

## **Box 6**

How would a repricing in bond markets impact euro area investment funds?

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**An abrupt repricing of risk premia in bond markets has the potential to expose vulnerabilities in the rapidly growing investment fund sector.** A shock to bond prices would give rise to first-round mark-to-market losses for open-end investment funds, particularly those with large exposures to debt securities. From a systemic risk perspective, these losses could propagate through the financial system if negative returns trigger investor outflows, eventually resulting in forced sales of fund portfolios. Such sales have the potential to amplify the original shock to bond prices, with wider financial stability implications in the form of impaired market liquidity and possible spillovers to the real economy, via negative wealth and confidence effects. This box sheds some light on this channel, dubbed the “flow-performance nexus”, by quantifying the impact of an interest rate shock on the net asset values of euro area-domiciled investment funds (everything else held

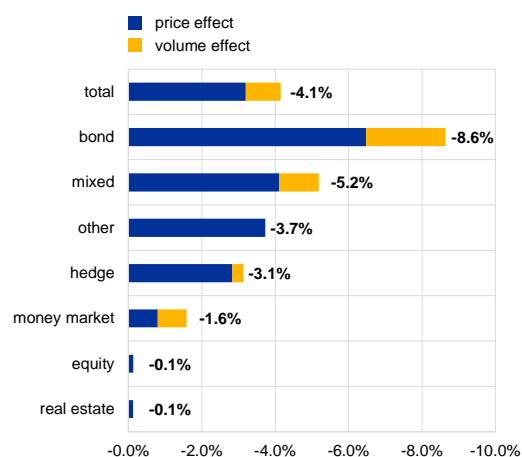
equal).<sup>76</sup> More specifically, the first part of the analysis examines the impact of an increase in yields on the net asset value of the main euro area investment fund categories (equity, bond, mixed, real estate, money market, hedge and other funds), while the second part particularly focuses on euro area bond funds.

### Chart A

A 100 basis point bond yield shock implies overall limited price and volume effects

#### Change in net asset value after an initial shock of 100 bps to the yield curve

(Q4 2016; x-axis: percentage points)



Sources: ECB, Thomson Reuters Lipper and ECB calculations.

Note: The underlying scenario assumes a "ceteris paribus" parallel upward shift of the yield curve up to 7-8 years affecting rates across bond markets.

**For both exercises, bond yields are assumed to increase, ceteris paribus, by 100 basis points all along the maturity spectrum and for all types of bond holdings.**

The first part of the analysis consists of a first step, where "direct" valuation losses resulting from a rise in bond rates are computed by assuming that the duration of funds' bond holdings matches that of the respective sector indices. Given this assumption, the sectors' fund holdings suffer a valuation loss equal to the product of the yield change and the assumed duration. Then, investor outflows are simulated using the estimated coefficients obtained from regressions of fund-level flows on lagged fund returns, controlling for lagged flows and total net assets. An important feature of this assessment is that it allows the quantification of both first-round valuation effects and of possible outflows.

#### The results for the euro area investment fund sector as a whole suggest that the

**contraction of net asset values (NAVs) would be relatively small (Chart A). In particular, the total contraction would be 4.1% and can be decomposed** into a "price effect" (a reduction in funds' NAVs resulting from the lower valuation of their portfolios), followed by a "volume effect" (a reduction in funds' NAVs resulting from investor outflows). The price effect represents 77% of the total, while the remaining 23% is the volume effect. The results displayed in Chart A reflect differences in investment policies and, more precisely, in the portfolio weights assigned to bond holdings. As expected, bond funds would experience the largest decline in net asset value (-8.6%), followed by mixed funds (-5.2%), as these fund types are the main holders of bonds among euro area investment funds. The expected declines in NAV for other types of investment funds, including hedge funds, equity funds, money market funds and real estate funds, are lower.

#### Further analysis for the bond fund sector suggests that sensitivities to an interest rate shock differ across types of bond funds.

For this analysis, fund flows at an entity level are regressed on benchmark indices corresponding to each of the five bond fund categories (e.g. mixed, sovereign, corporate, high-yield and emerging market bond funds), while distinguishing between positive and negative benchmark performance. The results indicate that a negative fund performance of 1% would correspond to an outflow ranging from 0.5% in the case of mixed bond

<sup>76</sup> A more comprehensive analysis, including possible feedback effects, is outside the scope of this box (e.g. second-round effects on asset prices, falling house prices and possible externalities resulting from asset fire sales are not considered).

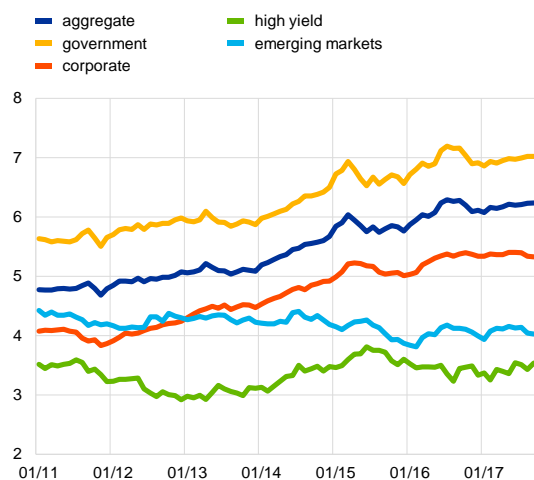
funds to 1.5% in the case of emerging market funds. These numbers seem rather modest and may reflect some degree of stickiness in the strategic asset allocations set out by some investors (for instance, participants in defined-contribution pension schemes investing in investment funds tend to rebalance their portfolios relatively infrequently).

### Chart B

Average duration in bond markets has increased over the past years

#### Duration for key benchmark performance indices

(Jan. 2011 – Sep. 2017, monthly data)



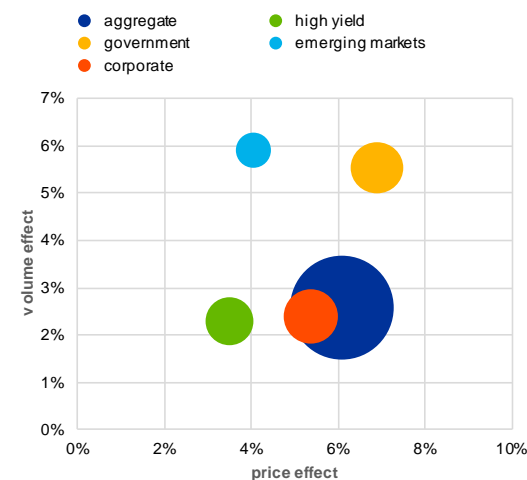
Sources: Bloomberg and Merrill Lynch indices.

### Chart C

Government and emerging market bond funds comparably sensitive to a yield shock

#### Decrease in net asset value after an initial shock of 100 bps to the yield curve

x-axis: price effect (decline as a % of total net assets)  
y-axis: volume effect (decline as a % of total net assets)



Sources: Thomson Reuters Lipper, Bloomberg and ECB calculations.  
Notes: The size of the bubbles represents total net assets. The fund flow variable is derived at entity level from Thomson Reuters Lipper, whereas performance measures are based on the indices shown in Chart B corresponding to the funds' investment focus.

**The extent to which the assumed increase in yields translates into a “price effect” depends on the benchmark durations which vary significantly across indices and have generally increased over the past years, except for emerging market and high-yield bonds (Chart B).**

Combining the price and volume effects, funds investing mainly in government and emerging market bonds would be the most affected by a hypothetical 100 basis point increase in bond yields (Chart C). The three largest bond fund categories would be responsible for almost 80% of the total reduction in net asset values (mixed, government and corporate bond funds). The decline would correspond to a contraction of 8.7%, 12.4% and 7.8% of total net assets, respectively. The results suggest that those funds with the largest reductions in asset values from the “price effect” (i.e. government bond funds) would also endure the largest outflows. Emerging market funds seem particularly vulnerable to outflows in spite of their limited duration. Mixed and corporate bond funds have comparably high duration and would thus suffer comparably large valuation losses, but seem to be less vulnerable to outflows.

**The magnitude of the expected outflows (between 2% and 6% one month following a bond yield hike of 100 basis points) suggests that the role of investment funds as bond price shock amplifiers may be limited.** There are some important considerations to keep in mind, however, when interpreting these results. First, they are based on average effects over the entire sample period and should be considered as a lower bound for the outflow amounts that the sector

could experience under adverse conditions, as sensitivities tend to increase during stress periods. Second, the rather sizeable dispersion of sensitivities across funds implies that some funds may experience substantially larger outflows than others – also because investors tend to be more sensitive to relative performance against, for example, a benchmark rather than absolute performance. Third, this is a “ceteris paribus” sensitivity analysis and not a complete crisis scenario (like the EBA stress tests or indeed the scenario simulations in Section 3.2 below). Finally, the analysis considers only first-round price effects and does not include feedback loops, leverage targeting by managers or externalities resulting from forced asset sales.

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