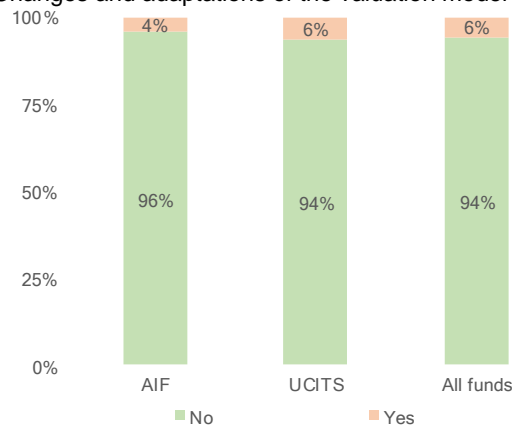
53. As indicated in the charts below, only a small proportion of funds have adapted their valuation models and procedures during the period of stress. The main adaptations carried out by management companies to be able to price assets in stressed market conditions cover e.g. increased engagement between the investment and valuation team, organisation of a price challenge process, and collection of data to implement an adjustment in the pricing process.

Limited reporting of asset valuation problems



Note: Funds reporting valuation issues between February and March 2020.  
Sources: NCAs, ESMA.

Changes and adaptations of the valuation model



Note: Funds reporting changes and / or adjustments in their valuation model following the period of market stress between February and March 2020  
Sources: NCAs, ESMA.

### Issues reported by asset managers with respect to price discovery

- Brokers stopped delivering prices during this period
- Wrong prices by the administrators or lagged updates compared to executable prices
- Bid/Ask quotes not representative of actual tradable price levels. Due to market illiquidity, bids offered in the market were not tradeable
- Larger price deviations between counterparties than in normal circumstances
- Most price vendors changed/improved their methodology (e.g. inclusion of prices previously considered as "outliers")

### Modifications in valuation model reported by asset managers

- Application of a correction coefficient to prices based on the differences between bid/ask prices and traded prices
- Price adjustment to reflect the estimated difference between vendor and market prices
- Use of sale prices
- Use of bid price in case of large redemption
- Widening of tolerance price ranges in accordance with widening bid/ask spreads
- Application of haircuts for EM corporate bonds for unrealistic vendor prices
- Move from Mid to Bid pricing to take into account huge increase in spreads

54. Some management companies have also indicated their plan to reinforce the oversight on the valuation process and liquidity of assets covering inter alia the following areas: evolution of Bid/Ask spreads, analysis of representativeness of the prices provided by the market by comparing them with transactions executed and firm prices requested from counterparties.
55. The limited extent of changes implemented by the funds in the sample also raises questions about the existence of valuation procedures that do take into account market conditions, as required in the regulation. Art. 67(2) of AIFM Regulation provides that “The valuation policies and procedures shall address at least the following: (...) (e) the valuation of any adjustments related to the size and liquidity of positions, or to changes in the market conditions, as appropriate.”

#### Dealing with valuation uncertainty

Despite the challenging market environment only a minority of funds reported valuation issues. However, a closer analysis of the data and descriptions provided by these management companies strongly suggests the existence of a more general uncertainty around market prices. Therefore, asset management companies should have procedures in place to be able to value their assets under stressed market conditions. Only a small proportion of management companies adapted their valuation process to be able to price assets in stressed market conditions.

**Priority Area 5** – valuation procedures should capture market stress scenarios, ensuring a sustainable approach in case of extended periods of market stress and eventually – where needed – adapt their valuation model.

#### ***5.2.3. Use of liquidity management tools during the period of market stress in February and March 2020***

56. This section examines the use of LMTs during the COVID-19 related market stress in February and March 2020. More information on the legal framework and availability of LMTs by Member States is provided in Section 5.3.2, showing significant variation in the availability of those tools across EU jurisdictions, with special liquidity arrangements more frequently available to UCITS in the sample.
57. In light of the deterioration in market liquidity and rising redemption requests, asset managers took the following actions in February and March 2020:
- the activation of “extraordinary tools” such as suspension in redemptions, redemption in kind, side pocketing and activation of gates/deferred redemptions,

- the modification of "ordinary tools" which are usually used on a day to day basis to handle the impact of subscriptions and redemptions of the portfolio. One example is swing pricing with the increase of the swing factors.

58. During February and March 2020, in the sample only six UCITS by four management companies suspended redemption due to the combination of valuation uncertainties and significant outflows. The use of swing pricing has been more widespread (134 UCITS and four AIFs). This may indicate that during this period most managers were able to meet redemption requests without using the suspension of redemption but decided to use swing pricing to treat fairly remaining investors, by passing part of the cost of liquidity to redeeming investors (see case study below).
59. The use of other LMTs was overall limited. Only few funds had access to anti-dilution levies (17% UCITS, 8% by NAV; 11% AIFs, 8% by NAV), with 3% of funds in the sample using them.
60. Temporary borrowing is the most commonly available liquidity management tool (available to 90% of UCITS and 80% of AIFs in the sample). During the period of COVID-19 market stress 8% (11% NAV) of UCITS and 11% (10% NAV) of AIFs have activated it.

### Case study: Suspensions and application of swing factors

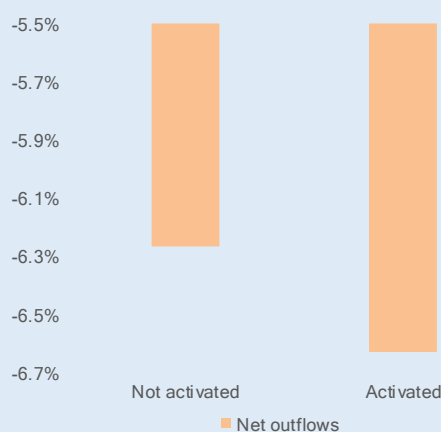
Only six UCITS in the sample **suspended redemption** during the period of COVID-19 related market stress in February and March 2020. The NAV of these six funds amounted to EUR 10.8bn on 17 February and EUR 8.5bn at the end of March (0.8% of total UCITS NAV). Suspensions of redemptions lasted up to 13 days. There is no typical profile of the suspended funds. All six funds offer daily redemption, but they differ in terms of investment policy, with e.g. one fund showing larger BBB corporate bond exposures and two funds having significant securitisation exposures. The investor base of the suspended funds also differs: two funds primarily cater to retail investors (65% of their shares) while two other funds have more than 90% institutional investors.

All managers of suspended funds indicated valuation uncertainty as their main motivation, with three managers indicating at least one day with no market prices for 35%-50% of their portfolio. However, redemptions played a role since five out of the six suspended UCITS experienced significant outflows (21% to 46%) between mid-February and end-March 2020. Two funds reported outflows more than 2 and 5 times higher than their historical highest weekly outflows.

In comparison, fund managers made much greater use of **swing pricing**. Swing pricing was activated by a large proportion of the funds in the sample having the possibility to use it according to fund rules and national law: 4 AIFs out of 13 and 134 UCITS out of 187. In terms of location, these funds were concentrated in a small number of jurisdictions. Funds which activated swing pricing experienced slightly higher outflows (6.7%) than funds that did not activate swing pricing but for which the tool is available (6.3%) with similar changes in NAV (around -17%). The average swing factors applied (1.4%) were similar to 2019 levels (1.2%). During 2019 swing pricing was activated by 103 funds in the sample.

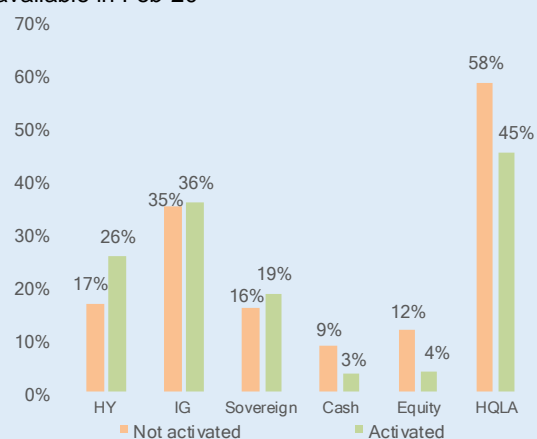
Funds activating swing pricing had on average less liquid portfolios with higher HY exposure (26%) than funds which did not activate (17%) and less HQLA (45% compared to 58%).

Outflows of funds with swing pricing available



Note: Net outflows suffered by fund with swing pricing available, in % of NAV  
Sources: NCAs, ESMA.

Portfolio composition of funds with swing pricing available in Feb-20



Note: Share of investments for funds with swing pricing available in February 2020, in %.  
Sources: NCAs, ESMA.

### Adoption and use of LMTs

Despite the severity of the market stress in February and March 2020, a majority of funds in the sample did not use LMTs. The primary reason cited was a lack of necessity given the limited duration of the acute phase of the liquidity crisis.

In terms of suspensions, six UCITS suspended redemptions. However, the more widespread usage of swing pricing indicates that managers were overall concerned with maintaining a fair treatment of investors, especially remaining investors.

ESRB Recommendation (ESRB/2017/6) suggests making additional liquidity management tools available to fund managers and introducing further supervisory requirements and tighter liquidity stress testing practices to address risks from liquidity mismatches. Especially, having at least a usable tool to address redemption pressure and a usable tool to protect investors seems necessary in the event of a liquidity crisis.

In addition, the ESRB, the FSB and IOSCO make recommendations on the necessity for authorities to promote clear decision-making processes on the use of LMTs, and to provide guidance on the use of LMTs in stressed conditions, taking into account the costs and benefits of such action from a financial stability perspective.

**Priority area 4** – Increase of the availability and use of liquidity management tools

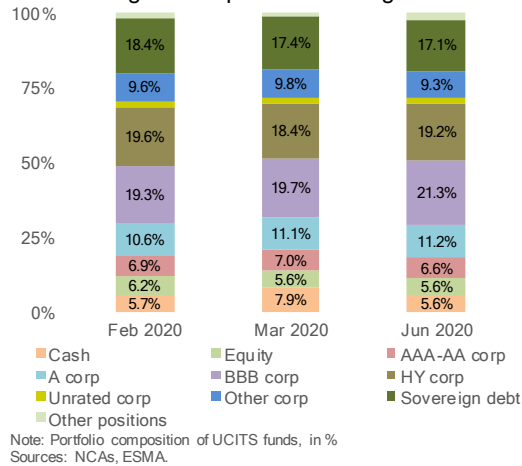
## 5.3. Assess the current state of preparedness (Topic B)

### 5.3.1. Fund liquidity set up and liquidity risk management

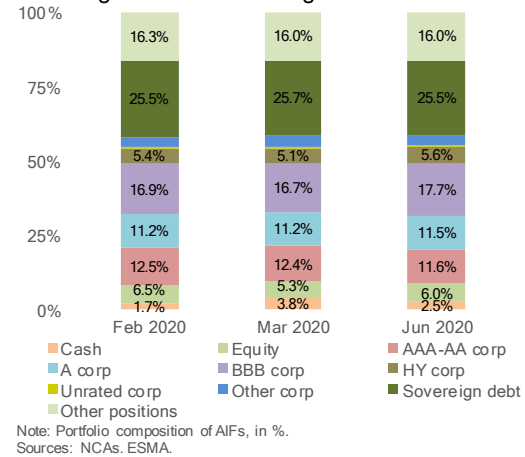
61. This section analyses the current state of preparedness of the funds exposed to corporate debt to a future redemption and/or valuation uncertainty shock.
62. The analysis of the data suggests that, overall, the portfolio composition remained stable as funds used vertical slicing when selling assets. At the end of June 2020 corporate debt represents 69% of the assets of the UCITS in the sample, with a significant proportion of BBB-rated (21%) and HY corporate (19%). Despite a temporary increase in March, cash went back to pre-crisis level (1.7%). As already highlighted in section 5.1, AIFs have a significantly higher proportion of sovereign debt (26% compared to 17% for UCITS) and a smaller exposure to HY corporate (6%). Still, while portfolio composition overall remained broadly stable, the situation varies across funds and for some of them the share of less liquid assets rose sharply between mid-February and end-June 2020.



UCITS: Larger cash positions during market stress

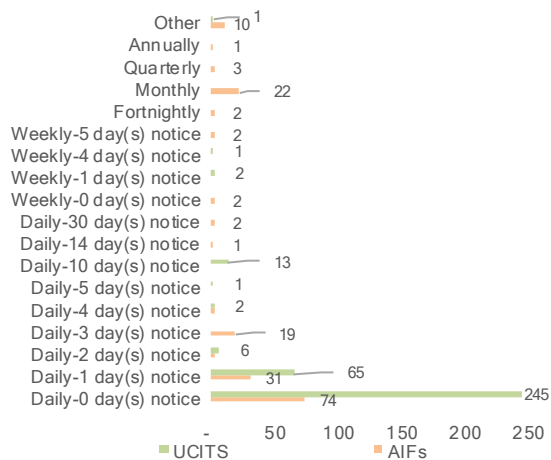


AIFs: High share of sovereign debt

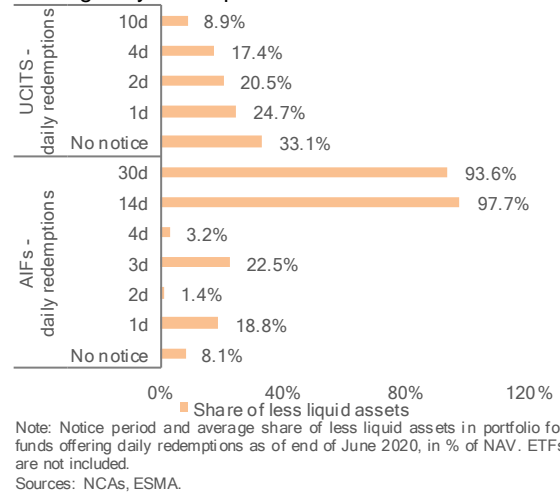


63. The vast majority of funds offer daily redemption (91%). A large proportion of funds in the sample have no notice periods (73% of UCITS and 43% of AIFs in the sample). UCITS with no notice period invest an average of 33% in less liquid assets such as HY bonds and loans. This varies significantly depending whether funds have gating arrangements or not - funds without gating arrangements invest on average 20% in less liquid assets whereas this proportion is 37% for funds with gating arrangements. For AIFs with no notice period this proportion is much lower – the average proportion of less liquid portfolio assets is 8%.

Redemption frequencies and notice period

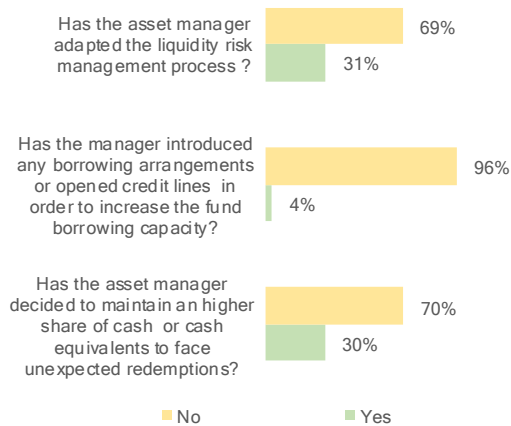


Notice period and share of less liquid assets in funds offering daily redemptions



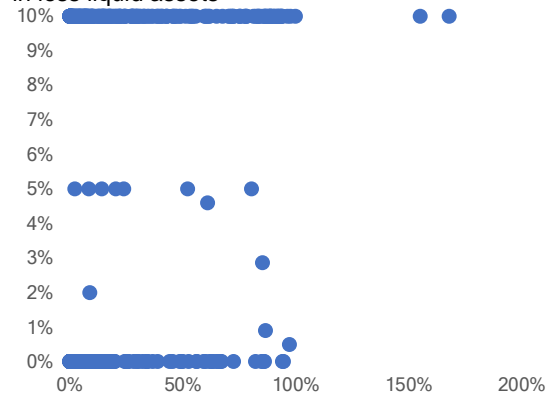
64. Only few funds have adapted the liquidity set-up of their funds during the reporting period. Redemption frequencies have remained the same for all the funds under review. Only six funds with daily redemptions have added between 1 to 8 days to their notice period. None of them are among the funds that have been temporarily suspended during the crisis.

### Answers to qualitative questions



Note: Type of liquidity management process adjustments applied after February 17th, 2020.  
Sources: NCAs, ESMA.

### Comparison between gates and % of NAV invested in less liquid assets



Note: distribution of funds by share of less liquid assets, in % of NAV (X-axis) and level of gating arrangement, in % of NAV (Y-axis).  
Sources: NCAs, ESMA.

### Fund liquidity profile generally unchanged post-crisis

Fund managers generally managed to maintain the composition of their portfolio stable despite the liquidity crisis, both in UCITS and AIFs. Only a small number of funds significantly increased their exposures to less liquid assets, which should be investigated.

On the other hand, only a small number of funds have adapted the liquidity set-up of their funds.

**Priority Area 1** – Ongoing supervision of the alignment of the funds' investment strategy, liquidity profile and redemption policy

**Priority area 3** – Fund liquidity profiles.

65. Only 10 funds have indicated that no stress tests have been carried out. All other funds have carried out a stress test, and the majority (358 asset managers) have conducted a stress test exercise after 31 March 2020. For 128 funds, the redemption shocks tested have not been provided, raising the question whether their stress tests had included such a shock. 71% of funds do not envisage a shock on collateral although they seem to be concerned by collateral arrangements.

66. In some cases, the redemption shocks experienced during the current crisis did not reach the stress test levels which may suggest that the risk management of the funds seems to work properly. About 25% of funds in the sample have not provided information on the redemption stress assumed in the internal stress test models.

### **Stress testing should support asset managers' assessment**

Most asset managers are using stress tests as a tool to prepare for extreme events. Responses to this survey show that on average managers use conservative scenarios, exceeding what has been observed during the recent events, however for a number of funds scenarios were insufficient or incomplete.

Going forward, stress tests should continue to support asset manager's assessment of the impact of changes in asset liquidity and redemptions under stressed market conditions, also taking into account the expected behaviour of other market participants (e.g. other funds managed by the same manager) under similarly stressed market conditions.

**Priority area 2** – Ongoing supervision of liquidity risk assessment

### 5.3.2. Availability of LMTs as of June 2020

67. There is significant variation in the availability of LMTs across EU jurisdictions, depending on national rules. The suspension of redemption is the only tool available to all funds in all jurisdictions<sup>38</sup>.

#### Availability of LMTs for UCITS

	AT (1)	BE (2)	BG (3)	CY (4)	CZ (5)	DE (6)	DK (7)	EE (8)	ES (9)	FI (10)	FR (11)	GR (12)	HR (13)	HU (14)	IE (15)	IS (16)	IT (17)	LI (18)	LT (19)	LU (20)	LV (21)	MT (22)	NL (23)	NO (24)	PL (25)	PT (26)	RO (27)	SE (28)	SI (29)	SK (30)	
Gates	NO	YES	NO	YES	NO	YES	NO	NO	NO	YES	YES	NO	*	NO	YES	NO	NO	NO	YES	YES	NO	YES	YES			YES	YES	NO	NO	NO	
Side pockets	NO	NO	NO	YES	NO	NO	NO	NO	YES	NO	YES	NO	*	NO	NO	NO	NO	NO	YES	NO	YES*	NO	NO	YES	YES		NO	NO	NO	YES	NO
Anti-dilution levy	NO*	YES	NO	NO	NO	NO	NO	NO	YES	NO	YES	NO	*	NO	YES	NO	NO	NO	NO	NO	YES	NO	YES	YES			NO	NO	YES	NO	NO
Redemption fees	YES	YES	NO	NO	YES	YES	YES	NO	YES	YES	YES	YES	*	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES		YES	YES	YES	NO	YES	
Redemption in kind	NO	NO	NO	NO	NO	YES	YES	NO	YES	YES	YES	NO	*	NO	YES	YES	NO	YES	NO	YES**	NO	YES*	YES	NO		YES	NO	NO	YES	NO	
Suspension redemptions /subscriptions	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES		YES	YES	YES	YES	YES	
Swing pricing	NO**	YES	NO	NO	NO	YES	NO	NO	YES	YES	YES	NO	*	NO	YES	NO	NO	YES	NO	YES	NO	YES**	YES	YES			NO	NO	NO	NO	NO
Mandatory liquidity buffers	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	*	NO	YES	NO	NO	NO	NO	NO	NO	YES	NO	NO			NO	NO	NO	NO	NO
Side letters	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	*	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO			NO	NO	NO	NO	NO

1 \* The Austrian law does not mention specific anti-dilution levies.

\*\*Swing pricing is not mentioned in the national law and has not been used on the Austrian market so far. According to preliminary internal legal judgement it might be possible to introduce Swing pricing without changing the relevant rules.

13 \*According to national legislation, certain LMTs are not strictly prescribed by law, but they may be regulated within the fund documents (prospectus and/or rules). As of 20 June 2020, there were no funds that would have this regulated in their documents. However, there is a possibility that LMTs will be subsequently introduced in the documents of a certain fund, which would then require the prior approval of the Hanfa as NCA.

20 \*Please note that in principle this tool is only allowed for non-UCITS.

\*\*The CSSF is of the opinion that redemption in kind is problematic for retail funds, due to position size and liquidity problems the end-investor might face. Thus, the CSSF would expect the necessary agreement from retail investors to be redeemed in kind.

22 \*However not used in practice

\*\*No restrictions to apply however not used in practice

<sup>38</sup> The tables on the availability of LMTs for AIFs and UCITS refer to AIFs and UCITS in general and are not specific to corporate bonds funds. Hence, these should be considered relevant also to section 6 of this report on real estate funds.

## Availability of LMTs for AIFs

	AT (1)	BE (2)	BG (3)	CY (4)	CZ (5)	DE (6)	DK (7)	EE (8)	ES (9)	FI (10)	FR (11)	GR (12)	HR (13)	HU (14)	IE (15)	IS (16)	IT (17)	LI (18)	LT (19)	LU (20)	LV (21)	MT (22)	NL (23)	NO (24)	PL (25)	PT (26)	RO (27)	SE (28)	SI (29)	SK (30)
Gates	YES	YES	NO	YES	NO	YES	NO	NO	YES	YES	YES*	NO	*	NO	YES	YES	YES*	YES	YES	YES	NO	YES	YES	YES		YES	YES	YES	NO**	NO
Side pockets	YES	YES	NO	YES	NO	NO	NO	NO	YES	NO	YES*	NO	*	NO	YES	YES	YES*	YES	YES	YES	NO	YES	YES	YES		NO	NO	YES	YES*	NO
Anti-dilution levy	NO*	YES	NO	NO	NO	NO	NO	NO	YES	NO	YES*	NO	*	NO	YES	YES	NO	NO	NO	YES	NO	YES	YES	YES		NO*	NO	YES	NO**	NO
Redemption fees	YES	YES	NO	NO	YES	YES	YES	NO	YES	YES	YES*	YES	*	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES		YES	YES	YES	NO**	YES
Redemption in kind	YES	YES	NO	YES	NO	YES	YES	NO	YES	YES	YES*	NO	*	NO	YES	YES	NO	YES	YES/NO*	YES*	NO	YES	YES	YES		YES	NO	YES	YES*	NO
Suspension redemptions/subscriptions	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES*	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES		YES	YES	YES	YES*	YES
Swing pricing	NO**	YES	NO	NO	NO	YES	NO	NO	YES	YES	YES*	NO	*	NO	YES	YES	NO	YES	NO	YES	NO	YES	YES	YES		NO	YES*	YES	NO**	NO
Mandatory liquidity buffers	NO	YES	NO	NO	NO	YES	NO	NO	YES	NO	NO	NO	*	NO	YES	YES	NO	NO	NO	NO	NO	YES	NO	NO		NO	NO	NO	NO**	NO
Side letters	YES	NO	NO	NO	NO	YES	NO	NO	YES	NO	NO	NO	*	NO	YES	YES	NO	NO	YES**	YES	NO	YES	YES	YES		NO	NO	YES	NO**	NO

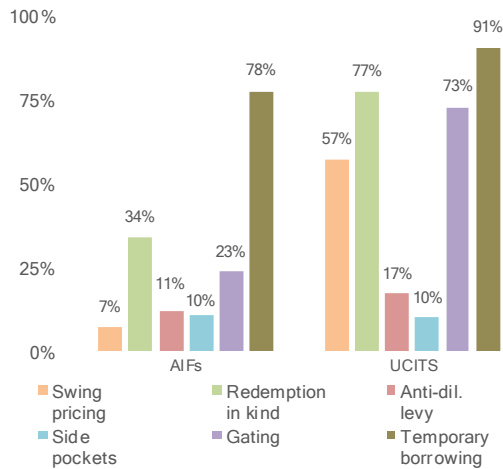
- 1 \*Changes in the redemption fees are seen as anti-dilution levy. The Austrian law does not mention specific anti-dilution levies.  
\*\*Swing pricing is not mentioned in the national law and has not been used on the Austrian market so far. According to preliminary internal legal judgement it might be possible to introduce Swing pricing without changing the relevant rules.
- 2 \*Only available to non-publicly offered AIFs. The LMTs available for publicly offered AIFs are the same as those for UCITS.
- 11 \*There are certain specificities depending on the type of AIFs. Not all LMTs are equally available to all types of AIFs under French law.
- 13 \*According to national legislation, certain LMTs are not strictly prescribed by law, but they may be regulated within the fund documents (prospectus and/or rules). As of 20 June 2020, there were no funds that would have this regulated in their documents. However, there is a possibility that LMTs will be subsequently introduced in the documents of a certain fund, which would then require the prior approval of the Hanfa as NCA.
- 17 \*For open-ended AIFs reserved to professional investors
- 19 \* Redemption in kind is available only for certain AIFs – 1) investment funds intended for informed investors and 2) investment companies intended for informed investors, which are incorporated as partnerships. Please note that informed investors in Lithuania comprise professional investors and other groups of investors which are able to assume relevant investment risks (due to experience, knowledge, wealth or other factors set by the law).\*\* Side letters are available only for AIFs intended for informed investors
- 20 \*However, the CSSF is of the opinion that redemption in kind is problematic for retail funds, due to position size and liquidity problems the end-investor might face. Thus, the CSSF would expect the necessary agreement from retail investors to be redeemed in kind.
- 26 \*Yes for closed-ended funds
- 27 \*Except retail AIFs
- 29 \*Available for open-ended AIFs marketed to retail. For other AIFs the availability of such LMT is not regulated by law, but subject to contractual agreements specified in the fund's documents (prospectus and/or rules).  
\*\*Not available for retail investors. For other AIFs the availability of such LMT is not regulated by law, but subject to contractual agreements specified in the fund's documents (prospectus and/or rules).

68. Special liquidity arrangements are more frequently available to UCITS in the sample. While the vast majority of UCITS and AIFs have the possibility to borrow on a temporary basis, swing pricing is available to >50% of UCITS but only to 7% of AIFs. Similarly, gates and redemption in kind are much more frequently available to UCITS funds in the sample.

69. It should be noted that to address liquidity risks in their funds, managers need to have the appropriate mix of LMTs at their disposal and that as such the effectiveness of LMTs cannot be analysed for individual tools in isolation. The appropriate mix of LMTs available to funds depends on the specific risk characteristics of the fund.

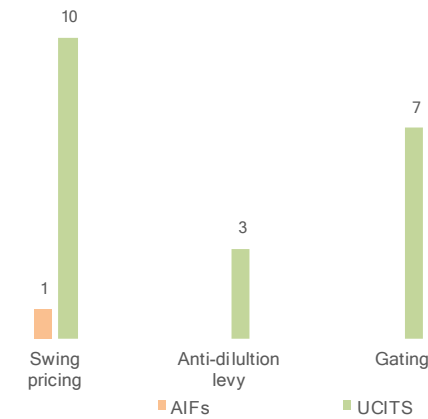
70. Changes in liquidity management tools following the COVID-19 related market stress in February and March 2020 have been limited, with only ten UCITS making swing pricing available and seven UCITS introducing the possibility to use gates.

### Availability of LMTs



Note: LMTs available to corporate debt funds as of June 2020.  
Sources: NCAs, ESMA.

### LMTs introduced between February and June 2020



Note: Number of funds introducing LMTs between February and June 2020.  
Sources: NCAs, ESMA.

### Adoption and use of LMTs

Despite similarities of the fund characteristics in the sample, the availability of LMTs is still heterogeneous between jurisdictions, UCITS and AIFs and funds at the individual level. Moreover, existing liquidity mismatches increase the need to have tools available in the event of a renewed liquidity crisis episode.

**Priority Area 4** – Increase the availability and use of liquidity management tools.

## 5.4. Estimation of resilience to a potential future shock (Topic C)

71. To support the assessment of fund resilience to a potential future shock, NCAs and ESMA staff conducted a stress simulation 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. As described in the methodology section, the simulation is a combination of asset liquidity stress and redemption shocks corresponding to the scenarios used in the ESMA fund stress simulation (STRESI)<sup>39</sup>.

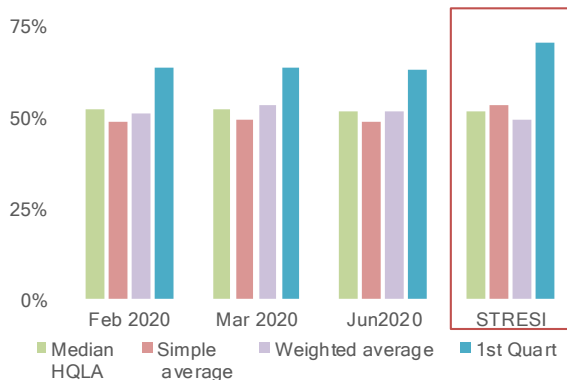
72. On the asset side, for the funds with significant corporate debt exposures in the sample, we measure the capacity to meet redemption requests with the HQLA approach developed for ESMA STRESI. The assumption underlying the stress simulation is that the liquidity stress is so severe that the manager can only sell the most liquid assets, or other liquid assets with a discount.

<sup>39</sup> ESMA, "Stress simulation for investment funds", Economic Report, September, 2019.

73. The level of HQLA measured in February, at the end of March and June remains stable for both UCITS (53%) and AIFs (69%). While the level of HQLA is significantly higher in AIFs, it is worth noting that it increased in March (84%) during the peak of the COVID-19 related market stress. Based on the level of HQLA the resilience of the funds in the sample to asset liquidity / redemption shocks has not been affected by the COVID-19 related market stress. The levels of HQLA observed for UCITS during the first half of 2020 are comparable with the levels estimated in ESMA’s 2019 STRESI report<sup>40</sup>.

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

UCITS: Levels of HQLA  
100%



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

AIFs: Levels of HQLA  
100%



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

<sup>40</sup> ESMA fund stress simulation (STRESI) focused on UCITS funds only.

### HQLA vs. redemption frequency

Redemption frequency	HQLA			
	< 25%	25%-50%	50% - 75%	> 75%
<b>UCITS</b>				
Daily	21%	24%	42%	12%
Weekly	0%	0%	0%	-
Other	0%	-	-	-
<b>Total</b>	<b>21%</b>	<b>24%</b>	<b>42%</b>	<b>12%</b>
<b>AIFs</b>				
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%	-
<b>Total</b>	<b>16%</b>	<b>18%</b>	<b>42%</b>	<b>24%</b>

Note: distribution of funds by redemption frequency, HQLA buckets and fund type, as of June 2020.

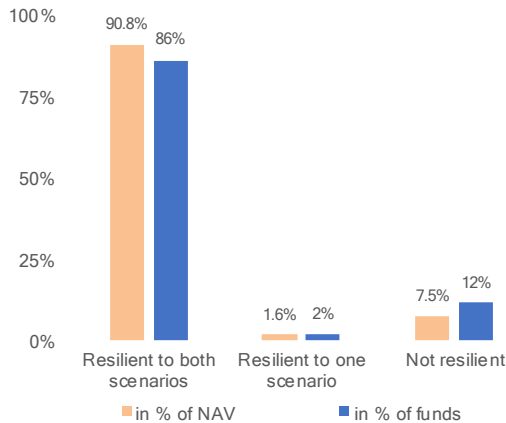
Sources: NCAs, ESMA.

75. The average weekly redemption shock applied in this exercise by ESMA is around 22% while the shocks applied by NCAs varied across jurisdictions (27% on average). In addition, a shock on collateral given and received is applied, equal to the maximum between the highest historical loss suffered (2017-2019), the losses reported during the COVID-19 crisis episode and the level assumed in the manager stress simulation.

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

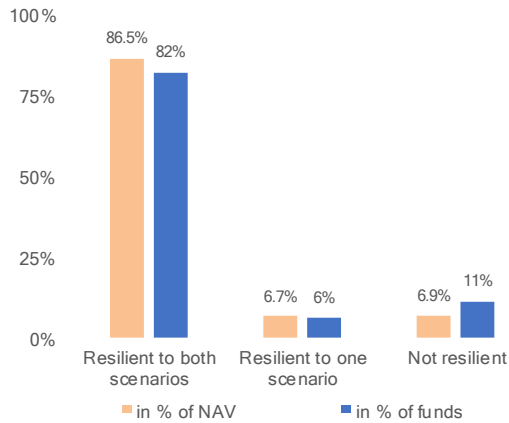


### UCITS: Resilience



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

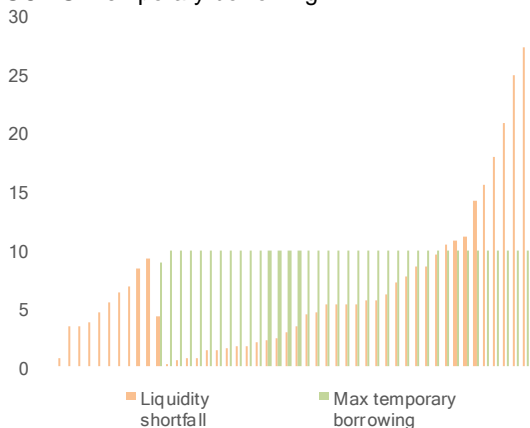
### AIFs: Resilience



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

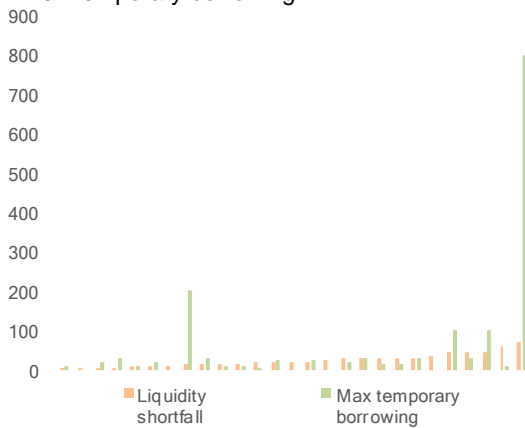
77. Moreover, most of the UCITS funds which have been found in the stress simulation to be not resilient to the shocks applied, and thus potentially vulnerable, could cover adverse severe shocks using available credit lines (temporary borrowings) to cover temporary cash flow mismatches up to a limit of 10% of the NAV, as indicated by the UCITS Directive.

### UCITS: Temporary borrowing



Note: Liquidity shortfall of UCITS funds with RCR<1 compared to maximum temporary borrowing allowed, in % of NAV.  
Sources: NCAs, ESMA.

### AIFs: Temporary borrowing



Note: Liquidity shortfall of AIFs with RCR<1 compared to maximum temporary borrowing allowed, in % of NAV.  
Sources: NCAs, ESMA.

## Use of stress simulations

The stress simulation conducted by ESMA showed some pockets of vulnerabilities within the funds in the sample. The use of stress simulations on a regular basis is a complement to regular monitoring by NCAs and can help to allocate dedicated supervisory resources where vulnerabilities have been identified.

**Priority Area 1** – Ongoing supervision of the alignment of the funds' investment strategy, liquidity profile and redemption policy

## 6. Assessment for funds with particularly large exposures to real estate

### Key findings

**Sample:** The analysis is based on 92 real estate AIFs from 13 jurisdictions with a total of EUR 294bn AuM in February 2020, covering 31% of EU real estate funds.

**Flows:** Real estate funds overall did not experience substantial outflows between mid-February and end-June 2020. Redemption requests represented 1.8% of the NAV in the sample, with actual redemptions only representing 0.28% of NAV.

**Portfolio:** REIFs in the sample are mostly exposed to corporate real estate (CRE; 50% of AuM) and located in a small number of jurisdictions (51% of REIFs in 2 jurisdictions, 73% of sample AuM).

**LMTs:** Due to the low level of redemption requests between February and March, only few LMTs were used during this period. The two suspensions of REIFs in the sample occurred in June. LMTs are an important tool to mitigate fund liquidity issues but, apart from temporary borrowing, other LMTs are not widely available (only 38% of REIFs of the sample accounting for almost 20% of the total NAV of REIFs, have gating arrangement in place for example).

**Valuation uncertainty:** 38% of funds reported having been affected by valuation uncertainties and 42% declared to be affected by material distortions in the incoming cash-flows from their real estate assets.

**Liquidity profile under stressed conditions:** Given the illiquid nature of real estate assets open-ended REIFs are exposed to liquidity mismatches. NCAs should especially monitor REIFs offering daily liquidity to their investors. While REIFs generally hold cash buffers to meet redemption requests, a wider availability of LMTs appears necessary to mitigate the impact of large fund redemptions.

78. In accordance with the ESRB Recommendation, the current chapter presents the sample, describe how funds have reacted since the onset of the COVID-19 pandemic (Topic A), assesses the current state of preparedness (Topic B), and presents an estimation of resilience to a potential future shock (Topic C).

## 6.1. Sample analysed by NCAs and ESMA

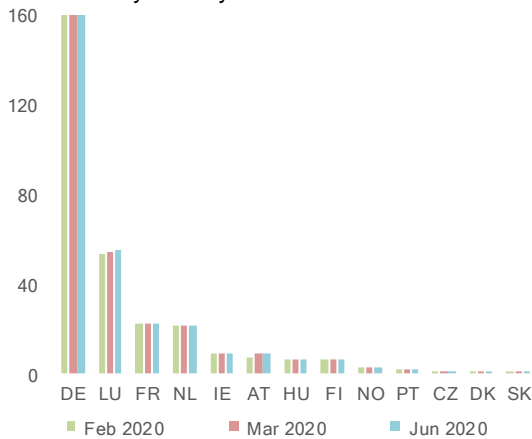
79. This section presents the characteristics of the sample and its relevance in the context of the ESRB Recommendation. NCAs collected data on open-ended real estate funds with more than EUR 500mn of AuM in jurisdiction where less than 10 funds were above this threshold. In all other jurisdictions the threshold was set at EUR 1bn. The resulting sample consists of 92 real estate AIFs, with a total AuM of EUR 294bn (NAV of EUR 229bn) in February 2020, covering 31% of EU real estate funds by AuM. The vast majority of AIF managers in the sample are domiciled in DE (54%), LU (18%) and to a lesser extent FR (8%) and NL (7%).
80. In terms of exposures, real estate funds in the sample are predominantly exposed to commercial real estate (50%), with the rest of the real estate exposures in residential (12%), industrial (9%) and other sectors (7%). In addition, portfolios contain significant parts (22%) of non-real estate assets, including cash (10%). Funds are mostly exposed to domestic and EU real estate (respectively 49% and 35% in February).

### Focus on commercial real estate exposures, concentrated in a few jurisdictions

The ESRB raised the concern that real estate asset sales in response to large scale fund redemptions could lead to downward pressure on real estate valuations. Based on the data collected in this exercise, the commercial real estate sector is the most exposed (50% of AuM). The relevance of this market from a financial stability perspective is reinforced by the cyclical nature of the CRE market, and the risk of valuation losses in the current economic environment. The other takeaway is the strong concentration of REIFs in a few jurisdictions (73% of total AuM in 2 jurisdictions) and the relative domestic focus of fund portfolios (51%). Proper supervision of the related risks is key in monitoring and addressing any fragilities, including potential spillovers to other EU markets.

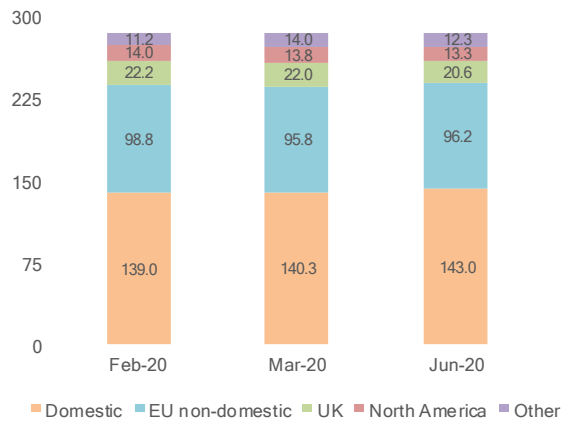
**Priority Area 1** – Ongoing supervision of the alignment of the funds' investment strategy, liquidity profile and redemption policy

REIF - AuM by country



Note: AuM of real estate funds by authorising country, in EUR bn.  
Sources: NCAs, ESMA.

Geographical focus of REIF investments



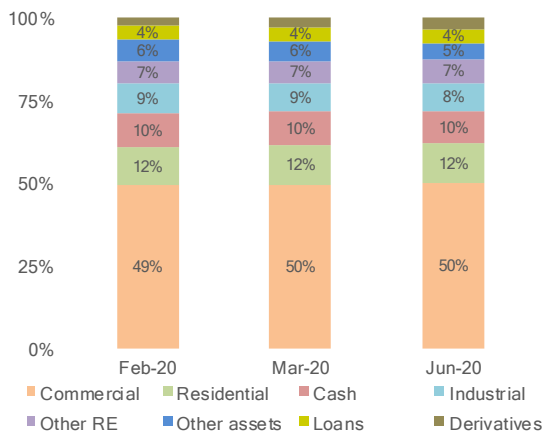
Note: Geographical focus of real estate funds, in EUR bn.  
Sources: NCAs, ESMA.

## 6.2. How funds have reacted since the onset of the COVID-19 pandemic (Topic A)

81. This section analyses the flows, performance, valuation uncertainties and the use of liquidity management tools for the real estate funds in the sample during the reporting period.

82. **Redemptions** – Overall and in contrast to corporate debt funds, real estate funds did not experience substantial outflows. No fund covered in this data request suspended redemptions during the COVID-19 related market stress in February and March 2020, but two REIFs suspended redemptions in June 2020. Redemption requests represented 1.8% of the NAV in the sample, with actual redemptions only representing 0.28% of NAV. Therefore, funds did not have to sell assets in response to redemption requests and their portfolio composition was globally unchanged between February and June 2020.

Portfolio composition

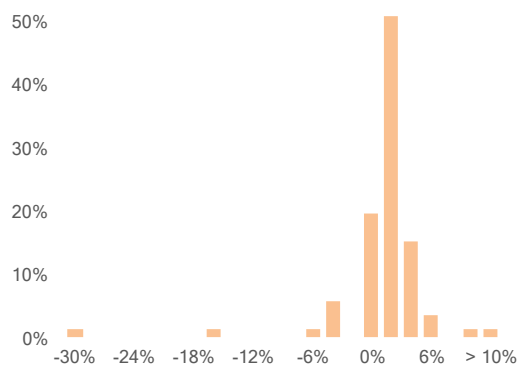


Note: Share of investments by real estate funds, in %.  
Sources: NCAs, ESMA.

**83. Performance** – The small number of funds reporting redemption requests did not provide any particular explanation. It is however likely that declining performance played a role in the context of the dominance of commercial real estate assets and worsening prospects for the commercial real estate market. Until the end of March 2020, the performance of REIFs in the sample was relatively homogeneous with two-third of the funds displaying returns for the first quarter of 2020 in a range of -2% to 2%. This is in contrast with corporate bond funds where 90% of funds experienced negative returns. Per end of June 20% of REIFs exhibited negative 2020 performance, whereas around 30% of sample REIFs displayed 2020 performance above 2%. These figures need to be interpreted with caution given the general uncertainty regarding asset valuation.

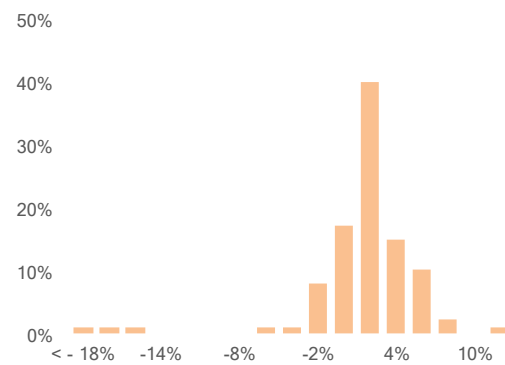
**84.** Performance for REIFs in the sample between February and March appears not to have been a major driver for REIF redemptions as only a few funds with negative returns in 1Q20 had net outflows.

REIF YTD performance as of 31 March  
60%



Note: Distribution of YTD performances of real estate funds as of March 2020, in %.  
Sources: NCAs, ESMA.

REIF YTD performance as of 30 June  
60%



Note: Distribution of YTD performances of real estate funds as of June 2020, in %.  
Sources: NCAs, ESMA.

**85. Valuation uncertainty** – Due to the nature of real estate market, the impact of the crisis on asset valuation was not immediate but may be more long lasting. At the end of June, 38% of funds (29% by AuM) were affected by valuation uncertainties and 42% (48% by AuM) declared to be affected by material distortions in the incoming cash-flows, such as rental income defaults. On several occasions REIFs had to agree to rent deferrals or rent-free periods with the tenants.

**86. Use of LMTs** – Overall, only few LMTs were used by REIFs in the sample. While no sample REIFs were suspended between February and March 2020, two funds were suspended in June 2020, with fund managers stating that valuation uncertainty affects their holdings. These two funds had a NAV of EUR 2.7bn (AuM of EUR 3bn) at the end of June 2020.<sup>41</sup>

<sup>41</sup> In comparison, 15 UK commercial real estate funds, not included in this sample, gated in March. All the managers of these funds mentioned valuation issues as the primary reason. Also, during the second quarter of 2020 the NAV of all suspended AIFs in the EU (not only in the sample) reached EUR 40bn, this has been mainly driven by real estate funds suspending redemptions.

Three funds activated anti-dilution levies and two funds applied gates. Around one third of the funds in the sample imposed a minimum cash position.

**The impact of the COVID-19 related market stress on REIFs was not immediate, but may be long-lasting**

Redemption requests were so far limited for the REIFs in the sample. For that reason, LMTs were overall not widely used, and their efficiency cannot be assessed. In the current economic environment, performance of CRE assets may be durably impacted. In turn, this may have a long-lasting impact on REIFs with large CRE exposure and prompt redemption requests, while valuation uncertainty may durably affect capacity of REIFs to meet those requests. A significant number of managers (29%) were affected by valuation uncertainties or distortions in the incoming cash-flows (42%).

**Priority Area 1** – Ongoing supervision of the alignment of the funds' investment strategy, liquidity profile and redemption policy

### **6.3. Assess the current state of preparedness (Topic B)**

87. This section analyses the current state of preparedness of the REIFs to future redemption and/or valuation uncertainty shocks.
88. REIFs may be more vulnerable now compared to the acute COVID-19 related market stress in February and March 2020. In contrast with corporate debt funds, real estate funds did not experience significant outflows. However, real estate funds may be impacted with a delay. This is linked to the nature of real estate markets and the characteristics of real estate funds: the 2 REIFs which suspended redemption in June were not initially under the pressure of redemption requests, as they offer quarterly redemption. However, they suspended the redemption due to valuation issues.
89. **REIFs are exposed to liquidity mismatches.** REIFs frequently offer daily redemption (around 1/3 of the sample funds, 42% of the sample AuM), thus potentially exposing them to liquidity mismatches given the intrinsically illiquid nature of real estate assets. Such mismatches are partially addressed by the use of notice periods, which are, however, generally short for funds offering daily redemption (below 7 days for 52% of REIFs in the sample with daily redemption). It is also worth noting that REIFs hold a significant amount of cash that can be used to meet redemption request. REIF cash positions in the sample were stable at around 10% between February and June 2020. In that context, the low level of redemptions experienced by REIFs so far indicates a stability of investors in those funds, which is consistent with a longer-term horizon of an investment in real estate. This may also hold for retail investors, whose participation is particularly high (50%) in funds offering daily redemption.

### Redemption frequency and cash position

Redemption frequency	Number of AIFs	AuM (bn) June 2020	Cash
Daily	30	125.6	11%
Fortnightly	7	20.8	15%
Monthly	8	16.5	4%
Quarterly	23	69.2	2%
Lower than quarterly	23	65.1	12%
N/A	1	0.6	1%
<b>Total</b>	<b>92</b>	<b>297.8</b>	<b>10%</b>

Note: Number, AuM and cash position for Real Estate funds in sample as of June 2020. AuM expressed in EUR billions; cash in % of AuM.

Source: NCAs, ESMA.

### Redemption frequency and notice period

Redemption frequency	Notice period			
	0-1 day	2-7 days	8-30 days	> 30 days
Daily	15%	8%	2%	75%
Fortnightly	62%	12%	25%	>1%
Monthly	58%	>1%	25%	25%
Quarterly	15%	-	22%	63%
Lower than quarterly	7%	-	8%	84%
N/A	-	-	-	-
<b>Total</b>	<b>19%</b>	<b>4%</b>	<b>11%</b>	<b>65%</b>

Note: Real estate funds by redemption frequency and notice period given to investors as of June 2020, in % of NAV.

Source: NCAs, ESMA.

90. The vast majority of funds in the sample appears to be not substantially leveraged<sup>42</sup>, i.e. with an AuM to NAV ratio below 300% and limited derivative exposure (4% on average). The average AuM to NAV ratio in the sample is around 146%. From the analysed REIFs, 90% display an AuM to NAV ratio below 200%<sup>43</sup>.

91. **Variable availability of LMTs for REIFs in the sample** – 78% of funds can take recourse to temporary borrowings, 38% can use gates. Anti-dilution levies, redemptions in kind and side pockets are available to 18%, 12% and 3% of funds respectively. Only a small number of REIFs can dispose of more than one LMT (9 have gates and redemption in kind arrangements, 13 combine gates with anti-dilution levies measures).

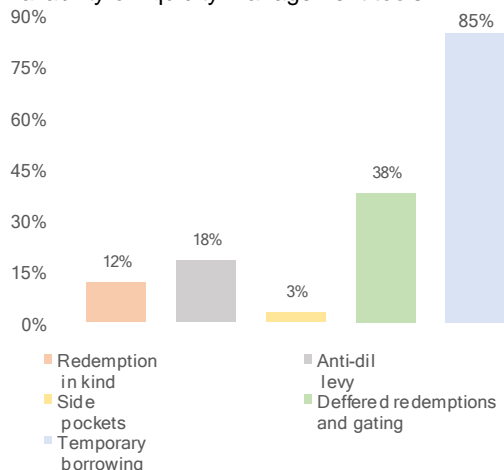
92. In the event of significant redemption requests, REIFs with gating arrangements in place have the possibility to defer redemptions over a period ranging from 6 months to 2 years (enabling them to meet portfolio liquidity constraints if necessary and avoid potential fire sales). The gate threshold applied ranges from 1% to 25%<sup>44</sup>, with an average of 10%. Funds with no gating arrangements in place account for almost 80% of NAV (76% for REIFs with no notice period or one day notice period).

<sup>42</sup> While the regulatory definition of AuM under the AIFM Directive may differ from the exposures calculated under the commitment method, the combination of an AuM to NAV ratio lower than 300% and the low exposure to derivatives indicates that most of AIFs analysed are not substantially leveraged. An AIF with a leverage ratio calculated in accordance to the commitment method of less than three times its net asset value it is not considered as employing leverage on a substantial basis.

<sup>43</sup> Only 3 REIFs have a AuM to NAV ratio above 300%.

<sup>44</sup> Only 2 funds reported a gate threshold above 20%.

### Availability of liquidity management tools



Note: Availability to real estate funds of main LMTs, in %.  
Sources: NCAs, ESMA.

#### LMTs may help in risk mitigation, but are not widely available in the fund set-up

Outflows were limited so far for funds in the sample, which explains the low use of LMTs. However, LMT availability for funds is variable and overall, based on total NAV, limited.

#### Priority Area 4 – Increase the availability and use of liquidity management tools

**93. REIFs preparedness to valuation uncertainty is uneven.** While 38% of REIFs (29% of total AuM) declared valuation uncertainty issues since the mid-February 2020, only 8% of the respondents are expecting material difficulties over the next 6 months, of which operational difficulties not related to real estate investment. Close to half of the managers declared having policies and processes for property valuation in stressed market conditions.

94. However, there is a particular risk related to loan covenants, i.e. contractual obligations relating to loans received by managers that may trigger fire sales and have a pro-cyclical effect. Difficulties in meeting significant guarantees and covenant obligations have been clearly indicated by six REIFs<sup>45</sup>. Following the impact of COVID-19 related market stress, declining rent collection affected the ability of two REIFs to service their debt, while others have negotiated either temporary covenant waivers or debt restructuring. In generic terms, during periods of market stress, liquidity risk for REIFs may arise from the inability or impossibility to waive such covenant obligations.

<sup>45</sup> Based on its in-depth supervisory review of the sector and discussions with its industry, one NCA has indicated that the majority of covenants obligations applying to the funds under their supervision were waived by the related financial institutions during the COVID-19 crisis.



## Responses to the questionnaire on asset valuation

Please describe the methodology used to establish the liquidity profile under normal conditions			Yes	No	<b>Example of answers from asset managers</b> <ul style="list-style-type: none"> <li>• Debt service coverage ratios surpassed</li> <li>• Debt restructuring and temporary covenant waivers due to the impact of COVID 19 crisis on rent collection, rent deferral or free periods agreed with tenants</li> <li>• Loan covenant in breach</li> <li>• Loan default due to rental problem</li> </ul>
Has the REIF been impacted by material distortions in the incoming cash-flows (e.g. rental income default)?	42%	58%			
Has the Fund experienced difficulties in meeting significant guarantees and covenants obligations for the REIF ?	7%	93%			
Do the AIFM's valuation policies and processes provide for property valuation under stressed market conditions (e.g. material uncertainty in independent appraiser's report) ?	50%	50%		<ul style="list-style-type: none"> <li>• Valuation model modified if deviation from previous value is superior to given thresholds (e.g. 5%-10% or 15%)</li> <li>• AIFMs can adjust valuation provided by the external valuers in case of divergence with current market conditions</li> </ul>	
Does the AIFM expect to experience significant difficulties in the valuation of assets for the calculation of the NAV of the fund over the next six months, based on the information available at the date of this questionnaire?	8%	92%		<ul style="list-style-type: none"> <li>• External valuers unable to estimate COVID-19 impact on the property (Art. 19 AIFMD)</li> <li>• Application of Material Valuation Uncertainty clauses</li> </ul>	
Valuation as of 30/06/2020			Yes	No	
Was the REIF subject to a "material valuation uncertainty" disclosure in the valuation report(s) of the independent valuation experts in the context of the valuation of the assets of the REIF at the latest official NAV calculation	38%	62%			38% of REIFs in the sample (29% of AuM) affected by valuation uncertainties in Jun-20

### Improve REIFs preparedness to valuation uncertainty

Only around a third of REIFs in the sample reported valuation difficulties between February and June 2020. Moreover, they are not expecting similar difficulties in the next 6 months. However, the potentially long-lasting impact of current macroeconomic uncertainties, especially for CRE assets, highlight the importance of robust valuation procedures in order to be able to mitigate valuation uncertainty. Therefore, managers should ensure that their valuation procedures cover all market situations.

#### Priority Area 5 – Supervision of valuation process in a context of valuation uncertainty

### 6.4. Estimation of resilience to a potential future shock (Topic C)

95. This section analyses the resilience of the REIFs to a future redemption and/or valuation uncertainty shocks by looking at their liquidity profile under foreseeable and stressed conditions.

96. A comparison of fund liquidity on the asset side (i.e. how quickly can fund assets be liquidated) and on the investor side (i.e. how quickly can investors redeem their fund shares) can provide an indication of the level of liquidity risk for a fund. In particular, given the illiquid nature of real estate assets, it is important to analyse the alignment between the investor and asset liquidity profiles at the short and medium term (i.e. between one day and one year). The following graphs provide a comparison between the investor liquidity

profile<sup>46</sup> and asset liquidity profiles under normal (green line) and stressed conditions (red line). This allows to identify potential fund liquidity mismatches, i.e. the risk that a fund is at risk of not being able to meet redemption requests by investors.

97. At the aggregate level, REIF liquidity profiles point to potential liquidity mismatch: within a week, investors can redeem up to 20% of the NAV, while less than 2% of the assets can be liquidated within this time frame. This especially holds for REIFs offering daily redemption, which should be able to redeem 38% of their investors within one day on average while less than 4% of their portfolio can be liquidated within this timeframe. This assessment is valid both under normal and stressed conditions: due to the illiquid nature of the assets, the difference between the normal and stressed assessment is limited overall.

98. Funds with a monthly or quarterly redemption are generally not exposed to the same liquidity issues in the short term. However, REIFs offering monthly redemption frequency still experience significant liquidity mismatches above 1 week, while funds offering a quarterly redemption are exposed to mismatches after 1 month.

**REIFs are intrinsically exposed to liquidity mismatches, which can be mitigated in anticipation of a future shock**

Real estate assets are not highly liquid by nature and expose open-ended REIFs to liquidity mismatches. The liquidity mismatch can be mitigated by cash to some extent: unencumbered cash for RE funds is higher compared to other types of funds. However, over longer time horizons, cash buffers are significantly lower than the potential liquidity mismatch that could arise if investors were to redeem, especially for funds offering daily redemptions.

While REIFs were generally able to meet redemption requests in the past, they were not tested yet against a major outflow episode. Ongoing supervision activities should therefore continue to pay attention to those liquidity mismatches, with a particular attention to funds offering daily redemptions. Moreover, as liquidity mismatches are inevitable, managers may have to rely on LMTs, provided that they are available at the fund level.

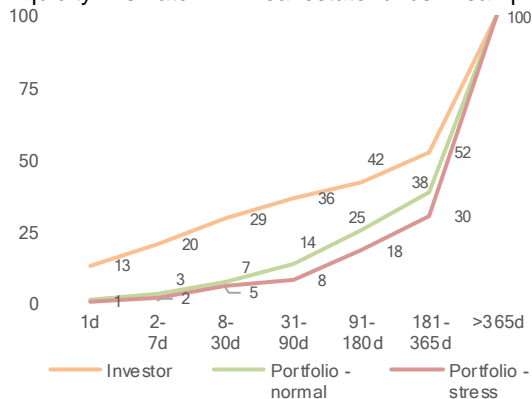
**Priority Area 1** – Ongoing supervision of the alignment of the funds' investment strategy, liquidity profile and redemption policy

**Priority Area 4** – Increase the availability and use of liquidity management tools.

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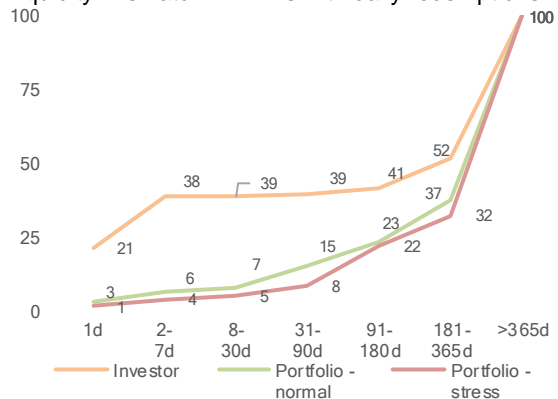
<sup>46</sup> As discussed in Chapter 4, the investor liquidity profile reported by REIFs takes into account available gating arrangements.

### Liquidity mismatch – All real estate funds in sample



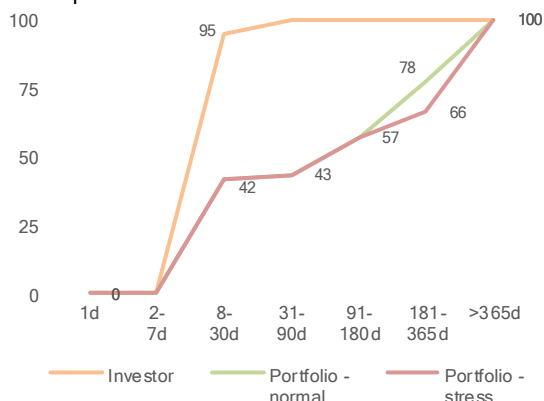
Note: Investor and portfolio liquidity profiles of real estate funds, in % of NAV. Funds offering daily to annual redemptions. x-axis: time to liquidate portfolio assets (portfolio liquidity) and delay for investors to redeem their fund shares (investor liquidity); y-axis: % of fund NAV. Sources: NCAs,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

### Liquidity mismatch – REIFs with daily redemptions



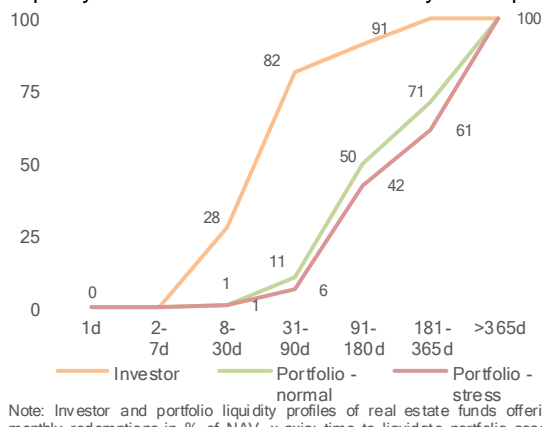
Note: Investor and portfolio liquidity profiles of real estate funds offering daily redemptions, in % of NAV. x-axis: time to liquidate portfolio assets (portfolio liquidity) and delay for investors to redeem their fund shares (investor liquidity); y-axis: % of fund NAV. Sources: NCAs, ESMA.

### Liquidity mismatch - REIFs with fortnightly redemptions



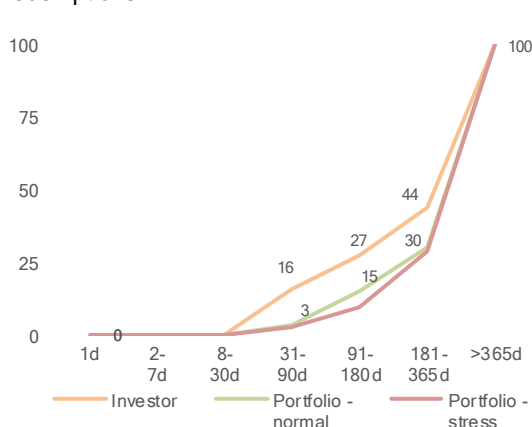
Note: Investor and portfolio liquidity profiles of real estate funds offering fortnightly redemptions, in % of NAV. x-axis: time to liquidate portfolio assets (portfolio liquidity) and delay for investors to redeem their fund shares (investor liquidity); y-axis: % of fund NAV. Sources: NCAs, ESMA.

### Liquidity mismatch – REIFs with monthly redemptions



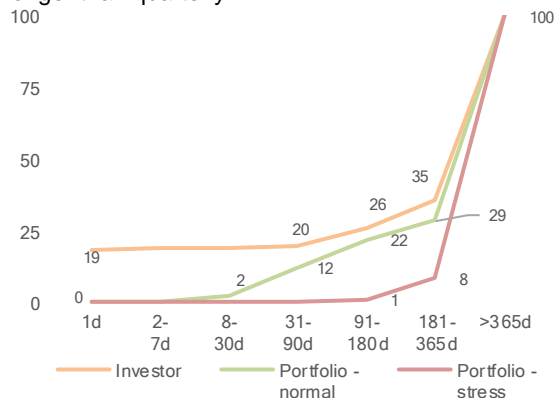
Note: Investor and portfolio liquidity profiles of real estate funds offering monthly redemptions in % of NAV. x-axis: time to liquidate portfolio assets (portfolio liquidity) and delay for investors to redeem their fund shares (investor liquidity); y-axis: % of fund NAV. Sources: NCAs, ESMA.

### Liquidity mismatch – REIFs with quarterly redemptions



Note: Investor and portfolio liquidity profiles of real estate funds offering quarterly redemptions, in % of NAV. 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.

### Liquidity mismatch – REIFs with redemption periods longer than quarterly



Note: Investor and portfolio liquidity profiles of real estate funds offering redemptions with a frequency longer than quarterly, in % of NAV. 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.

## **7. Conclusion on the preparedness and consideration on whether additional actions are needed to foster the asset managers industry preparedness (Topic D)**

### **7.1. Scope of the exercise**

99. The results in this report are based on a large data sample of corporate bond and real estate funds, collected to implement the ESRB recommendation.

100. NCAs have indicated that their risk assessments of the sample are broadly consistent with the conclusions across investment fund categories drawn from their active supervision of the crisis, including their regular exchanges with the management companies and data collection and analysis. This consistency especially applies to fund redemptions and valuation issues.

101. The overall number of EEA funds suspended remained small through the acute market stress in Q1 2020 (0.17% of NAV on 23 March 2020) and further decreased until the end of Q2 2020 (less than 0.06% of NAV end of March 2020). However, the proportion of funds suspended in the analysed sample is about 0.4% for corporate debt funds<sup>47</sup> and 1% for REIFs<sup>48</sup>. This has to be seen against the fact that the analysed sample consider only large funds investing in less liquid assets and hence are in principle more prone to use LMTs under stressed market conditions.

### **7.2. Preparedness of the analysed funds against an increase in redemptions and/or episodes of valuation uncertainty**

#### ***7.2.1. Corporate debt funds***

#### **Overall, funds managed to meet redemption requests during the COVID-19 related market stress in February and March 2020...**

102. On average, the analysed corporate bond funds managed to maintain their activity adequately when facing redemption pressures and/or episodes of valuation uncertainty. For example, the number of suspensions during the COVID-19 related market stress in February and March 2020 was low (six funds with significant corporate debt exposure). Management companies were able to meet redemption requests while maintaining their portfolio structure broadly stable ("*vertical slicing*").

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<sup>47</sup> As indicated in section 5.2.3, the six corporate debt funds suspended between February and March 2020 have EUR 8.5bn NAV at the end of March, that is 0.8% of UCITS NAV analysed. When considering also the NAV of corporate debt funds under AIFMD, this share is even lower (0.4%).

<sup>48</sup> As indicated in section 6.2, two REIFs amounting to EUR 2.7bn NAV have been suspended in June 2020.

103. A proportion of corporate debt funds reported valuation issues (16%), especially in relation to certain asset types such as high yield, structured products and subordinated debt<sup>49</sup>. The deteriorating conditions in the underlying asset market from February onwards were characterised by a widening of bid-ask spreads, reduction in the number of counterparties, as well as inconsistent and non-transparent prices in the market.

**..... however, these results should be interpreted with caution...**

104. The management of redemption requests during the COVID-19 related market stress in February and March 2020 should be considered against the backdrop of the support provided by governments and central banks to the markets in which these funds invest. Without these interventions, it is not certain that the funds could have continued to be managed in the same way.

105. Depending on the nature and unexpectedness of any future shock, the situation might unfold differently, especially if investors' redemption requests were to be higher for a longer period of time. While vertical slicing applied by funds has been positive from an investor protection perspective, it could also indicate, on the other hand, that managers whose funds hold less liquid assets may want to increase the relative share of their cash holdings as a precautionary measure, thus limiting in practice the use of cash buffers in a stressed environment. If used at a large scale, vertical slicing can also imply that assets with limited liquidity are sold to an extent which can exceed the absorption capacity of these markets.

**... the results show pockets of vulnerabilities...**

106. The following issues have been identified for a number of corporate bond funds in our sample:

- The potential misalignment between the liquidity profile of the fund investments and their redemption policies for some funds (e.g. funds which invest in less liquid assets and have a high redemption frequency with no or low notice periods and/or redemption deferrals).
- The absence of liquidity management tools at the disposal of management companies, especially to handle large and unusual redemptions or deteriorating asset market conditions (i.e. gating arrangements, swing pricing mechanism). While some national frameworks make available a wide range of LMTs for fund managers, these are more limited, or absent, in other jurisdictions.
- Stress tests were conducted by almost all asset managers in 2020, however not always in an adequate manner (e.g. no/low stress on redemptions, no stress on collateral).

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<sup>49</sup> Section 5 states that this figure may have been underestimated.

**... and funds have made only few adjustments which points to the need for corporate debt funds to better prepare for a renewed episode of market stress**

107. The stressed market conditions in early 2020 provide management companies with an opportunity to adapt their internal risk management processes and reinforce the liquidity management process of their funds (utilisation of cash buffers, use of additional liquidity management tools, improve valuation process).
108. Some corporate bond funds have improved their preparedness for new valuation shocks by deploying additional valuation methodologies.
109. However, overall only few adaptations have been undertaken, even among management companies whose funds have encountered problems such as suspensions and valuation issues. Only 21 corporate debt funds in the sample have increased the number of LMTs available to them<sup>50</sup>, among which seven funds introducing gating arrangements and 14 funds swing pricing and anti-dilution levy measures. Only six funds have revised their notice periods.

### **7.2.2. Real estate funds**

**Overall funds were relatively resilient to the COVID-19 related market stress in February and March 2020, however in a context of low redemptions ...**

110. Despite having structural liquidity mismatches due to the illiquid nature of their assets, the REIFs in the sample appeared to be globally relatively resilient during the COVID-19 related market stress in February and March 2020. For instance, none of them were suspended during the period and they maintained their liquidity buffer. However, REIF redemption levels were low in the first half of 2020 and some REIFs recorded inflows. Hence, most of the funds had no issues in covering redemption requests without activating any special arrangements.

**... with significant issues around valuation, availability of LMTs and loan covenants**

111. The data collected show that the main issue reported by RE funds is valuation uncertainty in real estate assets caused by the uncertainty of cash flows, and by the low level of real estate transactions, which narrow the comparable transactions used for valuation purposes. These elements considered together reasonably suggest that the effects of the COVID-19 related market stress may have not yet materialised.

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<sup>50</sup> It should be underlined that the introduction of these measures may take some time, as national regulation may provide for different requirements to be satisfied prior to their adoption (e.g., informing investors and obtaining their consent, obtaining an authorisation from their regulators).

112. While no analysed funds were suspended between February and March 2020, two funds were suspended in June 2020, with the fund managers stating that valuation uncertainty affects their holdings.
113. In addition, the availability of LMTs is more reduced in real estate funds with important differences between countries.
114. Another risk related to REIFs stems from loan covenants, i.e. contractual obligations relating to loans taken on by the fund. Both open and closed-ended REIFs create financial leverage via loans contracted with financial institutions. These loans contain covenants which are legally binding and if breached may trigger loan redemption which in turn can lead to forced sales of real estate assets. It is important to raise the industry's awareness regarding the potential risks related to leverage with a particular focus on loan covenants and invite national competent authorities to monitor this risk in the sector.

### **7.3. Further actions are needed to enhance the preparedness**

#### ***7.3.1. Further increase NCAs engagement on funds' liquidity risk management***

115. Both UCITS and AIFMD frameworks contain provisions on liquidity management that require redemption policies to be consistent with the liquidity profile of the investment strategy of the fund. They are aimed at ensuring the fund's ability to meet investors redemption requests according to the fund rules, and in a manner consistent with the fair treatment of all investors.
116. Indeed, according to Article 40(4) of Commission Directive 2010/43/EU "Member States shall require management companies to ensure that for each UCITS they manage the liquidity profile of the investments of the UCITS is appropriate to the redemption policy laid down in the fund rules or the instruments of incorporation or the prospectus".
117. Article 49 of Commission Delegated Regulation (EU) No 231/2013 provides that "For the purposes of Article 16(2) of Directive 2011/61/EU [liquidity management provisions], the investment strategy, liquidity profile and redemption policy of each AIF managed by an AIFM shall be considered to be aligned when investors have the ability to redeem their investments in a manner consistent with the fair treatment of all AIF investors and in accordance with the AIF's redemption policy and its obligations" and "In assessing the alignment of the investment strategy, liquidity profile and redemption policy the AIFM shall also have regard to the impact that redemptions may have on the underlying prices or spreads of the individual assets of the AIF".
118. Already before the COVID-19 related market stress, the ESRB<sup>51</sup> and ESMA<sup>52</sup> expressed concerns about the build-up of potential liquidity mismatches, which raised questions about whether these rules were being complied with in practice.

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<sup>51</sup> Among others: [EU Shadow Banking Monitor of September 2018](#), ESRB recommendation, ESMA Report on Trends, Risks and Vulnerabilities ("ESMA TRV reports").

<sup>52</sup> All ESMA TRV reports express concern about the increase, from [ESMA TRV n.1 2018](#).

119. ESMA has undertaken different actions with regard to liquidity risks, among which are:

- a stress simulation exercise (STRESI) which results were discussed with NCAs,
- an ongoing Common Supervisory Action (CSA) on UCITS liquidity risk management launched on 30 January 2020: NCAs agreed to assess simultaneously how market participants in their jurisdictions adhere to the UCITS liquidity rules in their day-to-day business. This is being done on the basis of a common methodology. The execution of the supervisory action was left to NCAs who are competent to supervise UCITS, while it is being coordinated by ESMA. The selection of the managers and funds to be scrutinised was made by NCAs in line with an agreed methodology. The finalisation of the CSA exercise in the coming months could also incorporate the results stemming from the present work.
- the Guidelines on stress testing in UCITS and AIFs<sup>53</sup>.

120. Supervisory interventions have often raised the standards of systems, controls and governance. It should be underlined that the ongoing supervision of how management companies are meeting their obligations to manage liquidity risks by NCAs has sometimes resulted in changes in the funds liquidity process (e.g. introduction of notice periods, gates, cash held as a liquidity buffer where appropriate), the increase of LMTs available to their funds market and the improvement of the liquidity risks management process. This monitoring was reinforced during the COVID-19 related market stress in February and March 2020.

121. In terms of overall market conditions, ESMA has raised awareness about the fragile market environment in its TRV report 2/2020<sup>54</sup>. In particular, “*the potential decoupling of financial market performance and underlying economic activity raises the question of the sustainability of the market rebound looking forward.*”

122. To prepare for more challenging times, the first priority would be that NCAs pursue their close monitoring of liquidity risks, which should be aimed at identifying and addressing any potential weaknesses.

123. In particular, parts 5 and 6 of this report have highlighted potential vulnerabilities for some funds that could result in liquidity risks or an inadequate liquidity risk management process. For instance, potential misalignments between the liquidity profile of the funds’ investments and their redemption policies have been identified through the stress simulation exercise and the analysis of the coherence of liquidity profiles for assets and liabilities (sections 5.3 and 6.3). Moreover, the analyses presented in these sections conclude that only a few funds have adapted their liquidity process and increased the LMTs available to them after having experienced difficulties during the first episode of the crisis<sup>55</sup>.

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<sup>53</sup> Guidelines on liquidity stress testing in UCITS and AIFs ([ESMA34-39-882](#)).

<sup>54</sup> See [ESMA TRV report 2/2020](#).

<sup>55</sup> It should be underlined that the introduction of these measures may take some time, as national regulation may provide for different requirements to be satisfied prior to their adoption (e.g., informing investors and obtaining their consent, obtaining an authorisation delivered by the regulator).



124. This is, for instance, the case for (i) some REIFs with high redemption frequency (e.g. more frequent than quarterly), with a short notice period and no gates, and (ii) some corporate debt funds investing in HY bonds or loans with daily redemption frequency and no LTMs to help them meet the redemptions when the liquidity of their assets declines during crisis.
125. These potential weaknesses require further analysis by NCAs in order to prompt asset managers to remediate them.
126. Beyond the analysis conducted to implement the ESRB exercise, continued active engagement and oversight by NCAs of their market participants is critical. NCAs should continue their efforts to ensure that any misalignments between the liquidity profile of the funds' investments and their redemption policies are remedied in a timely manner.

**Priority area 1 – Ongoing supervision of the alignment of the funds investment strategy, liquidity profile and redemption policy.**

Market participants are responsible for ensuring the alignment between the liquidity profile of funds' investments and their redemption policies. In order to supervise compliance with rules on liquidity risk management, NCAs should continue their active engagement with, and supervision of, their market participants. Misalignments between the liquidity profile of funds' investments and their redemption policies should be corrected in a timely manner<sup>56</sup>. In the context of the ESRB recommendation, this applies in particular to the funds analysed in this exercise, if potential misalignments are confirmed by further analysis carried out by NCAs. This monitoring should be taking into account all information at their disposal (in particular the fund liquidity profile established under the AIFMD reporting) and insight gained through their ongoing dialogue with management companies. Management companies should be able to justify the liquidity set-up of their funds, at the authorisation phase or during NCAs supervisory actions (surveillance of funds, thematic reviews, on-site and off-site inspections). Particular attention should be paid to funds investing in less liquid or illiquid assets.

127. The assessment of the liquidity risk is a key component to identify and address potential liquidity mismatches. However, certain factors seem to be overlooked by management companies in this assessment. By way of example, 71% of the funds under review employing collateral arrangements did not envisage a shock on collateral in their liquidity risk assessment.
128. Regarding REIF more specifically, the COVID 19 crisis is of a particular nature and has unprecedented effects on the economy and, by way of consequences, on the commercial real estate market. Against this background, the risk of loan covenants and fire sales aforementioned should be properly assessed.

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<sup>56</sup> The measures envisaged to remedy liquidity risks identified may require initiating an orderly process involving administrative milestones to inform and obtain investors' consent (e.g. introduction of LMTs, modification of the redemption frequency or adaptation of the fund's strategy).

## Priority area 2 – Ongoing supervision of liquidity risk assessment.

As part of their ongoing supervision of management companies, NCAs should supervise the liquidity risk assessment by management companies. Particular attention should be paid to supervising that management companies in their liquidity risk assessment comply with their obligation to take all factors into account that could have an impact on funds liquidity or that could trigger unwanted sales of assets, such as (i) margin calls which may increase cash needs in case of renewed heightened market volatility, and (ii) loan covenants in the REIFs. Furthermore, all relevant items on the liability side of the fund balance sheet, including items other than redemptions, should be subject to liquidity stress tests, as stated in the Guidelines on liquidity stress testing in UCITS and AIFs<sup>57</sup>.

129. The identification of funds that present potential liquidity mismatches (Priority area 1) or use improper method to assess liquidity risks (Priority area 2) should be based on all information and data at NCAs' disposal.
130. Acknowledging the importance of data in risk-based supervision, in its letter to the European Commission in the context of the AIFMD review, ESMA has indicated, the need to harmonise UCITS and AIFM frameworks especially regarding reporting to competent authorities. The ESRB recommendations on liquidity and leverage risks in investment funds covers the issue in its Recommendation D on UCITS reporting, asking the European Commission to undertake a legislative initiative aiming to harmonise the UCITS reporting regime. The ESRB in particular specifies that the Commission's proposed changes to the relevant EU legislation should include reporting obligations that cover both manager and fund-specific data while also reflecting the specificities of UCITS.
131. Through the AIFMD reporting, information on funds' liquidity profiles are already available to NCAs and these are particularly important for supervisory activity, as they allow to compare the liquidity of the assets in funds' portfolios and the liquidity that can be requested by investors. However, the data collected have shown that AIFMs tend to interpret differently reporting requirements under AIFMD.
132. Against this background, it is important to improve and harmonise the reporting regimes, in order to enhance the common understanding, quality and usability of this information.

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<sup>57</sup> Guidelines on liquidity stress testing in UCITS and AIFs (ESMA34-39-882): "Understanding liquidity risks - A manager should have a strong understanding of the liquidity risks arising from the assets and liabilities of the fund's balance sheet, and its overall liquidity profile, in order to employ LST that is appropriate for the fund it manages" and "Stress testing fund liabilities to determine the effect on fund liquidity - LST should incorporate scenarios relating to the liabilities of the fund, including both redemptions and other potential sources of risk to liquidity emanating from the liability side of the fund balance sheet".

### **Priority area 3 – Fund liquidity profiles.**

In the context of the AIFMD review, additional specifications on how liquidity profiles should be established and reported as part of the AIFMD reporting framework should be introduced. This includes (i) on the asset side how to determine a realistic and conservative estimate of which percentage of the fund portfolio can be liquidated (estimate for each asset class based on reliable methodology and data), and (ii) on the liability side, how to take into account arrangements with respect to gates and notice periods in the determination of investor liquidity profiles. These data are important to ensure necessary information on liquidity profiles and to support a risk-based approach in the supervision of liquidity risks mentioned in Priority area 1.

In its letter to the European Commission with regard to the review of the AIFMD<sup>58</sup>, ESMA called for "*greater harmonisation of the UCITS and AIFMD frameworks*", and in particular, the introduction of a UCITS reporting framework to support their risk-based supervision<sup>59</sup>. When such UCITS reporting is introduced, a consistent approach should be applied to both UCITS and AIFM frameworks in particular in relation to the reporting of liquidity profiles. Therefore, this priority area 3 equally applies to UCITS.

#### **7.3.2. Increase the availability and use of liquidity management tools**

133. In its letter to the European Commission regarding the review of the AIFMD<sup>60</sup>, ESMA has reiterated its support for the ESRB recommendation (ESRB/2017/6)<sup>61</sup> calling for a harmonised legal framework to govern the availability of additional liquidity management tools for fund managers subject to both UCITS and AIFMD frameworks.

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<sup>58</sup> [Letter to the European Commission with regard to the review of the AIFM Directive \(ESMA34-32-550\)](#).

<sup>59</sup> The [ESRB recommendations on liquidity and leverage risks in investment funds](#) covers the issue in its Recommendation D on UCITS reporting, asking the European Commission to undertake a legislative initiative aiming to harmonise the UCITS reporting regime.

<sup>60</sup> [Letter to the European Commission with regard to the review of the AIFM Directive \(ESMA34-32-550\)](#).

<sup>61</sup> [ESRB recommendations on liquidity and leverage risks in investment funds](#)  
[ESRB considerations regarding the AIFMD](#)

*Recommendation A - Liquidity management tools for redemption*

*1. The Commission is recommended to propose that Union legislation incorporates a common Union legal framework governing the inclusion of additional liquidity management tools (a-LMTs) in the design of investment funds originating anywhere in the Union so that the decision on which a-LMTs to incorporate in the constitutional documents of or other pre-contractual information on investment funds is made individually by each entity responsible for management.*

*2. The Commission is recommended to propose that Union legislation includes further provisions specifying the NCAs' role when using their powers to suspend redemptions in situations where there are cross-border financial stability implications.*

*3. The Commission is recommended to propose that Union legislation sets out ESMA's general facilitation, advisory and coordination role in relation to the NCAs' powers to suspend redemptions in situations where there are cross-border financial stability implications, in line with Recommendation A(2).*

134. From a regulatory and supervisory perspective, it appears important to broaden the range of available LMTs, especially for funds that are more exposed to less liquid assets and/or assets whose liquidity usually recedes in crisis times. In certain EEA countries, the LMTs available to the funds and management companies were widened (for instance, in Germany).

135. However, the availability of LMTs still varies across the European fund industry due to a variety of reasons, such as differences in national regulatory frameworks and NCAs approaches to encourage their use. Reputational issues may also deter management companies from using LMTs.

136. The work coordinated by ESMA showed a lack of harmonisation at EU level on the availability, characteristics and national provisions with regard to LMTs. This is evidenced by the results of a mapping exercise carried out among NCAs in 2017 and updated in 2020 (see paragraph 65 in section 5.3.2 above). LMTs are not defined in EU legislation, and national definitions, where available, may vary significantly.

137. The introduction of a harmonised legal framework for LMTs would be an important step to foster their adoption and use by UCITS management companies and AIFMs. This should provide clear definitions of LMTs, transparency requirements, provisions related to their documentation and control mechanisms (e.g. controlling the cost charged to redeeming investors through swing pricing / anti-dilution levy mechanisms). This is an important milestone to ensure the availability of LMTs, to promote investor protection and thus reduce the barriers to the use of these tools linked to the negative image they may have.

138. Against this background, ESMA further reiterates its support for the ESRB Recommendation on liquidity and leverage risks in investment funds<sup>62</sup>, in order to make LMTs more broadly available across the EU and ensure convergence on their use. Pending the recommended legislative harmonisation at EU level, some progress may already be

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<sup>62</sup> [ESRB recommendations on liquidity and leverage risks in investment funds \(ESRB/2017/6\)](#)

achieved at national level on the availability and use of LMTs, in close coordination and cooperation with ESMA and NCAs.

#### **Priority area 4 – Increase of the availability and use of liquidity management tools**

As indicated in the letter to the European Commission with regard to the review of the AIFMD<sup>63</sup>, ESMA reiterates its support for the ESRB recommendation<sup>64</sup> calling for a harmonised legal framework to govern the availability of additional liquidity management tools for fund managers in both UCITS and AIFM frameworks. The legal framework should also include specifications on the required disclosures for the provision and use of LMTs to ensure greater protection and consistency for investors.

#### **7.3.3. Scrutiny on valuation procedures under stressed condition**

139. According to both UCITS and AIFM directives<sup>65</sup>, the rules for the valuation of assets and the rules for calculating the price of the units of a UCITS shall be laid down in the applicable national law. Management companies should develop and employ adequate valuation procedures. It is important to ensure that these procedures are robust and incorporate clear valuation approaches for stressed market conditions to enable proper valuation of funds in times of stress in underlying markets.
140. According to management company answers provided to NCAs in the context of the supervisory exercise which led to this report, around 15% of corporate funds and 38% of real estate assets were affected by valuation uncertainties. However, as already mentioned, valuation issues were more widespread in practice. The analysis of the data and the answers by NCAs show that not all managers have included provision to value their assets in a stressed environment.
141. NCAs should ensure that the procedures provide clear rules for the use of the different valuation methods, and in particular the possibility to switch from one method to another under stressed market conditions. Especially, managers should not use mark-to-model when mark-to-market provides a reliable value of the asset. Where mark-to-market does

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<sup>63</sup> Letter to the European Commission with regard to the review of the AIFM Directive (ESMA34-32-550)

<sup>64</sup> ESRB recommendations on liquidity and leverage risks in investment funds (ESRB/2017/6)

<sup>65</sup> Article 85 of UCITS Directive, « *The rules for the valuation of assets and the rules for calculating the sale or issue price and the repurchase or redemption price of the units of a UCITS shall be laid down in the applicable national law, in the fund rules or in the instruments of incorporation of the investment company* ». Article 12 of UCITS Directive « *In particular, the competent authorities of the management company's home Member State, having regard also to the nature of the UCITS managed by a management company, shall require that each such company: (a) has sound administrative and accounting procedures* ». According to Article 19 of AIFMD « *1. AIFMs shall ensure that, for each AIF that they manage, appropriate and consistent procedures are established so that a proper and independent valuation of the assets of the AIF can be performed in accordance with this Article, the applicable national law and the AIF rules or instruments of incorporation. 2. The rules applicable to the valuation of assets and the calculation of the net asset value per unit or share of the AIF shall be laid down in the law of the country where the AIF is established and/or in the AIF rules or instruments of incorporation.* » Article 67(2) of AIFM Regulation provides that « *The valuation policies and procedures shall address at least the following: (...) (e) the valuation of any adjustments related to the size and liquidity of positions, or to changes in the market conditions, as appropriate.* »

not provide a reliable value of the assets, the manager should assign a fair value to the asset by using mark-to-model.

142. The data and answers collected during this exercise have shown the importance of having real-time access to market information and sufficient expertise in the valuation team, especially to challenge the reliability of the sources used in the valuation process, whose quality may have been affected during the crisis. Against this background, the delegation of portfolio management should be taken into account to ensure that the team in charge of the valuation has sufficient knowledge and access to information to analyse the reliability of the sources and establish a fair valuation of the portfolio.

**Priority area 5 – Supervision of valuation processes in a context of valuation uncertainty**

As part of their ongoing supervision of management companies, NCAs should carry out further supervisory activities to ensure that management companies valuation procedures cover all market situations including valuation approaches for stressed market conditions.

The circumstances of delegated portfolio management should be taken into account to ensure that the team in charge of the valuation has sufficient expertise and access to information to analyse the reliability of the valuation sources it uses and establish a fair valuation of the portfolio.

## Annex – Sample of funds analysed

**Table A: Corporate debt funds in the sample**

Country	UCITS				AIFs						
	Number of funds	NAV (EUR bn)			Number of funds	NAV (EUR bn)			AuM (EUR bn)		
		Feb-20	Mar-20	Jun-20		Feb-20	Mar-20	Jun-20	Feb-20	Mar-20	Jun-20
Austria	1	2.4	2.2	2.5	1	3.1	3.0	3.1	3.1	3.0	3.1
Belgium	2	2.6	1.9	2.5							
Denmark					2	3.3	3.2	3.2	44.8	39.8	40.8
Finland	8	16.7	14.0	14.6							
France	15	52.0	44.9	46.6	14	37.5	35.4	35.9	58.6	57.7	61.5
Germany	5	18.5	20.1	20.2	107	586.5	548.5	580.4	764.0	800.1	818.2
Ireland	103	453.6	362.1	412.3	18	58.0	49.2	52.8	146.1	145.5	119.0
Italy	5	15.1	13.4	14.1	3	7.5	7.1	7.4	8.1	7.8	8.2
Luxembourg	186	719.1	589.8	656.3	18	49.6	41.9	42.4	82.3	77.4	74.4
Netherlands	2	3.3	3.2	3.2	8	89.2	84.2	87.6	123.5	111.9	118.3
Norway	9	19.7	16.7	19.8							
Spain	13	26.2	24.7	25.4							
Sweden	18	35.0	33.0	34.4	3	3.5	3.4	2.6	60.7	56.2	76.4
<b>Total</b>	<b>367</b>	<b>1364.2</b>	<b>1126.0</b>	<b>1251.9</b>	<b>174</b>	<b>838.1</b>	<b>775.9</b>	<b>815.4</b>	<b>1291.2</b>	<b>1299.4</b>	<b>1319.9</b>

Note: number, NAV and AuM for corporate debt funds in sample across time. NAV and AuM expressed in EUR billions.  
Sources: NCAs, ESMA.

**Table B: Real estate funds in the sample**

Country	Number of funds	AIFs					
		NAV (EUR bn)			AuM (EUR bn)		
		Feb-20	Mar-20	Jun-20	Feb-20	Mar-20	Jun-20
Austria	4	8.1	8.1	8.2	7.5	8.9	9.0
Czech Republic	1	1.0	1.0	1.0	1.1	1.0	1.0
Denmark	1	0.8	0.8	0.8	0.8	0.8	0.8
Finland	5	4.1	4.1	4.1	5.9	5.9	6.0
France	8	18.8	18.7	18.8	22.1	22.1	22.1
Germany	30	124.9	125.5	126.8	160.4	161.7	161.3
Hungary	4	3.8	3.5	3.5	6.6	6.3	6.3
Ireland	7	6.1	6.0	5.9	9.2	9.1	9.1
Luxembourg	17	38.0	38.9	38.9	53.2	54.5	54.8
Netherlands	8	17.5	17.9	17.9	21.3	21.3	21.4
Norway	3	3.0	2.9	3.0	3.1	3.0	3.1
Portugal	3	1.9	1.9	1.9	2.1	2.2	2.1
Slovakia	1	0.8	0.8	0.8	0.8	0.8	0.8
Total	92	229.1	230.1	231.6	294.2	297.6	297.8

Note: number, NAV and AuM for real estate funds in sample across time. NAV and AuM expressed in EUR billions.  
Sources: NCAs, ESMA.