

# FUND REDEMPTIONS AMID PERIODS OF SHOCK: EVIDENCE FROM UCITS CORPORATE BOND FUND OUTFLOWS

## INTRODUCTION

In the wake of recent financial crises, European regulators have increasingly scrutinised the role of bond fund redemptions in amplifying market stress.<sup>1</sup> Corporate bond funds, which typically offer daily liquidity while investing in less liquid assets, are seen as potential transmission channels for systemic risk due to this perceived liquidity mismatch. During periods of market turbulence, such as the COVID-19 shock or the aftermath of monetary tightening by global central banks in early 2022, it is argued that sharp outflows from these funds have led to forced asset sales, further depressing prices and straining market liquidity. While it is undeniable that funds - as a sector - sell assets during market shocks, it is questionable whether these sales are driven by a liquidity mismatch, or by a 'first-mover advantage', as commonly termed.

European authorities—particularly the European Securities and Markets Authority (ESMA), the European Central Bank (ECB), and the European Systemic Risk Board (ESRB)—have emphasised the need for enhanced liquidity management tools and market-wide stress-testing frameworks.<sup>2</sup> Despite the current emphasis of the EU's financial policy agenda on enhancing competitiveness and simplifying regulations, these authorities are pushing within the Financial Stability Board (FSB) and International Organisation of Securities Commission (IOSCO) for additional requirements that would go above and beyond changes agreed during the recent AIFMD/UCITS review (e.g. by requiring asset managers to classify funds based on the liquidity of their underlying assets or to calculate the market impact before each trade and reflect this implicit cost in the

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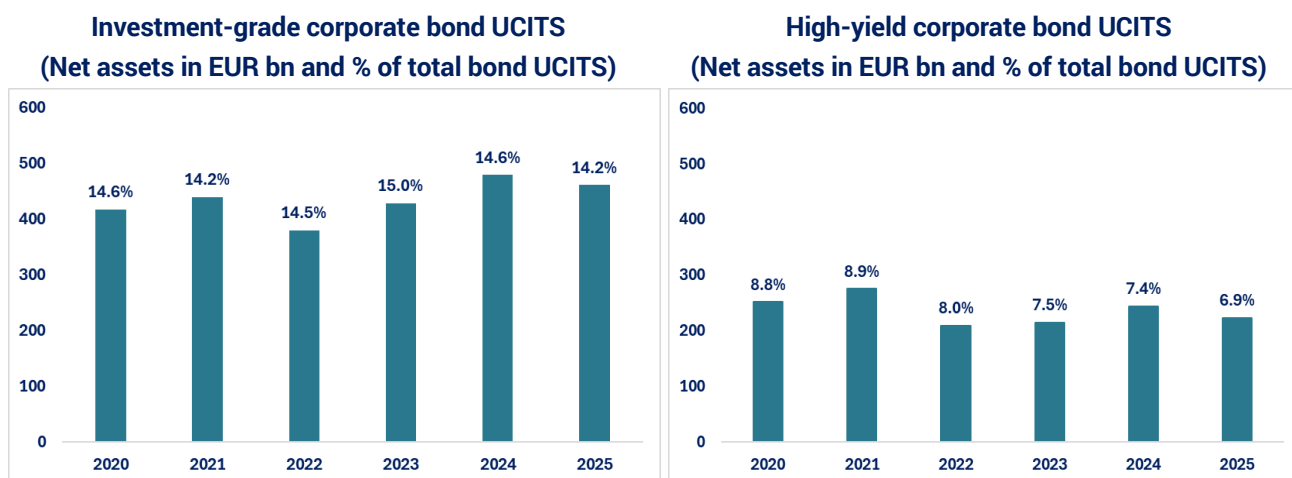
pricing of anti-dilution tools).<sup>3</sup>

This report provides a comprehensive analysis of the daily and monthly redemption patterns of European corporate bond funds during the three most recent financial shocks (Covid-19 in 2020, the 2022 interest rate hike and the tariff shock in 2025), evaluating whether observed redemption levels could pose a material threat to financial stability. While there is ample prior literature on this topic<sup>4</sup>, the report introduces an innovative approach to analysing the 'stickiness' of corporate bond fund flows. Specifically, the analysis expands the shocks sample to include the 2025 tariff-related turmoil, thereby providing a more comprehensive assessment of flow dynamics under stress.

Understanding the dynamics of fund redemptions is critical for an informed regulatory policy discourse, where it is often believed that rapid and widespread withdrawals and sales by other market participants trigger liquidity strains within the corporate bond market and amplify systemic shocks. The findings of this report demonstrate that the alleged liquidity mismatch does not materialise and that fund outflows remain well below the levels used in ESMA stress test scenarios (i.e., 22% within one week).<sup>5</sup> Consequently, rather than imposing stricter requirements on liquidity management for the industry as a whole, supervisors should use their existing powers to investigate and address excessive liquidity transformation in the funds most at risk of facing significant redemptions. It is also essential that authorities look more closely at other sources of liquidity demand during shocks. For example, the Bank of England (BoE) conducted a System-Wide Exploratory Scenario (SWES) for 2023-2024<sup>6</sup>, which demonstrated that margin calls were a main source of liquidity demand during periods of stress, particularly for certain types of large financial institutions.<sup>7</sup>

## INVESTMENT GRADE AND HIGH-YIELD CORPORATE BOND FUNDS

This report examines two categories of corporate bond funds that certain regulatory bodies often identify as potential sources of financial instability during periods of market stress: investment-grade and high-yield corporate bond UCITS funds. As of 2025, the investment-grade category comprised 682 funds with total assets of EUR 472 billion, corresponding to 14% of total bond UCITS. The high-yield category included 431 funds amounting to EUR 223 billion, or 7% of total bond UCITS<sup>8</sup>. Despite some regulators' warnings with regard to the risk these fund categories could pose, they amount to an even smaller share of total UCITS, 3.6% and 1.7% respectively. The charts below show the net assets of each category during the three crises under review (see below), along with their respective shares of the overall bond fund market.



Source: EFAMA's calculation based on EFC classification and Morningstar data

## RESILIENCE IN ACTION: FUND REDEMPTION TRENDS DURING SHOCKS

Using the EFC<sup>9</sup> classification, we define the scope of each fund universe and draw on Morningstar data to track both daily and monthly redemption flows. To capture the intensity of short-term liquidity pressures, we examine daily flows through a two-day cumulative flow-to-net-assets ratio<sup>10</sup>. This approach helps identify potential stress episodes driven by consecutive large outflows and has been employed in prior research focused on US funds (Ellenbogen, P. and Nachmany, A. (2024)).

Building on this framework, we calculate the percentage of daily<sup>11</sup> observations where outflows exceeded 3% and 10% of the previous month's net assets<sup>12</sup>. In addition, we present the full distribution of daily flow percentages using density plots, allowing for a more nuanced view of the redemption behavior across the fund universe. We also analyse monthly flow ratios to assess the broader and more sustained severity of outflows beyond short-term fluctuations.<sup>13</sup> Monthly data provides a complementary perspective, capturing redemption patterns that may not be evident in daily movements but are nonetheless critical for understanding overall market stress. We also present density distributions of monthly flows for each fund group and each month, offering a comprehensive view of the variation and intensity of investor behavior over time.

Since the Covid shock window under review does not cover a complete calendar month, we cannot produce a meaningful monthly flow analysis for this episode<sup>14</sup>. For this reason, we restrict the Covid analysis to daily flow observations only.

NUMBER OF TOTAL DAILY FLOW OBSERVATIONS USED IN THE ANALYSIS		
Period	Investment-grade	High-yield
COVID shock	11,403	7,150
2022 downturn	155,376	99,138
2025 tariff-based sell-off	34,844	13,516
<b>TOTAL</b>	<b>201,623</b>	<b>119,804</b>

### a) *The COVID shock (24<sup>th</sup> Feb – 24<sup>th</sup> Mar 2020)*<sup>15</sup>

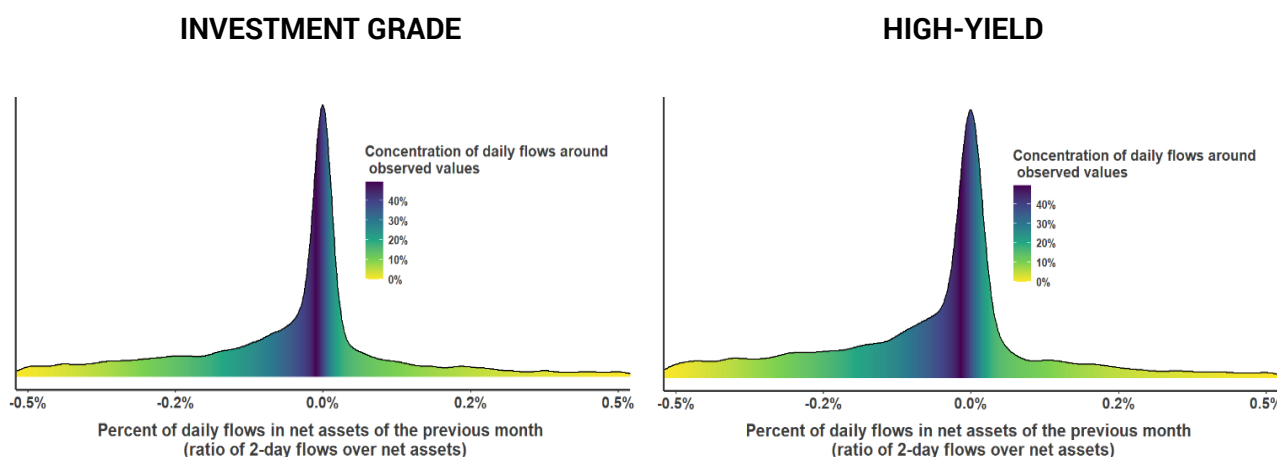
The COVID-19 shock triggered widespread market turmoil, and European corporate bond funds were no exception. Initial expectations were of severe outflows as investors responded to economic uncertainty and collapsing market confidence. However, a closer examination of daily fund outflow data reveals a more nuanced reality: while outflows occurred, they were not as dramatic or destabilising as widely assumed.

During the early months of 2020, the bond market experienced significant volatility. Concerns over corporate solvency and tightening liquidity led to increased redemption requests, and fund managers were put under pressure to meet these while avoiding major losses. Media narratives often referred to a liquidity shock, particularly for high-yield funds. Yet, as this data-driven analysis shows, daily outflows remained relatively contained, suggesting that investors were more measured in their response than anticipated. **The discrepancy between the perceived severity of the shock and the actual outflow behavior underscores the importance of empirical analysis.** While the COVID-19 shock was a genuine stress test for fund liquidity and risk management frameworks, the data suggests that European corporate bond funds weathered the storm better than expected and offers important insights for regulators, fund managers, and market participants alike.

Several factors may help explain this resilience. The European Central Bank adopted its Pandemic Emergency Purchase Programme (PEPP), but its large-scale purchases were mainly sovereign bonds versus (non-financial) corporate ones<sup>16</sup>. This implies that the resilience in the corporate bond sector cannot be fully attributed to the ECB’s interventions, even if those actions helped calm markets more broadly. More importantly, many investors appeared to adopt a “wait and see” approach rather than liquidate their positions abruptly. Insurance companies, pension funds and retail investors, who form a significant portion of the investor base in these funds, are typically less reactive to short-term (as opposed to long-term) volatility, which may have contributed to the relative stability in outflows<sup>17</sup>. This highlights the importance of understanding investor behavior in times of market shocks.

The chart below shows the distribution of daily flow observations for the two groups of corporate bond funds under study, expressed as a percentage of the fund’s net assets in the previous month, during the stated Covid period. Overall, it illustrates that most daily flows remained close to zero, indicating that under abnormal conditions funds experienced only very small inflows or outflows relative to their size. Only rarely did funds experience extreme outflows (or inflows).

### Concentration of observed daily flows of corporate bond funds during the COVID shock (24 Feb – 24 Mar 2020)



**Notes:** The horizontal axis shows the broad<sup>18</sup> range of possible daily flow outcomes for the funds in the group. The coloured shading reflects their frequency: darker areas mark outcomes that occurred more often, while the lighter tails capture rare extreme movements—most notably large outflows.

*Source:* EFAMA’s calculation based on EFC classification and Morningstar data.

For a clearer understanding, it is important to look at the share of days with very large outflows. When we examine the percentage of daily flow observations that recorded outflows greater than 3% and even 10% of the fund’s net assets, we find that these cases are extremely rare. This highlights that, even during the Covid shock, severe daily outflows were exceptional rather than the norm. In fact, fewer than 1% of all daily flow observations reported outflows above 10% of net assets for both fund groups.

INCIDENCE OF EXTREME DAILY OUTFLOWS DURING COVID		
Universe	Outflows above 3% of net assets	Outflows above 10% of net assets
Investment-grade corporate bond funds	4.59%	0.63%
High-yield corporate bond funds	5.87%	0.56%

If we shift the perspective from daily observations across all funds to the fund level, the picture of extreme outflows becomes even clearer. In fact, during the most turbulent Covid periods, only about one in nine funds in either group experienced a single day with outflows exceeding 10% of net assets. Such evidence strongly questions the assumptions around widespread systemic outflows in open-ended funds.

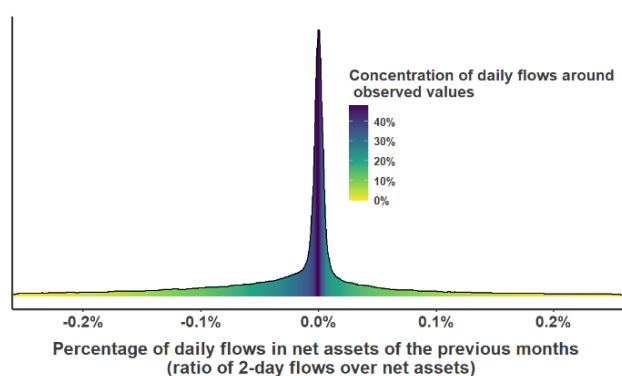
*b) The 2022 interest rates hike (15<sup>th</sup> Dec 2021 – 15<sup>th</sup> Dec 2022)*

The turmoil in global fixed income markets in 2022 has widely been described as one of the worst bond market sell-offs in recent history, with European corporate bond funds often cited as among the hardest hit. At the heart of this episode was a sharp pivot by the ECB, which began raising interest rates aggressively to combat surging inflation. This marked the end of a prolonged era of ultra-loose monetary policy, catching many investors off guard. Rising interest rates led to falling bond prices, prompting investors to reassess their exposure to interest rate risk. In particular, long-duration bonds suffered notable losses, and many investors chose to exit bond funds to avoid further capital erosion. This was compounded by the withdrawal of central bank support, as the ECB scaled back its bond-buying programs, reducing a key source of demand in the market. Adding to these pressures was the energy crisis sparked by Russia’s invasion of Ukraine, which exacerbated inflation and heightened economic uncertainty. Concerns about a potential eurozone recession further dampened investor sentiment, especially toward corporate and high-yield bonds. In this context, liquidity became a growing concern, and many investors shifted towards safer or shorter-duration assets, such as money market funds.

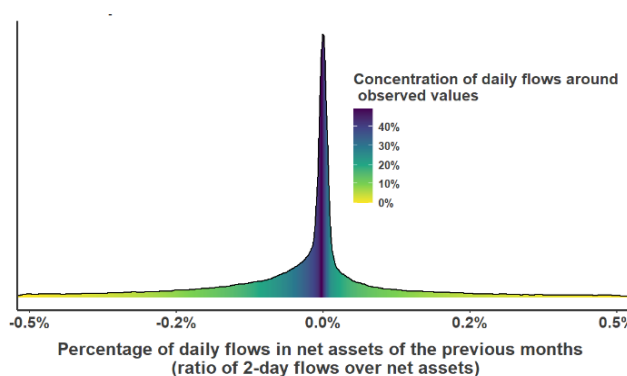
Popular narratives emphasised the vulnerability of corporate bond funds to rising yields and widening credit spreads, with expectations of significant outflows driven by liquidity concerns and risk aversion. While aggregate performance indicators indeed show steep valuation losses across credit markets, the results presented here suggest a more nuanced picture: while there were periods of outflows, particularly around major monetary policy announcements and spikes in market volatility, the overall flow patterns do not indicate a sustained or systemic run on these funds. By examining granular flow data, this study challenges the narrative of widespread investor flight and highlights the resilience relative stability of corporate bond fund holdings during a year of extreme market stress.

**Concentration of observed daily flows of corporate bond funds during the 2022 interest rates hikes (20 Dec 2021 – 15 Dec 2022)**

**INVESTMENT GRADE**



**HIGH-YIELD**



**Notes:** The horizontal axis shows the broad range of possible daily flow outcomes for the funds in the group. The coloured shading reflects their frequency: darker areas mark outcomes that occurred more often, while the lighter tails capture rare extreme movements—most notably large outflows.

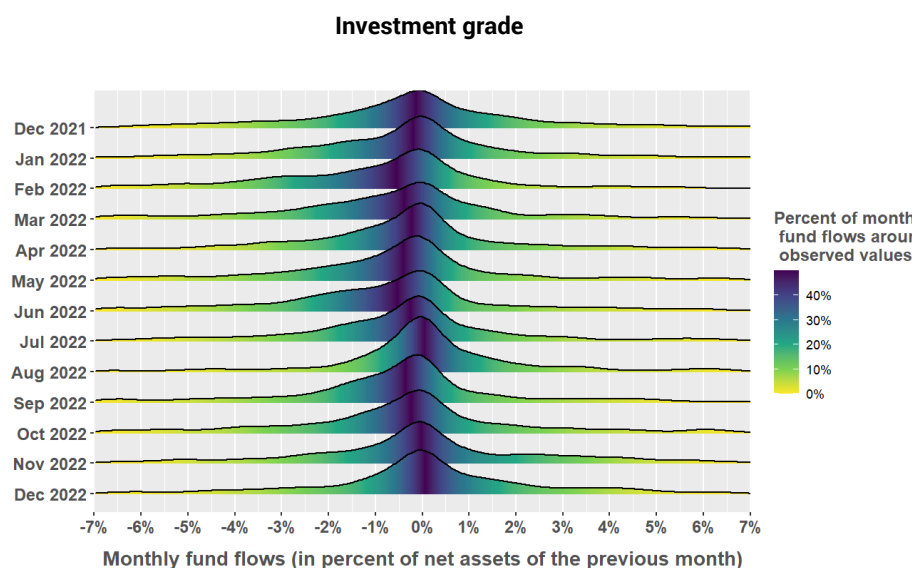
*Source:* EFAMA’s calculation based on EFC classification and Morningstar data.

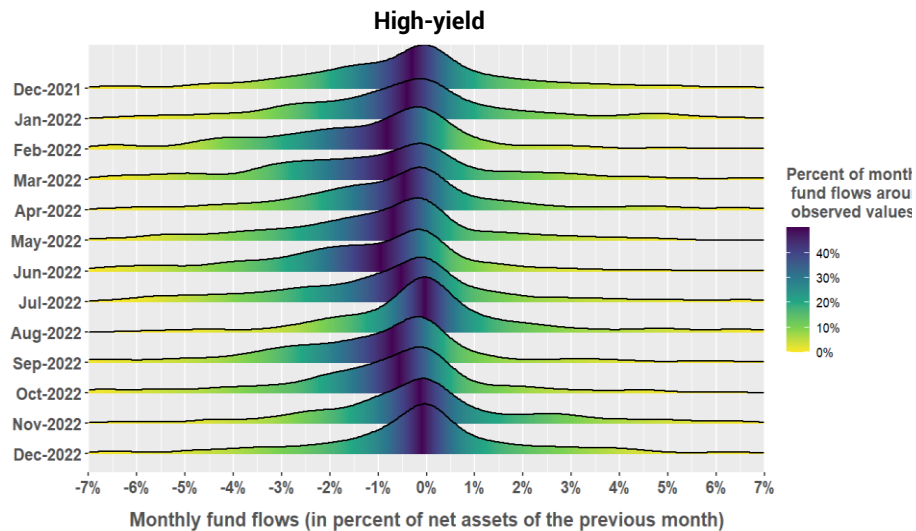
During the turbulent period of 2022, outflows exceeding 10% of net assets were extremely rare, occurring in less than 0.3% of all daily observations analysed. This indicates that such severe redemption events were not at all widespread. Looking at the data from a fund-level perspective leads to a similar conclusion: only about one in four funds experienced even a single day with outflows above 10% over the course of the year. These findings confirm that, while episodes of extreme stress did occur, they were limited both in frequency and in scope across the industry. Given that stress narratives often assume large & persistent outflows during stress periods, the demonstrated level of flow above a deliberately conservative hurdle (10% at any point during the period, irrespective of whether the episode was isolated or short-lived) cannot be said to be elevated.

INCIDENCE OF EXTREME DAILY OUTFLOWS DURING INTEREST RATE HIKE		
Universe	Outflows above 3% of net assets	Outflows above 10% of net assets
Investment grade corporate bond funds	1.48%	0.30%
High-yield corporate bond funds	1.62%	0.30%

To strengthen the robustness of our research, we also extend the analysis to monthly data. The charts below show the distribution of monthly flows of corporate bond funds during the 2022 interest rate hike, together with the probability of observing outflows exceeding 3% or 10% of net assets. We observe that most values are concentrated around 0%, with the majority of outflows not exceeding 3% of net assets. This suggests that, for most months, corporate bond funds experienced only limited outflows relative to their size. When we turn to extreme events, the picture remains consistent: across both groups, only about 4% of monthly flow observations exceeded 10% of net assets. This underlines that very severe redemption pressures were rare and affected only a small portion of the sample.

### Concentration of observed monthly flows of corporate bond funds during the 2022 interest rate hikes (Dec 2021 – Dec 2022)





**Notes:** The vertical axis shows which month of the analysed period is being portrayed. The horizontal axis shows the broad range of possible monthly flow outcomes for the funds in the group. The coloured shading reflects their frequency: darker areas mark outcomes that occurred more often, while the lighter tails capture rare extreme movements—most notably large outflows.  
**Source:** EFAMA’s calculation based on EFC classification and Morningstar data.

INCIDENCE OF EXTREME MONTHLY OUTFLOWS DURING INTEREST RATE HIKE		
Universe	Outflows above 3% of net assets	Outflows above 10% of net assets
Investment grade corporate bond funds	15.9%	3.8%
High-yield corporate bond funds	18.9%	4.4%

### c) The tariff-triggered sell-off in 2025 (Mar – May 2025)

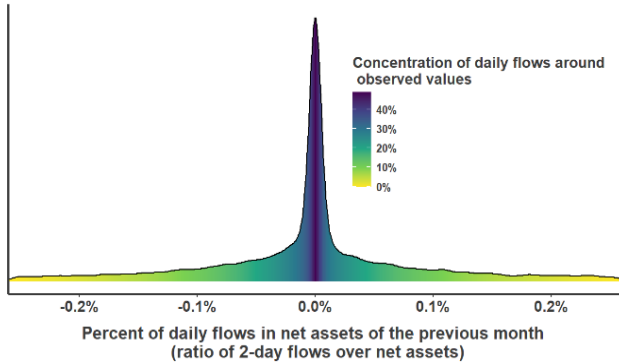
In 2025, European corporate bond funds experienced outflows driven by a combination of persistent macroeconomic and market factors. Elevated interest rates, maintained by the ECB to combat inflation, exerted downward pressure on bond prices, especially for longer-duration corporate debt. Inflation remained stubbornly above target, contributing to economic uncertainty and dampening investor appetite for credit risk, particularly in sectors vulnerable to cost pressures and slowing demand. Trade tensions and the imposition of tariffs further strained corporate earnings prospects in affected industries, adding to the risk-off sentiment. Additionally, the gradual withdrawal of central bank support through reduced asset purchases removed an important source of market stability and demand for bonds.

In response, investors increasingly sought refuge in safer or more liquid assets such as money market funds, short-duration bonds, and alternative investments. Although liquidity conditions improved compared to previous crises, some concerns persisted, prompting cautious redemption behavior. Overall, the 2025 outflows reflect a measured investor adjustment to evolving risks rather than a sharp market disruption, highlighting the resilience of European corporate bond funds amid a challenging but stable market environment.

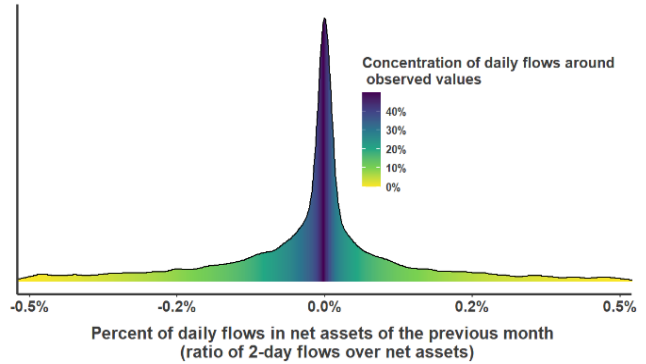
The charts below present the distribution of daily flow observations during the 2025 tariff-triggered shock. The results confirm our earlier findings: daily outflows exceeding 10% of net assets were extremely rare, occurring in less than 0.3% of the sample. Moreover, when shifting the focus from individual daily observations to the fund level, the results remain consistent: in both groups, only about one in ten funds experienced even a single day with outflows exceeding 10% of net assets.

**Concentration of observed daily flows of corporate bond funds during tariff-triggered sell-off in 2025 (01 Mar – 31 May 2025)**

**INVESTMENT GRADE**



**HIGH-YIELD**



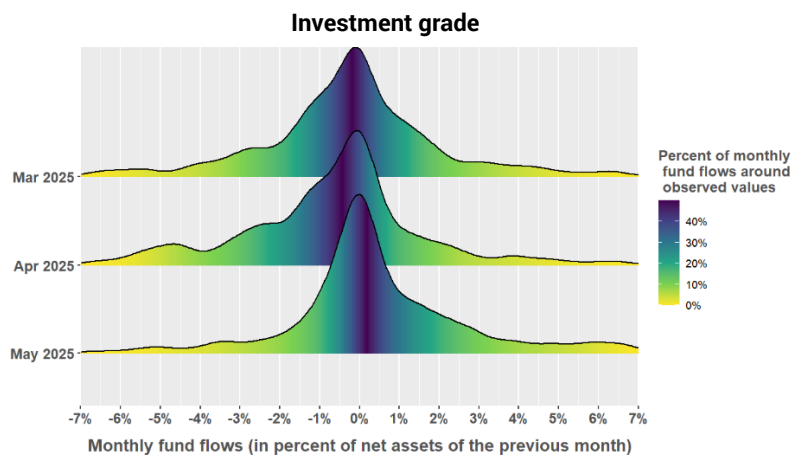
**Notes:** The horizontal axis shows the broad range of possible daily flow outcomes for the funds in the group. The coloured shading reflects their frequency: darker areas mark outcomes that occurred more often, while the lighter tails capture rare extreme movements—most notably large outflows.

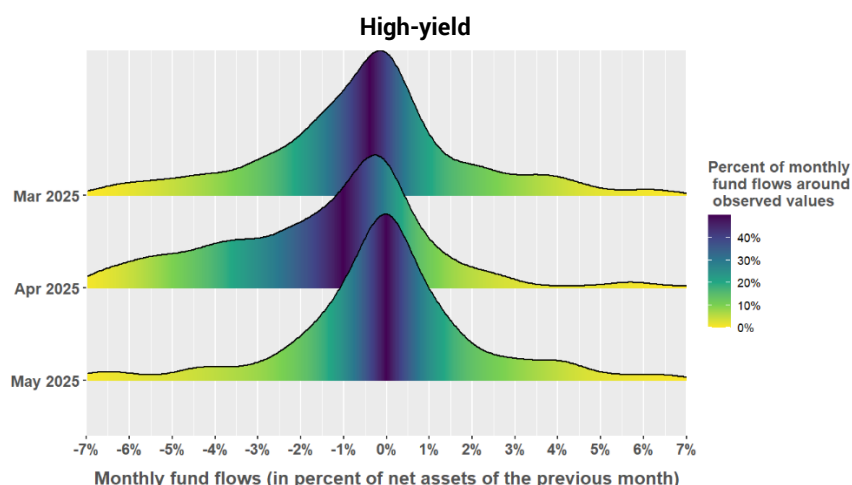
*Source:* EFAMA's calculation based on EFC classification and Morningstar data.

INCIDENCE OF EXTREME DAILY OUTFLOWS DURING TARIFF TRIGGERED SELL-OFF		
Universe	Outflows above 3% of net assets	Outflows above 10% of net assets
Investment grade corporate bond funds	1.34%	0.26%
High-yield corporate bond funds	1.98%	0.30%

We extend the analysis to monthly flow data for this period, focusing on extreme cases—defined as outflows exceeding 3% or 10% of net assets. The results show that, although March and April registered negative monthly flows, their scale remained contained. Among investment-grade corporate bond funds, only 3.5% of the total sample examined reported a monthly outflow above 10% at any point. For high-yield corporate bond funds, the share was slightly higher at 5.6%, yet still modest. Taken together, these findings indicate that even in the most volatile months, extreme monthly outflows were relatively rare and did not present a material risk to financial stability, with no 'en masse' investor redemptions occurring.

**Concentration of observed monthly flows of corporate bond funds during tariff-triggered sell-off in 2025 (Mar – May 2025)**





**Notes:** The vertical axis shows which month of the analysed period is being portrayed. The horizontal axis shows the broad range of possible monthly flow outcomes for the funds in the group. The coloured shading reflects their frequency: darker areas mark outcomes that occurred more often, while the lighter tails capture rare extreme movements—most notably large outflows.  
**Source:** EFAMA’s calculation based on EFC classification and Morningstar data.

INCIDENCE OF EXTREME MONTHLY OUTFLOWS DURING TARIFF TRIGGERED SELL-OFF		
Universe	Outflows above 3% of net assets	Outflows above 10% of net assets
Investment grade corporate bond funds	13.6%	3.5%
High-yield corporate bond funds	22.4%	5.6%

## CONCLUSION

Our analysis shows that, although there were periods of elevated redemptions, the magnitude of outflows for corporate bond funds remained relatively contained during three recent and markedly different financial shocks. This finding contradicts concerns raised by financial regulators and international institutions, such as the FSB, the ECB and the ESRB, which have argued that corporate bond funds—particularly those offering daily liquidity—can amplify market stress during periods of turmoil. These concerns are rooted in the theoretical belief that a potential mismatch between the liquidity of fund assets and the redemption rights of investors could lead to fire sales and broader financial instability.

However, our data indicate that such scenarios did not materialise in practice. Even during periods of heightened market volatility, fund managers appeared able to accommodate investor redemptions without resorting to disruptive asset sales or experiencing severe liquidity strains. The evidence suggests that, at least in the cases analysed, corporate bond funds acted as relatively stable investment vehicles rather than sources of systemic risk. For example, while our analysis shows that the largest monthly fund redemptions range between 3% and 6% of the previous month’s net assets across all observations, ESMA’s stress-test scenarios assume redemptions of 22% within a single week. These results call for a more nuanced view of the role of corporate bond funds in financial stability discussions and suggest that existing liquidity management practices are more robust than sometimes assumed. Indeed, the entire discussion around the role of bond funds should be framed in the wider context, which is that investment funds are not the only holders of bonds. Other key actors, such as central banks, banks, pension funds, insurance corporations, and sovereign wealth funds – inter alia – account for a far more sizeable portion of fixed income holdings compared to investment funds.<sup>19</sup>

Finally, this analysis suggests that risk-based supervision is more effective than regulation in addressing potential liquidity mismatches in the fund sector. Instead of applying broad measures across the entire fund universe, it may indeed be more effective to focus regulatory attention on those specific groups of funds that are structurally more exposed to the risk of extreme outflows. Based on the above analysis, it is possible to identify a few principles that supervisors should keep in mind when supervising funds:

1. The notion of liquidity mismatch that supervisors use to identify vulnerabilities in the fund sector is inappropriate. Rather than examining how much investors can redeem within a given period according to the fund's rules, supervisors should consider how much outflows a fund can realistically expect based on its historical performance.
2. Fund sub-categories, such as investment-grade and high-yield corporate bond funds, are not homogeneous categories. Therefore, it is inappropriate to limit one's analysis to their aggregate behaviour (e.g., by stating that "high-yield corporate bond funds have structural liquidity mismatches"). A more granular analysis is necessary to identify those funds that are more vulnerable to liquidity shocks. Likewise, it is inappropriate in top-down stress-test scenarios to assume that all funds in a category will face similar levels of redemptions. Stress test exercises based on such scenarios will inevitably fail to identify where the vulnerabilities lie, if any.
3. It is relatively rare for a fund to face daily outflows exceeding 3%. This means that, in most cases, asset managers are not faced with sudden and significant outflows that would trigger fire sales. Moreover, large outflows often result from an institutional investor exiting the fund. In such a case, it is usually requested that the investor inform the asset manager sufficiently in advance so that the manager can prepare for the withdrawal. For this reason, persistent daily outflows exceeding the 3% mark could be an indication of stress for a fund, which may require greater supervisory attention.

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## ABOUT EFAMA

EFAMA is the voice of the European investment management industry, which manages around EUR 33 trillion of assets on behalf of its clients in Europe and around the world. Its membership consists of 29 national associations, 47 global asset managers, and 29 associate members. We advocate for a regulatory environment that supports our industry's crucial role in steering capital towards investments for a sustainable future and providing long-term value for investors. Besides fostering a Savings & Investments Union, consumer empowerment and sustainable finance in Europe, we also support open and well-functioning global capital markets and engage with international standard setters and relevant third-country authorities. EFAMA is a primary source of industry statistical data and issues regular publications, including Market Insights and the authoritative EFAMA Fact Book. More information is available at [www.efama.org](http://www.efama.org)

## ENDNOTES

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<sup>1</sup> European Commission, *Target consultation on assessing the adequacy of macroprudential policies for non-bank financial intermediation (NBFi)*, 22 May 2024; ESRB, *Issues note on policy options to address risks in corporate debt and real estate investment funds from a financial stability perspective*, September 2023.

<sup>2</sup> ESMA, *Response to the European Commission consultation on the review of the EU macro-prudential policy framework for NBFi*, 22 November 2024; Eurosystem, *Response to EU Commission's consultation on macroprudential policies for non-bank financial intermediation*, 22 November 2024; ESRB, *A system-wide approach to macroprudential policy: Response to the European Commission's consultation assessing the adequacy of macroprudential policies for non-bank financial intermediation*, 22 November 2024.

<sup>3</sup> FSB, *Revised policy recommendations to address structural vulnerabilities from liquidity mismatch in open-ended funds*, December 2023; IOSCO, *Final report on anti-dilution liquidity management tools – Guidance for effective implementation of the recommendations for liquidity risk management for collective investment schemes*, December 2023.

<sup>4</sup> Relevant literature includes:

- a) Deghi, A. et al. (2022) *Asset price fragility in times of stress: The role of open-end investment funds*. International Monetary Fund, *Global financial stability report: Navigating the high-inflation environment*, chapter 3.
- b) Ellenbogen, P. and Nachmany, A. (2024) *A study of mutual funds liquidity*; Letter to the Securities and Exchange Commission.
- c) Chen, Q., Goldstein, I., and Jiang V. (2010) *Payoff complementarities and financial fragility: Evidence from mutual fund outflows*. *Journal of Financial Economics*, 97(2), pages 239-262.
- d) Goldstein, Jiang, and Ng (2017) *Investor flows and fragility in corporate bond funds*. *Journal of Financial Economics*; 126(3), pages 592-613.
- e) Falato, Goldstein, and Hortacsu (2021) – *Financial fragility in the COVID-19 crisis: The case of investment funds*. *Journal of Monetary Economics*; 123, pages 35-52.
- f) Ma, Xiao, and Zeng (2022) *Mutual Fund Liquidity Transformation and Reverse Flight to Liquidity*. *The Review of Financial Studies*, 35(10), pages 4674–4711.
- g) Schmidt, Timmermann, and Wermers (2016) *Runs on Money Market Mutual Funds: Evidence from the 2008 Crisis*. *American Economic Review*, 106(9), (pp. 2625–57).
- h) Schrimpf, A., Shim I. and Song Shin, H. (2021) *Liquidity management and asset sales by bond funds in the face of investor redemptions in March 2020*. *BIS Bulletin* 39.
- i) Gideon, O., Ronnie S. and Siyi, S. (2021). *Flattening the Illiquidity Curve: Retail Trading During the COVID-19 Lockdown*. *Journal of Financial and Quantitative Analysis*. 56(7).

<sup>5</sup> ESMA, *Report on the Recommendation of the European Systemic Risk Board (ESRB) on liquidity risk in investment funds*, 12 November 2020.

<sup>6</sup> Bank of England (2024). *The Bank of England's system-wide exploratory scenario exercise final report*.

<sup>7</sup> Bank of England (2024). *Report on the System-Wide Exploratory Scenario*.

<sup>8</sup> The remainder includes, primarily, mixed & government bond funds. The funds under analysis in this report are those which have a specific Investment grade or High-yield focus.

<sup>9</sup> *European Fund Classification* - a pan-European classification system of investment funds which has been developed by the European Fund Categorization Forum (EFCF), a taskforce of EFAMA.

<sup>10</sup> Using the methodology outlined in Ellenbogen, P. and Nachmany, A. (2024), this study defines the 'two-day cumulative flow-to-net-assets ratio' as the rolling sum of flows over two consecutive days, expressed as a percentage of the fund's assets at the end of the previous month. The use of a two-day window, rather than a single day, enables us to capture additional instances of significant redemption patterns. Naturally, days when financial markets were closed were excluded. For example, this measure could combine Monday and Tuesday flows, or Friday and Monday flows, each expressed as a percentage of the fund's assets from the prior month.

<sup>11</sup> When we say daily throughout we are referring to 'two-day cumulative flow-to-net-assets ratio'.

<sup>12</sup> We use these thresholds in line with the chosen approach and because they are aligned with conservative assumptions in the literature. For instance, while ESMA's referenced stress scenario assumes outflows of 22% over one week, our scenario of a 10% outflow on a monthly basis is significantly more conservative.

<sup>13</sup> The 'monthly flow ratio' is calculated by dividing the fund's monthly net flows by its net assets from the prior month.

<sup>14</sup> Conducting such an analysis on a partial month would risk distorting the results, as the data would not be comparable with the full-

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month periods examined for other crises.

<sup>15</sup> We also carried out the analysis over a longer horizon (1 January – 30 March 2020). However, for the purposes of this paper, we chose to focus on the shorter, most turbulent phase of the Covid crisis. This approach ensures greater robustness, as it isolates the period when market stress was most acute, while avoiding the dilution of results that could arise from including calmer days before and after the peak turmoil.

<sup>16</sup> According to the ECB, public sector purchases accounted for 97% of overall PEPP volumes. For further insights into the dynamic make-up of the Eurosystem's holdings under the PEPP, please refer to the following link: <https://www.ecb.europa.eu/mopo/implement/pepp/html/index.en.html>.

<sup>17</sup> ECB (2023). *Fund fragility: the role of investor base*.

<sup>18</sup> Values with negligible frequency beyond the displayed range were excluded for readability.

<sup>19</sup> See pg. 40 of EFAMA's *response to an EC consultation*, as well as pg. 21 of EFAMA's *Asset Management Report*.