

## Box 7

### Portfolio rebalancing by euro area investment funds following outflows

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**When investment funds face outflows, fund managers may have to liquidate parts of their portfolio, potentially changing its composition and riskiness as a result.** If fund managers respond to outflows by selling securities proportionally to the initial asset allocation, i.e. selling a vertical slice of the portfolio, the liquidity and risk profile of the fund remains unchanged.<sup>40</sup> But asset

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<sup>40</sup> IOSCO (2018) recommends that open-ended funds divest according to a “slicing approach”, keeping the fund liquidity risk profile unchanged. Although funds may be obliged to use a slicing approach as part of their fiduciary duties and wider risk management practices, there are no specific regulatory requirements.

managers might have incentives to reduce the portfolio non-proportionally.<sup>41</sup> For example, in trying to avoid incurring losses on illiquid assets, managers might choose to sell the most liquid securities first. And in the hope of increasing returns and attracting future inflows, they might choose to take on more risk in their portfolio. Other managers, worried about future outflows, might hoard liquid securities and de-risk their portfolios. However, large sales of illiquid securities may affect their market price at times of relatively low market liquidity, with possible spillovers to other financial institutions holding the same assets.

**This box investigates empirically how euro area bond funds have responded to outflows over the past year, assessing whether they modified the liquidity and risk profile of their portfolio.**<sup>42</sup> First, the effect of rebalancing on funds' liquidity profile is measured by changes in the portfolio share of cash and liquid bond holdings. To measure the liquidity of different assets in the portfolio in the absence of a liquidity regulation for investment funds, the definition of Level 1 high-quality liquid assets (HQLA) from bank regulation is applied. According to this, only those bonds which can be converted easily and quickly into cash are considered liquid. Second, the effect of rebalancing on funds' riskiness is measured by changes in the share of different types of individual securities within the portfolio, i.e. portfolio weights. The analysis also examines whether the investor base (i.e. institutional versus retail funds) and fund leverage influence rebalancing. The sample includes data on over 2,500 euro area active bond funds between June 2018 and June 2019. 80% of these funds are retail UCITS and do not use financial leverage, i.e. do not borrow cash for investments to seek higher profits.<sup>43</sup>

**Following outflows, most funds changed their strategic asset allocation by reducing cash holdings more than proportionally with respect to the initial allocation and hoarding liquid bonds.** In general, bond funds experienced cumulated net outflows of around 4.5% towards the end of 2018, followed by mild inflows in 2019. Among them, leveraged funds suffered the largest outflows. A regression analysis on the whole sample shows that, after outflows of 1% of assets under management, funds reduced their cash holdings by 2% on average. This reduction was offset by an increase in liquid assets of over 2%, supporting funds' ability to meet future redemption shocks (see **Chart A**, left panel). The portfolio allocation of leveraged funds shows a higher sensitivity to outflows and a stronger rebalancing towards liquid securities compared with the whole sample. By contrast, institutional funds experiencing outflows improved their liquidity profile by increasing both cash and liquid bond holdings and selling illiquid bonds more than proportionately.<sup>44</sup> Large sales of illiquid securities can have financial stability implications owing to their market price impact, particularly in times of relatively low market liquidity, with possible balance sheet losses and spillovers to other financial institutions holding similar assets.<sup>45</sup>

<sup>41</sup> See Chevalier, J. and Ellison, G., "Risk taking by mutual funds as a response to incentives", *Journal of Political Economy*, Vol. 105(6), 1997; Feroli, M., Kashyap, A., Schoenholtz, K. and Shin, H. S., "Market Tantrums and Monetary Policy", Chicago Booth Research Paper No 14-09, 2014; Morris, S., Shim, I. and Shin, H. S., "Redemption risk and cash hoarding by asset managers", BIS Working Paper No 608, 2017; and "How would a repricing in bond markets impact euro area investment funds?", *Financial Stability Review*, ECB, November 2017.

<sup>42</sup> Given the relatively short sample, the empirical results should not be taken as being too general. However, the sample includes both episodes of financial distress and periods of sustained inflows.

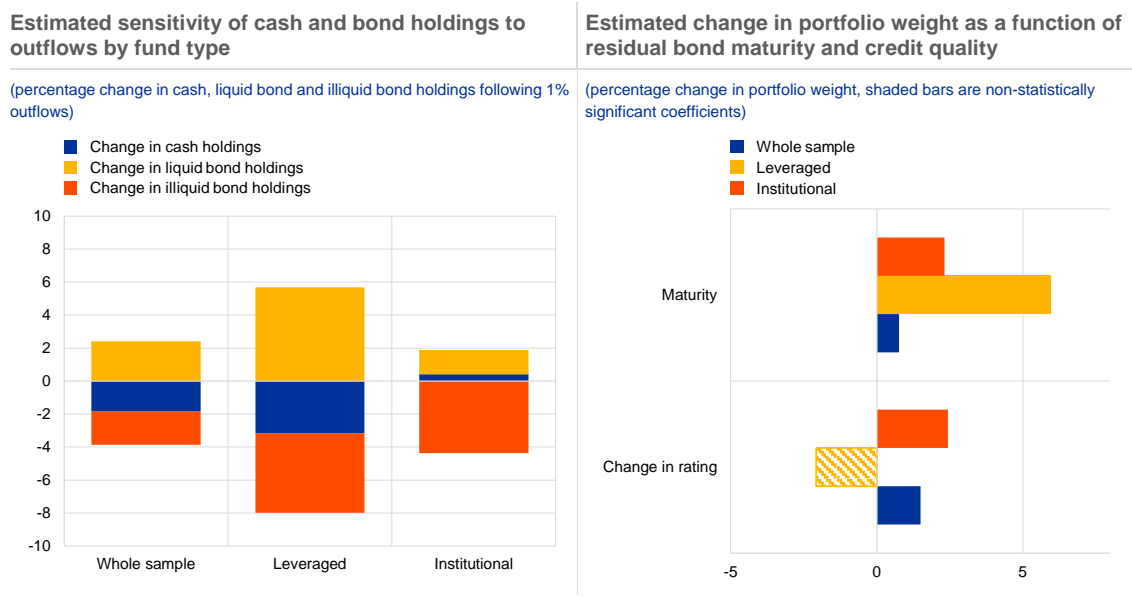
<sup>43</sup> Undertakings for collective investment in transferable securities are funds which are compliant with the UCITS Directive (2009/65/EC). These funds can seek a single authorisation in one EU Member State and register for sale and marketing across other EU Member States. They can be distributed to both retail and institutional investors. The UCITS harmonised framework includes requirements on eligible investments, liquidity, leverage, disclosure and investor protection.

<sup>44</sup> The results for liquid and illiquid bond holdings are confirmed and stronger in magnitude for funds experiencing extreme outflows (below the 75th or 90th percentile), while the estimated change in cash holdings is not statistically significant.

<sup>45</sup> Results are robust to different definitions of liquid assets, including for example only government bonds issued by euro area countries and the United States.

## Chart A

Funds reduced cash and illiquid bond holdings following outflows, while increasing residual maturity and reacting procyclically to rating changes



Sources: Refinitiv Lipper, ECB Centralised Securities Database and ECB calculations.

Notes: The analysis is based on Lipper monthly data on euro area active bond funds and covers the period June 2018-June 2019. The sample is split according to funds' investor base and use of leverage. Retail UCITS funds that do not use leverage make up 80% of the sample. The left panel shows the percentage change in funds' holdings of cash, liquid bonds and illiquid bonds following 1% outflows. Bonds are classified according to the [Basel Liquidity Coverage Ratio requirements for HQLA](#). Liquid bonds comprise Level 1 euro-denominated bonds issued by European governments and non-euro-denominated government bonds rated at least AA. The right panel shows the average change in portfolio weight (x-axis) as a function of bond characteristics (y-axis). A positive change in weight indicates the percentage increase in nominal holdings of a bond (i) having a residual maturity one year longer than the median (Maturity) and (ii) experiencing a one-notch upgrade in its rating (Change in rating).

### Funds also changed their tactical asset allocation following outflows by increasing their relative holdings of bonds with longer maturity and bonds undergoing a rating upgrade.

Controlling for the initial asset allocation, the empirical evidence shows that funds altered their portfolio weights according to individual bond characteristics, such as residual maturity and recent changes in credit rating. On average, funds increased their relative holdings of securities with longer residual maturity (see **Chart A**, right panel). In particular, leveraged and institutional funds increased the portfolio weight of longer-term bonds by 6% and 2%, respectively. Increasing residual maturity also increases duration risk of the portfolio, which makes funds more vulnerable to changes in interest rates. If credit ratings changed over the past month, funds reacted procyclically by purchasing securities which underwent a rating upgrade and selling securities which were downgraded. By contrast, the portfolio allocation of leveraged funds is not sensitive to changes in credit ratings.

### In an overall sense, following outflows between June 2018 and June 2019, euro area bond funds increased their duration risk by increasing residual maturities and reducing cash holdings.

At the same time, they de-risked their portfolio in response to rating downgrades and improved their overall liquidity profiles by selling illiquid securities and hoarding more liquid ones. The observed rebalancing patterns should support the funds' ability to meet future redemption shocks, especially for funds offering daily redemptions, but highlight the risk of a procyclical response, including possible liquidity spillovers. By selling illiquid assets and hoarding liquid ones, funds may contribute to a shortage of market liquidity at a time when it is most needed, also by other market participants. The procyclical behaviour with respect to rating changes may amplify any repricing in the event of more widespread downgrades coinciding with large outflows. In turn, this may exacerbate the effects of any downturn on the real economy through higher borrowing costs.