3 Euro area financial institutions

The risk outlook for the euro area banking sector remains broadly unchanged compared with that in November 2016. Market sentiment towards the sector has turned around markedly, on the back of an improved outlook for banks' earnings prospects, mainly triggered by revised expectations about the future level of interest rates and the slope of the yield curve. This notwithstanding, profitability deteriorated further in 2016, reflecting a continued decline in revenues and limited progress in curtailing costs. More importantly, even if profitability headwinds stemming from cyclical factors abate in the future, structural challenges remain and call for significant efforts to strengthen the business models of some euro area banks to make them sustainable. Such efforts should be directed at improving operating efficiency, including by achieving economies of scope and scale via consolidation, diversifying sources of income and taking advantage of the opportunities offered by digitalisation. Moreover, legacy assets in the form of non-performing loans (NPLs) continue to weigh on bank profitability and tie up bank capital. This said, euro area banks are adequately capitalised overall. The materialisation of the stylised adverse scenarios capturing the four risks set out in the Overview would result in solvency difficulties for only a few small banks and would not therefore trigger systemic events.

The outlook for the insurance sector is also surrounded by uncertainty. This sector faces challenges that are largely similar to those of the banking sector. Euro area insurers continue to face profitability headwinds from the still low level of yields, despite the more supportive recent market developments. Although the capital positions of most large euro area insurers remain solid, the levels slightly deteriorated in 2016. The business models of traditional life insurers are of particular concern, as these insurers continue to guarantee returns on existing policies that are higher, on average, than the yields currently offered by fixed income assets. To boost yields from investments, some euro area insurers have been gradually extending their portfolio allocation further across the credit risk spectrum.

The euro area non-bank financial sector has expanded further, albeit at a more moderate pace than in the period 2014-15. The repricing in global fixed income markets and the so-called "great rotation" from bond to equity funds observed in the United States have had a limited impact on the flows into euro area investment funds. More broadly, the rise in passive strategies, primarily implemented through investing in funds, raises concerns regarding correlated positioning, which could exacerbate market-wide pressures in the event of a global risk repricing.

In this environment, completing the financial regulation agenda remains of critical importance for containing systemic risk and strengthening the resilience of the financial system. The outstanding reforms of the Basel III framework are a key element of this agenda and their finalisation via continued global engagement will reduce regulatory uncertainty in the short term and strengthen the capital framework in the medium and long term.

3.1 Banks' profitability prospects modestly improved, but structural headwinds remain

3.1.1 Bank profitability remained weak in 2016, but market sentiment towards the sector has improved due to the easing of concerns about banks' future earnings prospects

Euro area banks' profitability weakened further in 2016, mainly due to a broad-based decline in revenues (see **Chart 3.1**). Looking at the key sources of bank revenues, net interest income remained under pressure in a context of low interest rates and relatively flat yield curves, as the compression of margins was only partly offset by still modest (albeit gradually recovering) loan growth.[39] That said, the contribution of margin and volume effects to net interest income changes varied across countries, with robust loan growth partly offsetting margin compression (e.g. in Austria and France) or widening margins somewhat alleviating negative growth effects (e.g. in Portugal) (see **Chart 3.2**). Furthermore, the decline in non-interest income also negatively affected bank profits, as valuation gains on marked-to-market assets (other than trading assets) and some fee income components were adversely affected by the repeated bouts of financial market volatility in the first half of 2016.

Chart 3.1

Banks' profitability declined in 2016, mainly driven by weaker revenues

Change in euro area significant banks' aggregate return on equity (ROE) from 2015 to 2016

(2015-16; percentage points)

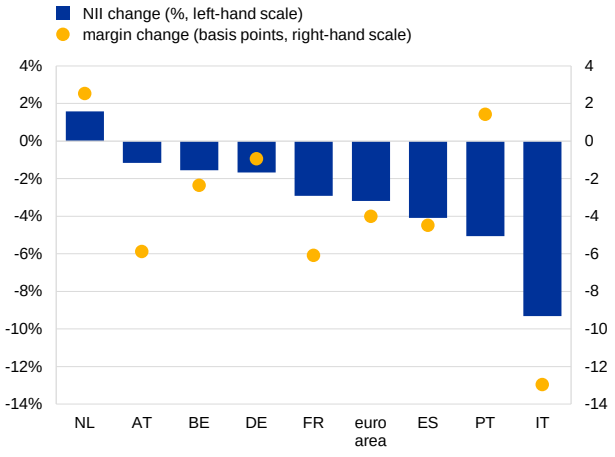
Sources: ECB supervisory data and ECB calculations.
Note: Green and red bars denote positive and negative contributions respectively.

Chart 3.2

Net interest income declined mainly due to margin compression

Change in significant banks' net interest income (NII) and net interest margin in selected euro area countries

(2015-16; percentages and basis points)



Sources: ECB supervisory data and ECB calculations.
Notes: Country-level figures refer to significant institutions only. Net interest margin is proxied as net interest income over total assets.

[39] For a balanced sample of 105 significant institutions, lending to the non-financial private sector grew by 1.3% year on year.

On aggregate, lower impairment costs positively contributed to bank profits, but this masked significant heterogeneity across institutions. On the one hand, the normalisation of loan loss provisioning costs continued amid a gradual economic recovery. On the other hand, some banks reported sharp increases in loan impairment charges, mainly linked with increased efforts to clean up their balance sheets. Despite ongoing cost-containment efforts, on aggregate, euro area significant banks' operating expenses only marginally declined in 2016 (see **Chart 3.1**). Generally, this suggests that banks are more likely to realise cost benefits from ongoing restructuring programmes only in the medium term (or beyond).

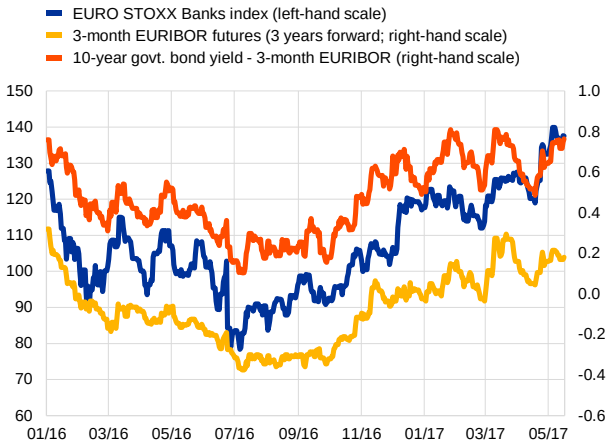
Despite banks' continued weak earnings performance, market sentiment towards the sector has markedly improved since late 2016. Higher equity valuations may partly reflect investors' increasing optimism regarding banks' earnings outlook, not least due to expectations that a steepening yield curve could support banks' net interest income generation (see **Chart 3.3**). This optimism is likely to also be linked to changing market expectations about the future level of short-term rates, which particularly affects the interest income of banks with a significant part of the loan book carrying floating rates. In addition, the improvement in some banks' earnings outlook may have been due to better prospects for capital market-related revenues, as evidenced by higher fixed income trading volumes and higher activity in corporate finance and advisory businesses in the first quarter of 2017.

Chart 3.3

Euro area bank equity valuations appear to be positively correlated with the yield curve slope and future expectations regarding short-term rates

Slope of the yield curve, three-month EURIBOR futures (three years forward) and euro area bank stock index

(Jan. 2016 – May 2017)



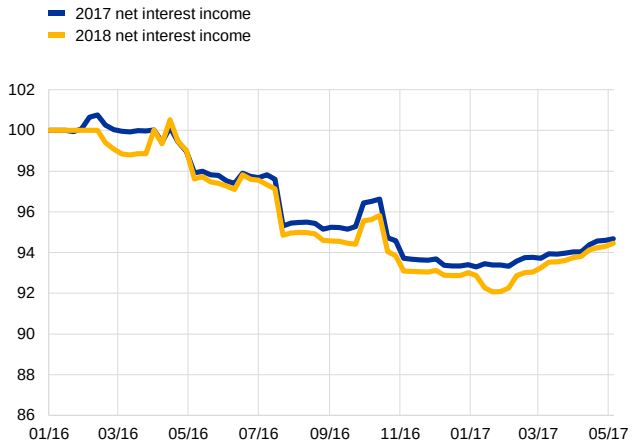
Source: Bloomberg.
Note: The slope of the euro area yield curve is approximated by the difference between the German ten-year government bond yield and the three-month EURIBOR.

Chart 3.4

Net interest income expectations for 2018 appear to have slightly improved since early 2017

Change in analysts' forecasts for banks' 2017 and 2018 net interest income

(Jan. 2016 – May 2017; index: Jan. 2016 = 100)



Sources: Bloomberg and ECB calculations.
Notes: The sample includes 25 listed significant banks included in the EURO STOXX Banks index. The index is based on aggregates for banks in the sample.

Nevertheless, strong increases in bank stock prices may be explained by higher earnings expectations only to a limited extent, with lower equity risk premia possibly also playing an important role. Following significant downgrades for much of last year, analysts' net interest income expectations for 2018 appear to

have bottomed out in early 2017, but the rebound since then has been lacklustre (see **Chart 3.4**). While analysts' earnings expectations have been shown to systematically miss actual outcomes, particularly when the forecast horizon is long (see **Box 5**), the timid increase in expected earnings is not commensurate with the marked rebound in bank equity prices. The fact that a strong increase in bank stock prices was accompanied by only a moderate upgrade in bank earnings expectations suggests that declining equity risk premia may have significantly contributed to stock price increases. This, in turn, could be partly due to an improvement in the economic outlook, which may have helped reduce the uncertainty around banks' earnings and thus risk aversion. Similarly, a less significant impact of the finalisation of Basel III rules on banks' capital requirements than anticipated earlier may have also contributed to lowering risk premia.

Box 5

Assessing the accuracy of euro area bank analysts' earnings forecasts

For some time, the prospect of continuing low profitability of euro area banks has been highlighted in the FSR as a key risk for financial stability. This risk remains a cause for concern, as both cyclical and structural factors continue to weigh on banks' ability to generate sustainable profits. In monitoring this risk, the ECB and other institutions make regular use of bank analysts' earnings forecasts. Looking at data for euro area banks, this box evaluates the accuracy of those forecasts.

The academic literature has found that analysts' earnings forecasts could be prone to excessive optimism and herding behaviour, owing to inherent incentive structures. These forecasts are typically produced by institutions that may have an intrinsic interest in a positive stock market outlook for the bank concerned, for instance because they offer related brokerage and underwriting services. In addition, the literature has shown that concerns about a possible loss of unhindered access to company information – should adverse expectations regarding the firm's earnings outlook be published – may influence some analysts.[40] To combat this, a range of regulatory safeguards have been instituted to address potential conflicts of interest that may arise from investment research.[41] Nonetheless, a large body of empirical literature in this field has found compelling evidence that analysts' forecasts tend to be biased upwards.[42] While the reputational costs associated with large forecasting errors should, in principle, serve to temper potential bias, there is evidence that analysts' recommendations tend to be characterised by herding behaviour, which dilutes the disciplining role of market scrutiny. One reason for this is that forecasting errors that stem from a view that deviates from the consensus may be perceived to be more damaging to an analyst's reputation than errors of an equal size that stem from a view that was aligned with the consensus. Indeed, it is common to observe an unbalanced proportion of "buy" vis-à-vis "sell"

40 See Clayman, M. and Schwartz, R., "Falling in Love Again – Analysts' Estimates and Reality", *Financial Analysts Journal*, Vol. 50, 1994.

41 In the EU, two main pieces of legislation include provisions that address the issue of conflicts of interest relating to investment research. They are the Market Abuse Directive and the Markets in Financial Instruments Directive (MiFID). For an overview, see http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52006DC0789&from=en

42 For an overview, see Chopra, V., "Why So Much Error in Analysts' Earnings Forecasts?", *Financial Analysts Journal*, Vol. 54, 1998, and Das, S., Levine, C. and Sivaramakrishnan, K., "Earnings predictability and bias in analysts' earnings forecasts", *The Accounting Review*, Vol. 73, 1998.

recommendations among analysts. For example, an analysis of S&P 500 stock ratings in 2015 found that only 6.7% carried a sell recommendation.[43]

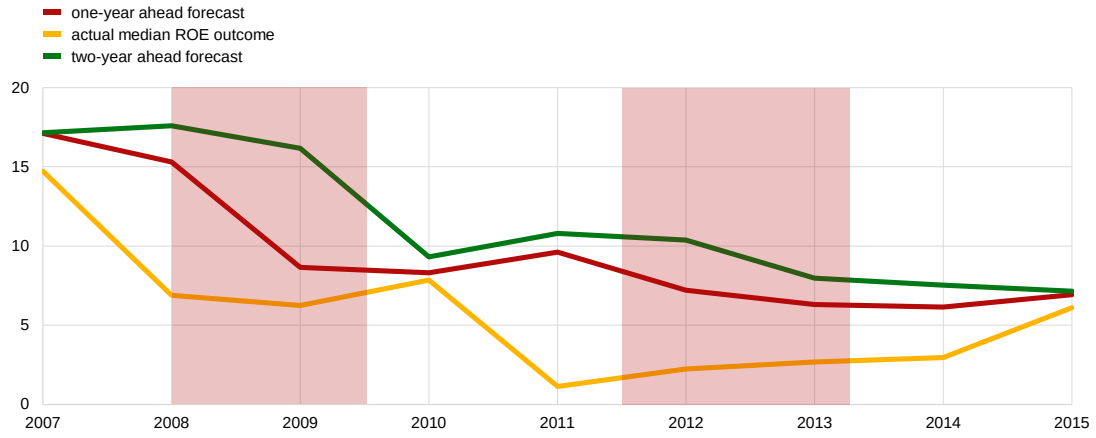
This box makes use of analyst forecast data for 27 euro area banks included in the EURO STOXX Banks index. Weekly data on analysts' forecasts of euro area banks' return on equity (ROE) were collected over the period 2007-15. To ensure representativeness of the analysis, coverage criteria were applied, requiring that 90% of the EURO STOXX banks were covered by analysts and that at least 50% of the banks covered had ten or more analysts providing ROE forecasts. Based on these criteria, the analysis focused on forecasts with a horizon of one or two years ahead.

Chart A

Bank earnings forecasts have, on average, exceeded actual outcomes since 2007

Forecast ROE and actual ROE outcomes for euro area banks

(2007-15; annual aggregate observations; percentage points)



Sources: Bloomberg and ECB calculations.
Notes: Large outliers are excluded from the calculations (absolute deviations between forecasts and outcomes above the 90th percentile). The shaded areas refer to periods of euro area recession as defined by the Centre for Economic Policy Research (Q1 2008 to Q2 2009 and Q3 2011 to Q1 2013).

Analysts' ROE forecasts for euro area banks have, on average, been overly optimistic over the past decade. To illustrate the evolution of the forecasting errors, **Chart A** plots the difference between one and two-year-ahead analysts' forecasts of ROE against subsequently reported ROE figures since 2007. Three notable features can be discerned from the chart. First, analysts have, on average over the sample period, provided an overly optimistic outlook concerning euro area banks' profitability prospects. Second, analysts' overestimation of banks' profitability prospects increases with the length of the forecast horizon. While this may partly result from more information becoming available over time, improving the capacity to produce more accurate forecasts, which increases the signal-to-noise ratio, the reputational cost of being too optimistic just before the publication of actual ROE outcomes probably also reduces any inherent bias over time. Third, the forecasting errors have varied over time. In particular, forecasting errors were particularly large during periods of economic recession in the euro area (see shaded areas in **Chart A**). This may simply reflect the fact that unexpected adverse macroeconomic shocks, after forecasts were produced, contributed significantly to an overestimation of earnings. In addition, high litigation costs and regulatory fines

[43] See the article entitled "Sellside research would be little missed", *Financial Times*, 16 February 2017.

dampened profitability for some banks over the sample period.[44] Such fines are often difficult to predict and therefore probably also contributed to forecasts being more optimistic than outcomes.

To sum up, analysts' earnings forecasts should be treated with some caution when evaluating risks and vulnerabilities for the euro area financial system. An assessment of euro area banks since 2007 reveals that analysts' forecasts tend to be systematically more optimistic regarding banks' earnings outlook than the actual outcomes. Furthermore, analysts' forecasting errors have varied substantially over time and were particularly large during periods of recession. In recent years, as the profitability of banks has partly recovered (albeit from low levels), the forecasting errors have been reduced.

Remaining challenges to bank profitability are increasingly linked to structural factors

Despite a broad-based improvement in bank valuations, in a global comparison a wide dispersion persists between euro area and US banks' valuations. Euro area banks' price-to-book ratios recovered from the lows of mid-2016, but the gap between euro area and US banks' valuations remains significant (see **Chart 3.5**), partly reflecting the better profitability prospects of US banks (see Chart 7 in the Overview). In a similar vein, the disparity between stronger and weaker euro area banks' valuations remains wide, suggesting the persistence of profitability challenges for the latter group. The large cross-sectional variation of price-to-book ratios within the euro area partly reflects cyclical factors, as the pace of economic recovery varies across countries, but possibly also differences in the progress made by institutions in tackling structural challenges which in some, although not all, cases appear to be linked to high NPL ratios (see **Chart 3.6**).

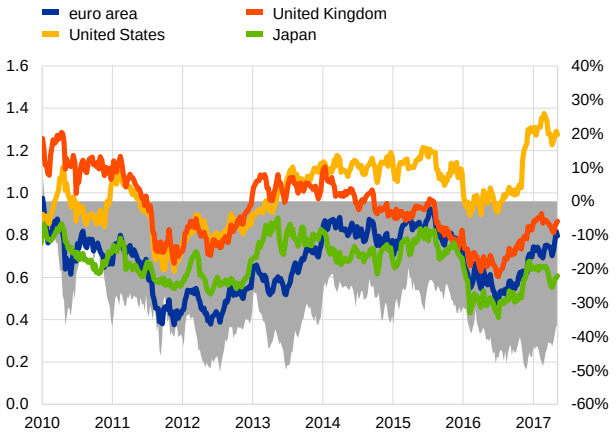
[44] See the box entitled "Global banks' legal costs: trends, drivers and implications", *Financial Stability Review*, ECB, May 2016.

Chart 3.5

In a global comparison, a wide dispersion persists between euro area and US banks' valuations

Aggregate price-to-book ratios for euro area, US, UK and Japanese banks

(Jan. 2010 – May 2017; multiples, percentages)



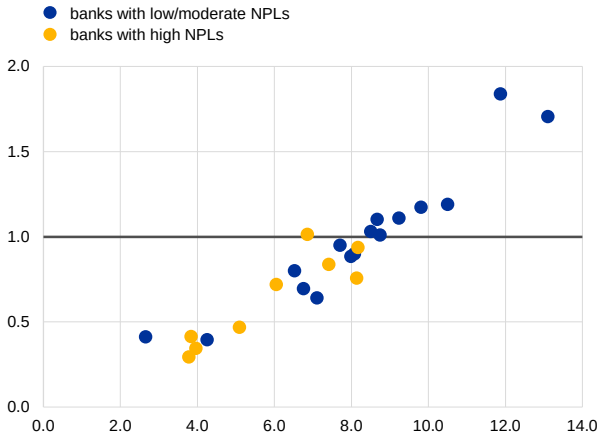
Source: Bloomberg.
Notes: The chart shows aggregate price-to-book ratios based on regional bank indices. The shaded area shows the valuation discount of euro area banks versus US banks.

Chart 3.6

Despite a broad-based increase in bank valuations, the disparity between stronger and weaker euro area banks remains wide, reflecting different profitability outlooks

Euro area banks' price-to-book ratios versus 2018 ROE forecasts

(May 2017; x-axis: consensus ROE forecast for 2018; y-axis: price-to-book ratio)



Source: Bloomberg.
Notes: Based on listed banks included in the EURO STOXX Banks index. The sample is divided into high and low/moderate NPL banks based on a 7% NPL ratio threshold.

The underlying causes of euro area banks' underperformance vis-à-vis their international peers vary across countries. In 2016, euro area significant banks' aggregate return on equity was around 3%, remaining well below the 9-10% levels delivered by US and Nordic banks. Cross-regional variation in bank profitability partly reflects differences in the pace of economic recovery and in the level of legacy non-performing assets. Looking at the main components of profitability, while euro area banks perform relatively well in terms of operating profits, this is outweighed by the still high level of loan impairment costs relative to other regions (see **Chart 3.7**). At the country level, the main drivers of low profitability vary from subdued operating profits (e.g. Germany, France, the Netherlands) to high loan impairment costs (e.g. Italy, Portugal) (see **Chart 3.8**).

One avenue for addressing banks' weak profitability outlook is to diversify their revenue base, but related revenue growth strategies entail challenges. In terms of shifting their asset mix, banks may be tempted to increase the share of higher-margin lending, as illustrated by the above-average growth of consumer loans over the last two years (around 6% per annum). Such growth strategies may face limitations in that an expansion of higher-margin loans entails higher credit risks and therefore the commitment of more capital. In terms of revenue mix, there is still scope for a further increase in the share of fee and commission income, but this is partly business model-dependent, as it has primarily been banks with strong asset management franchises (or custodian banks) that have been able to achieve significant fee income growth over the last two years.[45] At the same time, fee income

[45] See Special Feature C in *Financial Stability Review*, ECB, November 2016.

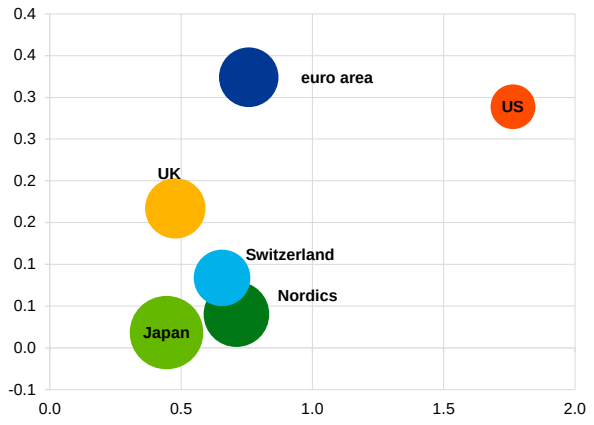
growth strategies available to a wider population of banks – such as increasing retail business-related transaction fees – could face limitations, not least due to competition from fintech firms. Finally, while a repricing of loans can be observed in some European countries where low interest rates prevail (for instance, Sweden and Switzerland), the feasibility of such a strategy is dependent on the degree of competition in the respective market.

Chart 3.7

On aggregate, euro area banks' underperformance is mainly due to still high provisions…

Banks' pre-impairment operating profits and impairment charges in major advanced economic regions

(2016 or latest; percentages of total assets; x-axis: operating profits; y-axis: impairments; bubble size: leverage)



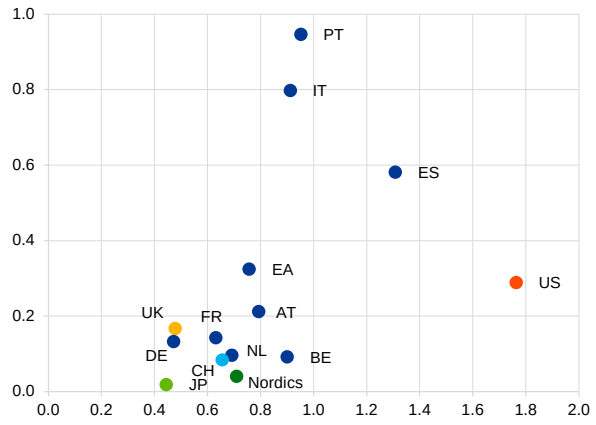
Sources: ECB consolidated banking data, Federal Deposit Insurance Corporation, Bank of Japan and Swiss National Bank.
Notes: Operating profits are before impairment charges. Leverage is defined as total assets over equity. For the euro area, the United Kingdom and the Nordics, data refer to the four quarters up to Q3 2016. For Japan and Switzerland, data refer to 2015. The indicators for the Nordics are based on simple averages of country-level values for Denmark, Finland and Sweden.

Chart 3.8

…but drivers of low profitability vary across countries

Banks' pre-impairment operating profits and impairment charges in selected euro area countries compared with other major advanced economic regions

(2016 or latest; percentages of total assets; x-axis: operating profits; y-axis: impairments)



Sources: ECB consolidated banking data, Federal Deposit Insurance Corporation, Bank of Japan and Swiss National Bank.
Notes: Operating profits are before impairment charges. For the euro area, the United Kingdom and the Nordics, data refer to the four quarters up to Q3 2016. For Japan and Switzerland, data refer to 2015. The indicators for the Nordics are based on simple averages of country-level values for Denmark, Finland and Sweden.

Amid continued difficulties in boosting revenues, remaining cost-inefficiencies also weigh on banks' profitability. On aggregate, euro area banks' cost-efficiency has deteriorated somewhat since 2010 based on both a cost-to-income and a cost-to-assets basis and compares unfavourably with some international peers, most notably the Nordic countries (see **Chart 3.9**). Against this background, for many euro area banks, a return to sustainable profitability is increasingly dependent on improvements in operational efficiency.

A cross-country comparison suggests that the relative importance of physical versus digital distribution channels may be one of the differentiating factors across countries in terms of cost-efficiency. While a downsizing of branch networks has been apparent across the European Union since the late 1990s, the rate of progress has varied greatly across countries. Part of this variation appears to be related to the different degree of adoption of digital banking channels by customers, as illustrated by the positive correlation between branch network reduction and the usage of internet banking in EU countries (see **Chart 3.10**). Accordingly, a number of banks have announced restructuring measures that are

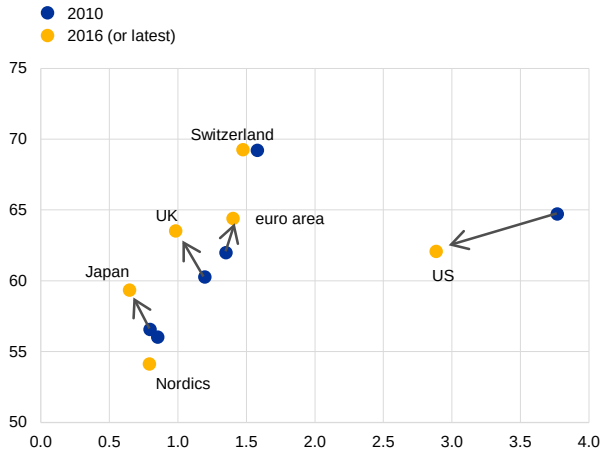
aimed at branch network optimisation and a shift towards the use of digital distribution channels, also reflecting changing customer preferences.

Chart 3.9

Euro area banks' cost-efficiency has not improved since 2010 and cost-efficiency metrics compare unfavourably with many of their international peers

International comparison of cost-to-assets and cost-to-income ratios

(2010-16; percentages; x-axis: cost-to-assets ratio; y-axis: cost-to-income ratio)



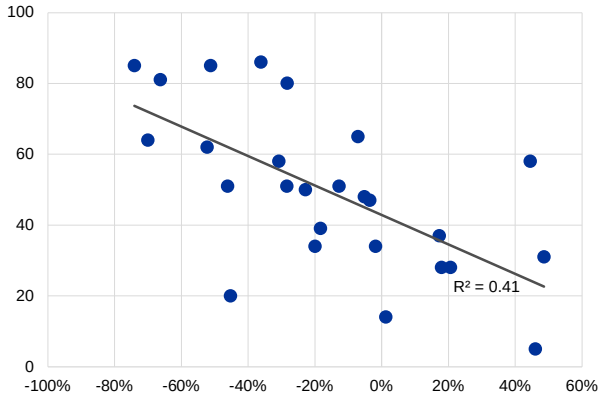
Sources: ECB, Federal Deposit Insurance Corporation, Bank of Japan and Swiss National Bank.
Notes: Figures refer to the first three quarters of 2016 (for the euro area, the Nordics and the United Kingdom), the full year 2016 (for the United States) and 2015 (for Japan and Switzerland). Figures for the Nordics refer to the simple average of country-level values for Denmark, Finland and Sweden.

Chart 3.10

Progress in branch network reduction in some countries may be limited by the still low adoption of digital banking by customers

Change in the number of branches since 1997 and the percentage of individuals using internet banking in EU countries

(1997-2015, 2015; x-axis: percentage change in the number of branches since 1997; y-axis: percentage of individuals using internet banking in 2015)



Sources: ECB and Eurostat.

Making bank business models sustainable should not, however, solely focus on the cost side, but should also explore emerging opportunities. While competitive pressures from both within and outside the banking sector (e.g. from fintech companies) present challenges for banks to continue operating efficiently with their existing business models, they could also create opportunities to boost bank profitability. By embracing fintech innovations and cooperating with fintech start-ups, banks could both increase operational efficiency through cost-cutting and benefit from new sources of revenue, possibly allowing banks' to protect their current market shares and penetrate new markets. In fact, some banks have already stepped up their efforts to exploit the opportunities from digitalisation (e.g. via the acquisition of, or partnerships with, fintech companies).

Structural challenges to profitability in some banking sectors are also linked to industry structure and excess capacity. In addition to banks' efforts to improve operational efficiency via cost-cutting, consolidation could bring some profitability benefits at the sector level. These could be particularly relevant in countries where banking systems remain fragmented and are characterised by low market concentration and high cost-to-income ratios. Ideally, consolidation should go hand-in-hand with greater geographical diversification. This would allow banks to achieve

economies of scope and scale from cross-border mergers and acquisitions, thereby also contributing to greater macroeconomic risk-sharing by diversifying country risks.

However, progress in bank consolidation in the euro area, in particular across borders, remains limited to date. While progress is being made in completing the banking union, some obstacles to cross-border consolidation within the euro area still remain. Regarding cyclical factors, the current environment of subdued economic growth is likely to have an adverse effect on cross-border mergers and acquisitions (M&As) within the euro area, given the cyclicality of M&A activity. Furthermore, high legacy NPLs in some countries may also act as an impediment as remaining uncertainties about the scale of future losses could complicate price-setting in potential M&As and may ultimately deter potential acquirers. Turning to regulatory and supervisory challenges, remaining uncertainties about banks' steady-state capital requirements (e.g. linked to the finalisation of Basel III) as well as the fact that (at present) SSM countries cannot be treated as a single jurisdiction for the purpose of calculating G-SIB (global systemically important bank) buffers may make longer-term capital planning and taking strategic decisions on M&As more challenging. Furthermore, there is still non-negligible national discretion in implementing the single rulebook, with some of the remaining options and discretions limiting the fungibility of liquidity within cross-border banking groups and preventing these groups from applying large exposure limits at the aggregate level. In addition, insolvency laws, the taxation of the banking sector and consumer protection rules remain rather diverse in the euro area (and the European Union), thereby presenting additional obstacles to cross-border activity. Finally, there is a need to complete the banking union with a European deposit insurance scheme (EDIS) to help delink the safety of deposits from the sovereign of the country in which the respective bank is domiciled.[46]

Banks' asset quality slightly improved, but progress in reducing the large stock of legacy non-performing assets remains slow

Euro area banks' asset quality continued to gradually improve in the second half of 2016, mainly driven by a decline in NPL ratios in the corporate sector. NPL ratios continued their downward trend in most euro area countries in the last two quarters of 2016 (see **Chart 3.11**), with improvements also extending to the majority of high-NPL countries. From a sectoral perspective, the improvement in euro area banks' loan quality was mainly driven by a nearly 2 percentage point drop in the NPL ratio for corporate loans. From a loan type perspective, the largest NPL ratio declines in the second half of 2016 were observed for small and medium-sized enterprise (SME) and commercial real estate (CRE) loans, although the ratios remain at high levels (see **Chart 3.12**).

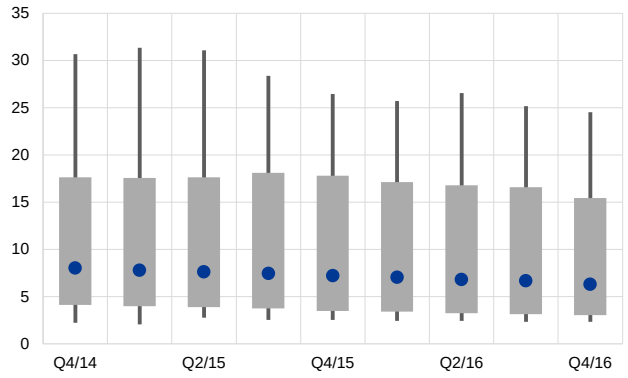
[46] For a more detailed discussion of the prospects for cross-border consolidation and remaining obstacles, see the special feature entitled "Cross-border bank consolidation in the euro area", *Financial integration in Europe*, ECB, May 2017.

Chart 3.11

Banks' asset quality continued to gradually improve in the second half of 2016, but NPL ratios remain stubbornly high in some countries

Distribution of country-level NPL ratios in the euro area

(Q4 2014 – Q4 2016; percentages; median, interquartile range and 10th-90th percentile range)



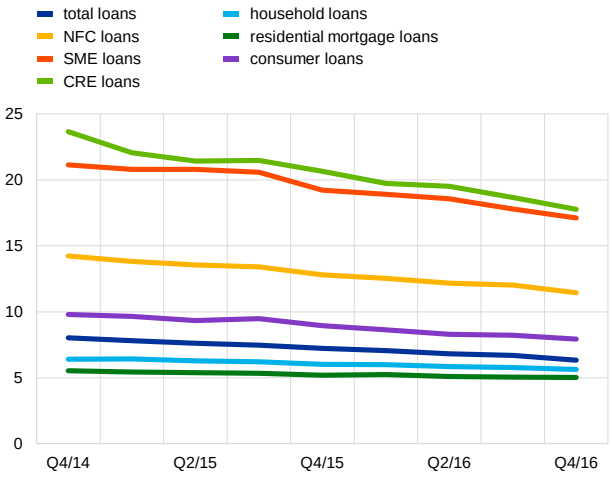
Source: ECB supervisory data.
Note: Country-level NPL ratios are based on country aggregates for significant institutions.

Chart 3.12

Asset quality improved both in the household and NFC segments, with the most marked drop in NPL ratios for CRE and SME loans

NPL ratios of significant institutions in the euro area, by sector and loan type

(Q4 2014 – Q4 2016; percentages)



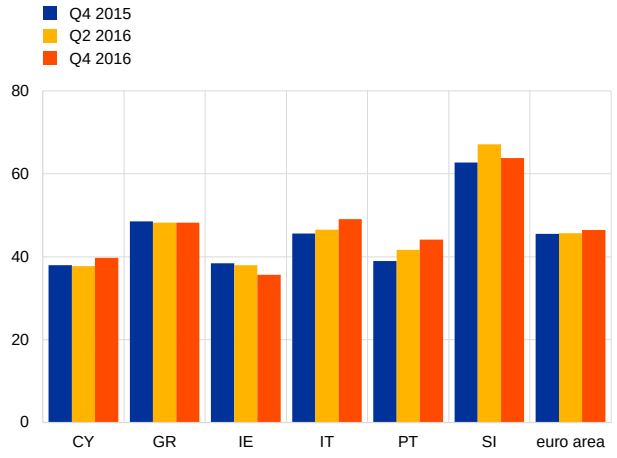
Source: ECB supervisory data.
Notes: Based on aggregates for significant institutions. NFC stands for non-financial corporation, SME for small and medium-sized enterprise and CRE for commercial real estate.

Chart 3.13

Coverage ratios improved in the second half of 2016, in particular in some high-NPL countries

Coverage ratios of significant institutions in high-NPL countries and in the euro area

(Q4 2015 – Q4 2016; percentages)



Source: ECB supervisory data.
Note: The coverage ratio is defined as the ratio of accumulated impairments on NPLs to total NPLs.

The coverage of non-performing loans by loan loss reserves also increased slightly in the second half of 2016, with some high-NPL countries showing a more tangible improvement. More specifically, coverage ratios increased by around 2 percentage points in Cyprus, Italy and Portugal, although in two of these countries NPL coverage remains below the euro area average (see **Chart 3.13**). This reflects efforts by a number of high-NPL banks to bring coverage more into line with peers.

Despite recent modest improvements, progress in reducing NPL levels remains slow as structural obstacles to NPL resolution persist. These include an underdeveloped secondary market for distressed assets, remaining deficiencies in legal and judicial frameworks, inefficient and uncertain debt enforcement frameworks and, in some cases, still unfavourable tax regimes. While authorities have taken a number of steps to improve legal and judicial frameworks in several high-NPL countries, these measures will still take time to become effective. Furthermore, even

though there was an uptick in activity in loan sales markets in 2016 in some high-NPL countries (notably Italy), more significant increases are impeded by a still wide gap between bid and ask prices in NPL markets.[47]

Supervisory efforts to improve NPL management practices should contribute to accelerating NPL resolution. In this respect, the recently published ECB guidance on NPLs calls on banks to implement realistic and ambitious strategies for addressing NPL problems. While the guidance does not specify quantitative NPL reduction targets, it asks banks to devise a strategy that could include a range of policy options such as NPL workout, servicing and portfolio sales. Amongst other options to address NPLs, which include the establishment of national asset management companies and asset sales with the assistance of an NPL transaction platform, **Special Feature C** in this issue of the FSR highlights the potential role and benefits of several co-investment strategies (between the private sector and the state) for addressing NPLs. The main advantage of these co-investment strategies is that they may – if implemented – enable sales that, owing to the currently elevated bid-ask spreads for NPL portfolios, may otherwise not occur.

Few signs of a broad-based increase in bank risk-taking

Risk measures reported by banks point to a decline in the credit risk in banks' loan books in 2016. For non-defaulted credit risk exposures under the internal ratings-based (IRB) method (accounting for around 60% of the total), both the weighted average probability of default (PD) and the average risk weight declined between 2015 and 2016 (see **Chart 3.14**). The broad-based decline in PDs by exposure class (see **Chart 3.15**) is consistent with the gradual economic recovery and the concomitant improvement in borrowers' debt repayment capacity (see Section 1). In addition, a breakdown of changes in credit exposures by asset class reveals a shift towards less risky exposures in 2016. While this was partly due to a significant increase in central bank claims (concentrated in a few countries), banks also increased exposures towards corporates (other than SMEs) and residential mortgages, while SME exposures rose only slightly. Among higher-risk categories, banks increased their other retail lending exposures more markedly (mainly consumer loans).

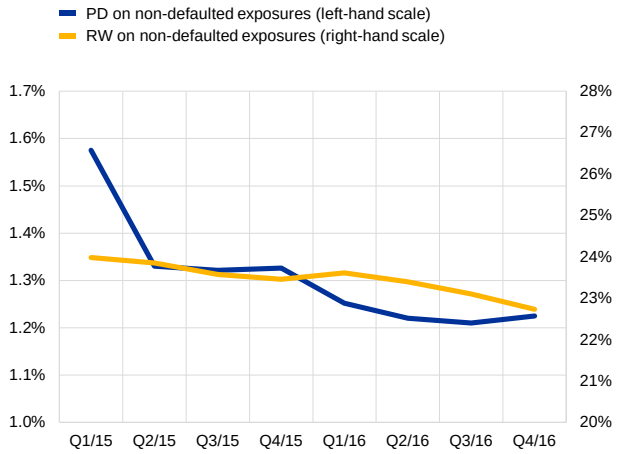
[47] On the role of wide bid-ask spreads in impeding the increase in NPL market transactions, see the special feature entitled "Addressing market failures in the resolution of non-performing loans in the euro area" in *Financial Stability Review*, ECB, November 2016.

Chart 3.14

The credit risk of IRB exposures declined in 2016 based on risk measures reported by banks

Weighted average probability of default and average risk weight for non-defaulted IRB credit risk exposures

(Q1 2015 – Q4 2016; percentages)



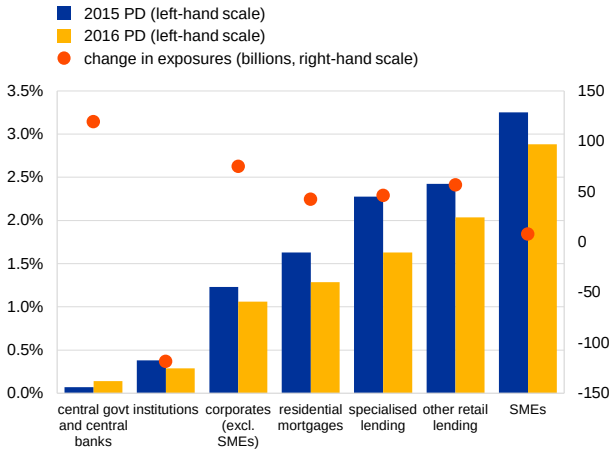
Sources: ECB supervisory data and ECB calculations.
Note: Excludes exposures in default.

Chart 3.15

Credit risk in banks' IRB portfolios declined across all asset classes in 2016, while the share of lower-risk exposures increased somewhat

Weighted average probability of default of IRB credit risk exposures by asset class and changes in exposures between 2015 and 2016

(2015-16; percentages, € billions)



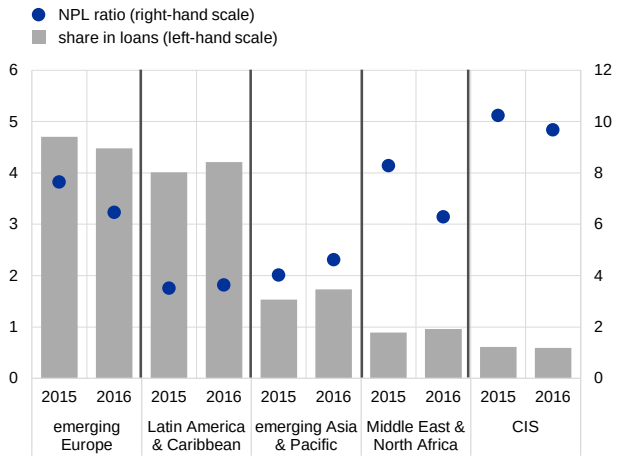
Sources: ECB supervisory data and ECB calculations.
Note: Excludes exposures in default.

Chart 3.16

Banks increased their exposure towards some EME sub-regions

Euro area banks' exposures and NPL ratios in selected EME regions

(2015-16; percentages of total loans, weighted averages)



Source: ECB supervisory data.

In terms of the geographical breakdown of loans, banks have increased the share of exposures to borrowers outside Europe. Banks increased their lending towards both advanced economies outside Europe (including the United States and Japan) and EMEs by 4% and 3%, respectively. Regarding EMEs, the increase in exposures towards emerging Asia and Latin America outweighed a decline in exposures towards emerging Europe. Asset quality trends differed somewhat across EME sub-regions, with slight to moderate increases in NPL ratios in emerging Asia & Pacific and Latin America & Caribbean contrasting with declines in emerging Europe, the Commonwealth of Independent States (CIS) and Middle East & North Africa, albeit from higher levels (see **Chart 3.16**).

Looking at the riskiness of banks' debt securities portfolios, the gradual shift towards higher credit quality debt securities continued in the second half of 2016 (see **Chart 3.17**). Continuing a trend from previous years, the combined share of higher credit quality (AAA to A rated) debt securities rose further to 68%, compared with 64% at end-2013. At the same time, the average maturity of bond portfolios continued to lengthen gradually (see Section 3.1.3), suggesting some increase in duration risk and in vulnerability to a rise in bond yields.

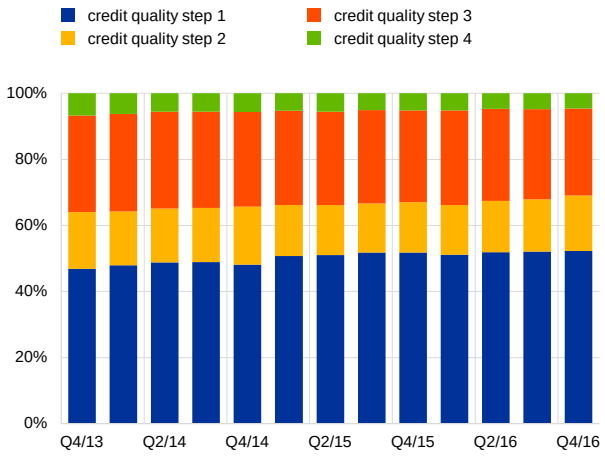
A geographical breakdown of changes in banks' sovereign debt portfolios shows some increase in exposures towards non-euro area sovereigns (see Chart 3.18). The home bias in euro area sovereign exposures declined in 2016, with the reduction in exposures towards domestic sovereigns accounting for over 85% of the overall decrease. The broad-based decline in banks' euro area sovereign debt portfolios can mainly be explained by the ECB's expanded asset purchase programme. Around one-third of this decline was accounted for by exposures towards euro area sovereigns more affected by the financial crisis (almost entirely due to changes in domestic banks' holdings). Exposures towards EME sovereigns increased only moderately, accompanied by a shift in allocation towards Latin America from other EME regions. Banks also increased their sovereign exposures towards the United States and its share reached 11% of total sovereign debt at end-2016. Therefore, the sensitivity of euro area banks to a further rise in US and EME sovereign yields increased somewhat, although this was offset by reduced exposures to interest rate risk on euro area sovereign debt.

Chart 3.17

The gradual shift towards higher credit quality debt securities continued in 2016

Holdings of debt securities by euro area banks broken down by rating

(Q4 2013 – Q4 2016; percentages of total holdings)



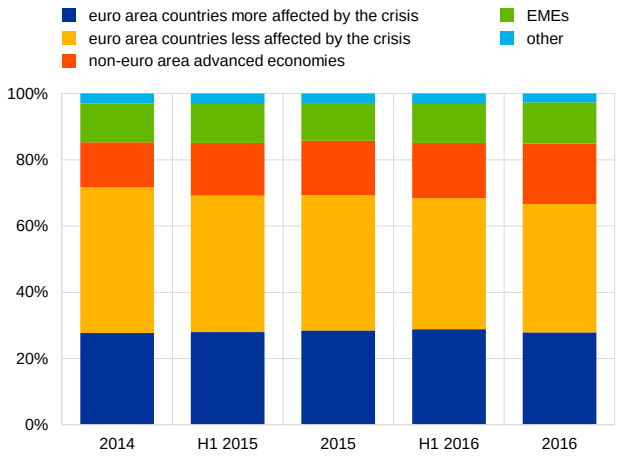
Sources: ECB Securities Holdings Statistics by Sector and ECB calculations.
Notes: Credit quality steps are defined in accordance with the Eurosystem credit assessment framework (ECAF), which provides a harmonised rating scale classifying ratings into three credit quality steps. The first category includes securities rated from AAA to AA-, the second from A+ to A- and the third from BBB+ to BBB-. A fourth category is added which includes all rated securities with a rating below credit quality step three. The chart is based on the nominal amounts of euro- and foreign currency-denominated securities.

Chart 3.18

Decreasing home bias in banks' sovereign debt holdings, accompanied by increases in exposures towards other advanced economies and EMEs

Holdings of government debt securities by euro area banks broken down by issuer region

(2014-16; percentages)



Sources: ECB supervisory data and ECB calculations.

In terms of equity exposures, banks' aggregate equity portfolio declined in 2016, but EME-related exposures increased somewhat. Banks reduced their equity exposures towards Europe and other major advanced economic regions. At the same time, banks increased their equity exposures towards EMEs (in particular to China) both in absolute and relative terms. That said, euro area banks' EME equity exposures remain rather contained in relative terms, accounting for 11% of total equity instruments and for only 0.2% of total assets.

Bank solvency positions improved further, mainly due to risk-weighted asset declines

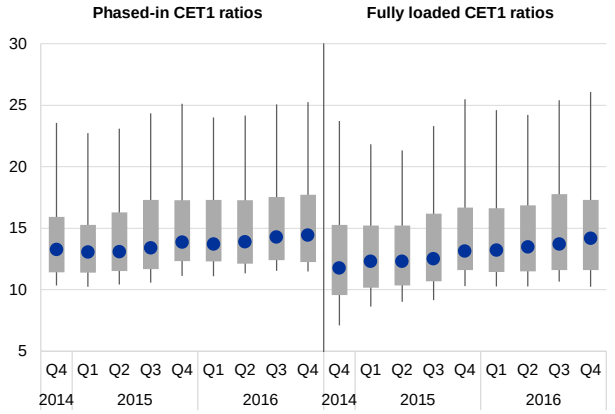
The strengthening of euro area banks' solvency positions continued in the second half of 2016. Euro area significant institutions' common equity Tier 1 (CET1) ratios improved in the last two quarters of 2016, both on a transitional and a fully loaded basis (see **Chart 3.19**). A decomposition of changes in significant banks' aggregate fully loaded CET1 ratio shows that the improvement of bank solvency positions in the second half of 2016 was mainly driven by risk-weighted asset (RWA) declines (see **Chart 3.20**). This was due to a combination of asset disposals, de-risking of portfolios as well as increased use of internal models by some institutions for the calculation of risk-weighted assets. In the same period, the effect of CET1 capital changes was largely neutral as significant losses at some banks in the last quarter offset CET1 capital increases in the third quarter.[48]

Chart 3.19

Solvency ratios continued to increase in the second half of 2016, both on a transitional and a fully loaded basis

Phased-in and fully loaded CET1 ratios of significant institutions in the euro area

(Q4 2014 – Q4 2016; percentages; median, interquartile range and 10th-90th percentile range)



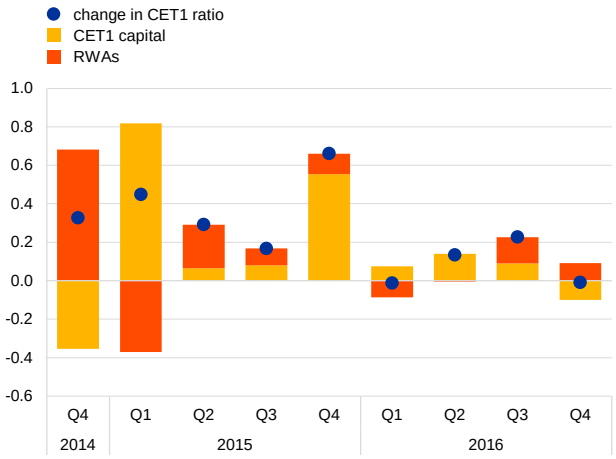
Source: ECB supervisory data.

Chart 3.20

The improvement in banks' aggregate fully loaded CET1 ratio in the second half of 2016 was mainly driven by RWA declines

Contribution of changes in CET1 capital and risk-weighted assets to quarterly changes in euro area significant institutions' aggregate fully loaded CET1 ratio

(Q4 2014 – Q4 2016; percentage points)



Sources: ECB supervisory data and ECB calculations.
Note: Changes in risk-weighted assets are shown with the opposite sign as their decline (increase) indicates a positive (negative) contribution to the capital ratios.

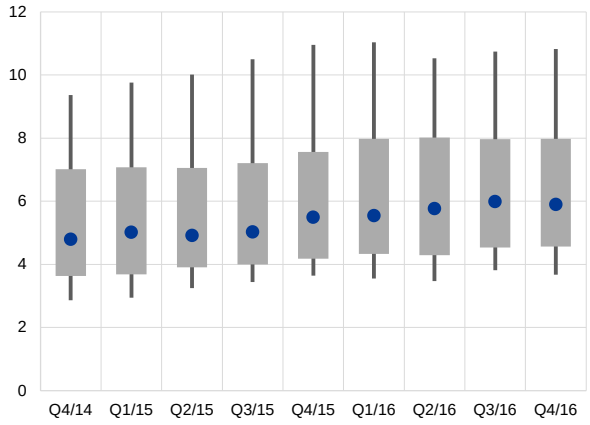
[48] It should be added, however, that capital actions implemented by some banks in the first quarter of 2017 compensate for losses made in the last quarter of 2016.

Chart 3.21

Leverage ratios edged up further, with the large majority of banks above 4%

Distribution of euro area significant institutions' fully loaded Basel III leverage ratios

(Q4 2014 – Q4 2016; percentages; median, interquartile range and 10th-90th percentile range)



Source: ECB supervisory data.

Euro area banks' leverage ratios also continued to improve in the second half of 2016, albeit to a lesser degree than risk-weighted ratios. At end-2016, the median fully loaded leverage ratio for significant institutions was close to 6% (see **Chart 3.21**). Differences across banks of different sizes persisted, with euro area G-SIBs remaining significantly more leveraged than other significant banks. The median leverage ratio for euro area G-SIBs stood above 4% at end-2016.

Looking ahead, the finalisation of Basel III reforms and the ECB review of internal models may still have an impact on banks' capital requirements. A final agreement on the Basel reform package has still to be reached. A key element of the package which is still under discussion is the calibration of the output floor (see Section 3.3 for more details). The completion of the Basel III review will reduce regulatory uncertainty. Furthermore, the ECB has launched a targeted review of internal models (TRIM) of all banks under its supervision with approved Pillar 1 internal models. The main objective of TRIM is to reduce inconsistencies in internal models and unwarranted variability in risk-weighted assets. It is expected that the review will be finalised in 2019. While the review is not intended to increase RWAs across the board, it could result in increases in capital needs for some individual banks.

Bank funding conditions remain favourable, while banks increasingly focus on the issuance of bail-inable debt

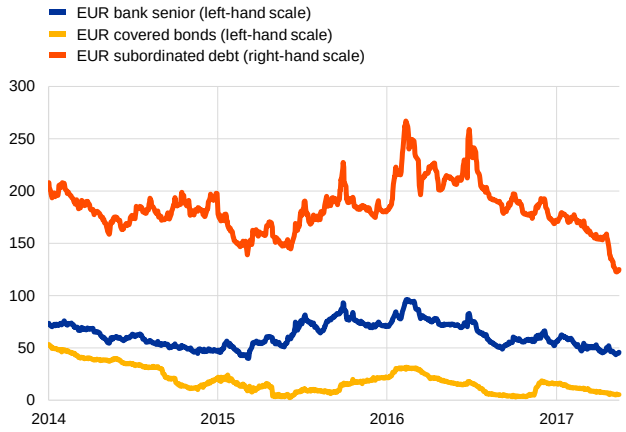
Market conditions for bank funding instruments have remained favourable. Bank debt spreads have tightened since late 2016 across all major debt instruments, including senior debt, covered bonds and subordinated debt (see **Chart 3.22**). Market conditions have also improved for contingent convertible capital instruments, with the spread for additional Tier 1 (AT1) instruments continuing its tightening trend that started in the second half of 2016 (see **Chart 3.23**). This may have been partly due to lower coupon risk owing to increased regulatory clarity on the maximum distributable amount (MDA) and a reduction in the effective MDA hurdle rate as a result of the splitting of Pillar 2 capital add-ons into two components, a binding Pillar 2 requirement (P2R) and a Pillar 2 guidance (P2G) element.

Chart 3.22

Market conditions for bank funding instruments have remained favourable since late 2016

Spreads on euro-denominated senior debt, subordinated debt and covered bonds

(Jan. 2014 – May 2017; asset swap spread in basis points)



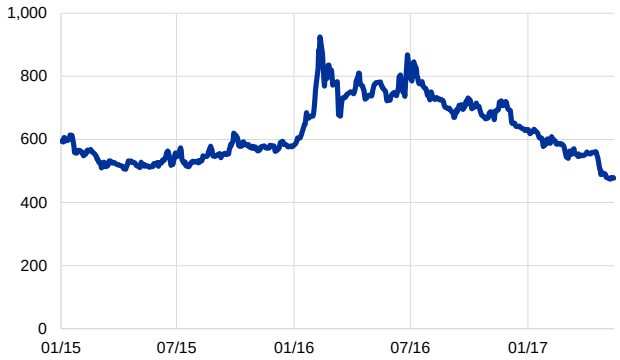
Sources: ECB and Markit.
Note: Based on the respective iBoxx indices.

Chart 3.23

Spreads on additional Tier 1 instruments have tightened in recent months, following the episodes of high volatility in 2016

Spread on euro-denominated AT1 instruments

(Jan. 2015 – May 2017; asset swap spread in basis points)



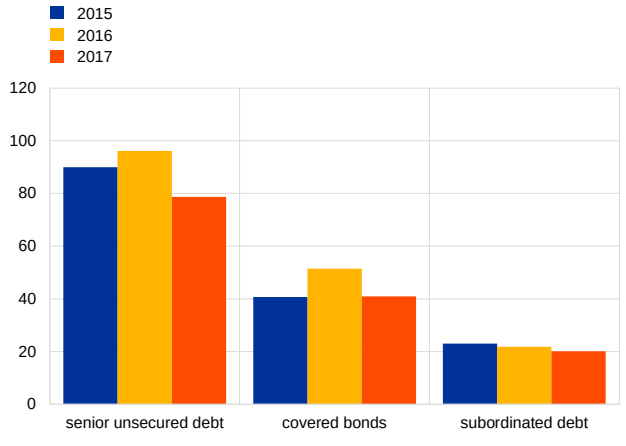
Sources: ECB and Markit.
Note: Based on the relevant iBoxx index.

Chart 3.24

Bank debt issuance dropped in the first four months of 2017, driven by lower senior unsecured and covered bond supply

Year-to-date issuance of senior unsecured debt, covered bonds and subordinated debt by euro area banks

(2015-17; year-to-date issuance in Jan.-May, € billions)



Source: Dealogic.
Note: Year-to-date issuance as at 16 May 2017.

Despite more favourable funding conditions, debt issuance by euro area banks dropped in the first five months of 2017, reflecting marked declines in both senior unsecured debt and covered bond primary market activity (see Chart 3.24). The decrease in senior unsecured debt and covered bond issuance was partly due to lower redemption needs compared with the previous year. In addition, borrowing under TLTRO-II may have been partly used by banks to replace more expensive debt funding.[49] At the same time, the increased focus of issuers on building up loss-absorbing capacity to comply with TLAC (total loss-absorbing capacity) and MREL (minimum requirement for own funds and eligible liabilities) requirements also affected the composition of debt issuance. In the senior segment, the issuance of non-preferred senior debt picked up in the first five months of 2017 (largely driven by French banks) and accounted for over 20% of total senior unsecured debt issuance. Meanwhile, subordinated debt issuance held up relatively well, with the largest part of year-to-date issuance consisting of Tier 2 debt.

[49] The final take-up of TLTRO-II funding in March 2017 was €233 billion, taking the overall gross take-up to €739 billion. TLTRO-II is the second series of ECB targeted longer-term refinancing operations, which was introduced in March 2016.

The continued implementation of bail-in rules at national level (MREL) as well as the preparation for future TLAC requirements remain an important determinant of banks' funding strategies in the near to medium term. In fact, banks' announced funding plans suggest that the trend of increasing issuance of bail-inable debt is set to continue throughout 2017 and beyond. Currently, different approaches exist in euro area countries regarding subordination, including a statutory subordination of "plain vanilla" senior unsecured debt to other (operational) senior liabilities in Germany, as well as the statutory subordination of non-preferred senior debt in France. In some cases, banks are issuing non-preferred senior debt based on contractual subordination, while a few euro area banks have issued holding company ("holdco") senior debt or are planning to set up holding companies for such issuance in the near future. Against the background of this diversity in the implementation of the bail-in tool in EU countries, the proposed amendments to the Bank Recovery and Resolution Directive (BRRD) by the European Commission (published on 23 November 2016) include a proposal for an EU harmonised approach to the bank creditor hierarchy, implying the creation of a new asset class of non-preferred senior debt instruments (see also Section 3.3).

Box 6

A comparison of market-based indicators of banking system stress

One standard market-based indicator of systemic risk regularly presented in the Financial Stability Review is the probability of default of two or more banking groups in the euro area.[50] Recently, a number of alternative methodologies have become available which measure similar market-based banking stress probabilities. The main aim of this box is to cross-check the information content of these alternative measures with the ECB's core indicator.

The ECB's standard indicator is forward-looking and uses market data in the form of bank equity returns and credit default swap (CDS) spreads as inputs to the model. More specifically, it uses market equity returns over time to estimate the interconnectedness between different large and complex banking groups (LCBGs), and it uses market CDS spreads to extract bank-specific probabilities of default. Both pieces of information are combined within a factor model to capture the market perception of the probability of two or more credit events over a two-year horizon among euro area banking groups.

In this box, the ECB's standard model is cross-checked with two alternative indicators of bank stress. Both indicators are based on the copula technique. Copulas allow an efficient combination of individual probabilities of default of different LCBGs, even if one assumes complicated functional dependences among them. Hence, they are well suited to estimate joint probabilities of default within different statistical frameworks.

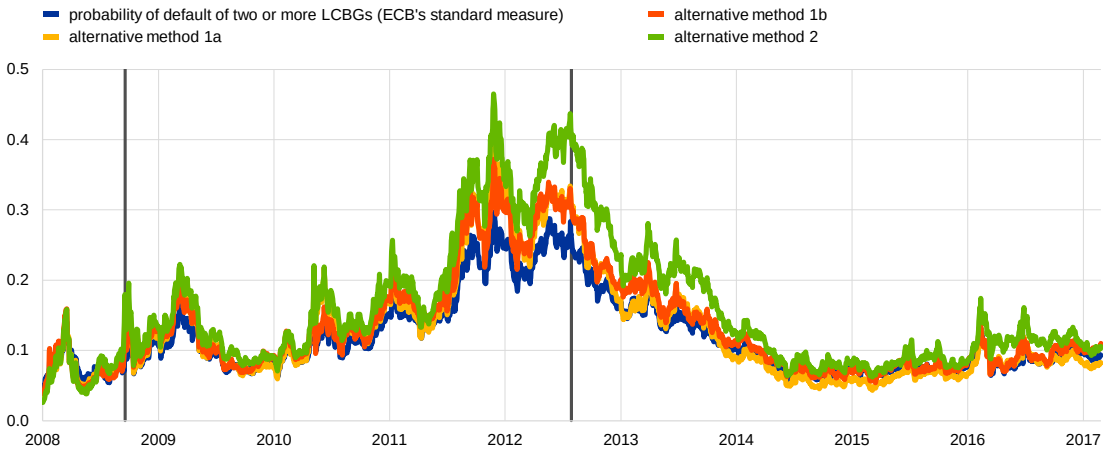
[50] See the box entitled "A market-based indicator of the probability of adverse systemic events involving large and complex banking groups", *Financial Stability Review*, ECB, December 2007, pp. 125-127.

Chart A

Similar pattern of euro area bank stress across methodologies

Probability of two or more credit events over a two-year horizon for 15 large euro area banks

(Jan. 2008 – Feb. 2017; daily data; percentages)



Sources: Bloomberg and ECB calculations.
Notes: "Probability of default of two or more LCBGs" refers to the probability of simultaneous defaults in the sample of 15 LCBGs over a two-year horizon. The first black line refers to the Lehman Brothers bankruptcy and the second to the initial OMT announcement in the summer of 2012.

The first indicator assumes time-varying volatilities and allows for potential fat tails in the parametric description of the data.[51] Two versions of this approach are employed: one in which time-varying correlations are modelled explicitly and one in which correlations are computed in a more ad hoc fashion using a 75-day rolling estimation window (alternative methods 1a and 1b in **Chart A**). The second indicator also allows for time-varying volatilities and fat tails in the data, but it simplifies the interconnectedness across different banking groups into a single time-varying parameter to reduce the mathematical complexity of the approach. This simplification permits the extension of the indicator to many more banks if necessary (alternative method 2 in **Chart A**).[52]

To make the comparison across approaches meaningful, a common sample of CDS spreads for 15 large euro area banks is used to compute the respective joint risk estimates. To further enable a comparison across methodologies, the recovery rates (or loss given default) used to derive probabilities of default from CDS spreads and the interest rates used for discounting are kept constant across models. As a result, the CDS spreads can be mapped into comparable idiosyncratic default probabilities. An important caveat to keep in mind is that CDS-implied default probabilities are based on risk-neutral probabilities, which tend to be higher than actual default probabilities. As a result, the systemic stress probabilities reported in the analysis overestimate risk. Thus, changes in the indicator levels are likely to be more informative than the levels themselves.

Overall, the results suggest that the ECB's standard measure of bank stress displays a pattern that is similar to the alternative approaches outlined above (see Chart A). Across methods, the market-implied probability of two or more credit events over a two-year horizon hovered at low levels prior to the global financial crisis. Between 2008 and mid-2012, euro area banking sector stress increased sharply, as the financial crisis spread to the real economy. From

[51] Lucas, A., Schwaab, B. and Zhang, X., "Conditional euro area sovereign default risk", *Journal of Business & Economic Statistics*, Vol. 32(2), 2014, pp. 271-284.

[52] Lucas, A., Schwaab, B. and Zhang, X., "Modeling financial sector joint tail risk in the euro area", *Journal of Applied Econometrics*, Vol. 32(1), 2017, pp. 171-199.

mid-2012 to 2014 the stress indicators covering the euro area banking sector gradually fell – initially sparked by the announcement of Outright Monetary Transactions (OMTs) and subsequently driven by the gradual recovery in economic growth prospects. In the last two years, the various stress indicators for euro area banks have remained fairly stable, despite occasional bouts of volatility in banks' share prices and overall low profitability, perhaps reflecting the gradual increases in banks' capital buffers.

To conclude, market-based measures of systemic stress in the euro area banking sector are an important tool for the ECB's financial stability analysis. This box compares the ECB's standard market-based tool for gauging banking system stress with some alternative methods. Overall, all banking system stress indicators display a similar pattern over time. Thus, from a model-based perspective, the ECB's standard market-based tool for measuring banking risk is robust to alternative specifications. This notwithstanding, market-based measures of banking stress should be interpreted with some caution. While the measures rose to what were, at the time, historically high levels in August 2007, when the sub-prime crisis erupted, they did not provide clear-cut early warning signals sufficiently far ahead of the global financial crisis that followed.[53]

3.1.2 Euro area insurance sector: solid capital positions but profitability challenges in a low-yield environment

Euro area insurers continue to face profitability headwinds from the still low level of yields, despite the more supportive recent market developments. The improvement in global financial market sentiment contributed to raising insurers' stock prices over the review period. In particular, euro area insurers' equity prices, like those of banks, outperformed other euro area stocks following the US presidential election, when long-term interest rates rebounded. The prolonged period of low yields, however, continues to weigh on insurers' investment income. In this environment, profitability prospects for some insurers have gradually weakened, which could imply vulnerabilities for the sector over the medium-to-long term.

Although the capital positions of most large euro area insurers remain solid, the levels slightly deteriorated in 2016. While not an immediate financial stability concern, the declining trend could become difficult to reverse, should insurers not adequately adapt their business models to the challenging operating environment. In this regard, the business models of traditional life insurers are of particular concern, as they continue to guarantee returns on existing policies that are higher, on average, than the yields currently offered by fixed income assets. To boost yields from investments, some euro area insurers have been gradually extending their portfolio allocation further across the credit risk spectrum. This, however, makes them vulnerable to widening credit spreads and rating migrations, which could be triggered, for instance, by heightened political risk in the euro area. In certain euro

[53] The underestimation of priced risk before times of stress has sometimes been referred to as the "financial stability paradox". See, for example, Borio, C., "Implementing a macroprudential framework: Blending boldness and realism", keynote address at the BIS-HKMA research conference on "Financial Stability: Towards a Macroprudential Approach", Bank for International Settlements, July 2010.

area countries, insurers also became more active in providing loans, especially mortgages, thereby to some extent taking on the traditional role of banks.

The market outlook for the insurance sector improved

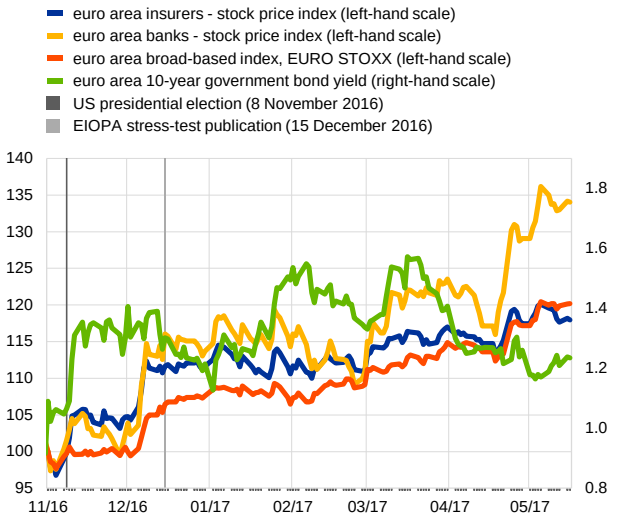
Euro area insurers' equity prices increased and were unfazed by the publication of the results of the EIOPA (European Insurance and Occupational Pensions Authority) stress test. The pick-up in euro area yields following the US election in early November was interpreted by markets as positively affecting the outlook for euro area insurers. As a result, the insurers' stock price index rose somewhat faster than the general index towards the end of 2016 (see **Chart 3.25**). The publication on 15 December 2016 of the results of the stress test conducted by EIOPA had an only limited impact on insurers' stock price developments. Given the focus of the stress tests on long-term life business, a somewhat larger initial effect could be discerned in the equity prices of life insurers, but this was ultimately also short-lived.[54]

Chart 3.25

Stock prices of euro area insurers increased, supported by the pick-up in long-term interest rates…

Stock price indices and euro area long-term yield

(1 Nov. 2016 – 16 May 2017; daily observations, stocks indexed to 100 on 1 Nov. 2016)



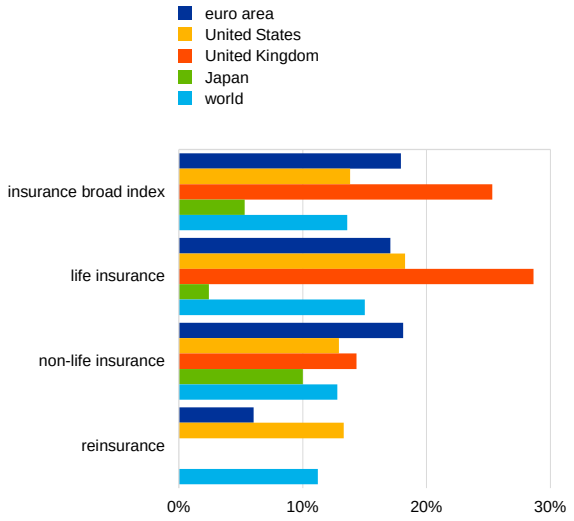
Sources: ECB, Thomson Reuters Datastream and ECB calculations.

Chart 3.26

...and going hand-in-hand with higher stock prices for insurers in other jurisdictions

Percentage change in stock prices since 1 November 2016

(percentage change between 1 Nov. 2016 and 16 May 2017)



Sources: Thomson Reuters Datastream and ECB calculations.

The increase in insurers' equity prices was not specific to the euro area, but occurred in tandem with rising stock prices for insurers in other jurisdictions. Share price increases for life insurers in some other jurisdictions, particularly in the United Kingdom, were even larger than those for life insurers in the euro area (see **Chart 3.26**). On the non-life side, euro area insurers outperformed the world average, whereas euro area reinsurers' stocks undershot their US peers. Overall, the

[54] For more information, see the part on the insurance sector outlook.

gain in the stock prices of euro area insurers (around 18%) was somewhat larger than that of their peers in the rest of the world (around 14%).

The financial position of large euro area insurers remains challenged[55]

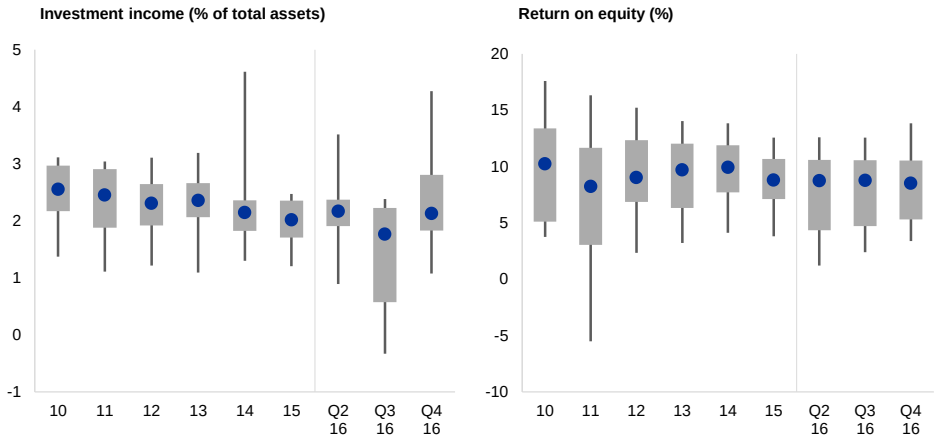
In the second half of 2016, the profitability of large euro area insurers remained broadly unchanged. In the last two quarters of 2016, the median return on equity hovered around 8%, which is broadly in line with the results in the first half of 2016 and in 2015 (see **Chart 3.27**). Median investment income also remained broadly unchanged over the review period and was thus weak from a historical perspective. The generally low levels of investment income reflect insurers' difficulties in generating solid returns on their portfolios, which are heavily invested in fixed income assets, in the prolonged low-yield environment.

Chart 3.27

Investment income remained at low levels, while return on equity was broadly unchanged

Investment income and return on equity for a sample of large euro area insurers

(2010 – Q4 2016; percentages; median, interquartile range and 10th-90th percentile range)



Sources: Bloomberg, individual institutions' financial reports and ECB calculations.
Notes: Investment income excludes unrealised gains and losses. Quarterly data are annualised.

On the life insurance side, the recovery in economic growth and financial market sentiment helped the underwriting business towards the end of 2016 (see Chart 3.28). More stable economic prospects, in the context of an increasingly broad-based recovery, reduce uncertainty with respect to household incomes and savings, thereby also facilitating the purchase of new life insurance products and reducing the risk of policy lapses (i.e. the risk that insurance contracts are terminated prematurely). Moreover, the favourable global financial market sentiment may have supported the sales of unit-linked products, in which the return to the policyholder is

[55] The analysis is based on a varying sample of 27 listed insurers and reinsurers with total combined assets of about €4.9 trillion in 2016, which represent around 62% of the assets in the euro area insurance sector. Quarterly data were only available for a sub-sample of these insurers.

directly linked to the performance of financial markets. Although euro area life insurers have been increasingly offering these products in recent years to limit their exposure to interest rate risk, the demand for these products has been dampened by the rather low prospect of attractive returns in financial markets.

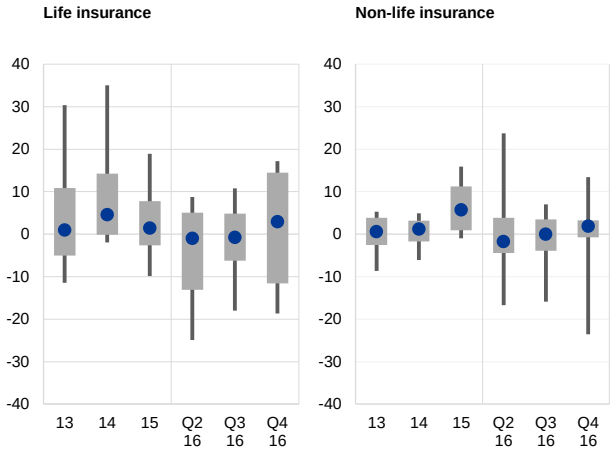
On the non-life insurance side, weak underwriting revenues were offset by favourable developments in insured losses in Europe. Competition in this market segment is intense, with around half of large euro area insurers not being able to increase non-life business in the second half of 2016 (see **Chart 3.28**). At the same time, benign developments in losses in Europe and the focus of insurers on cost optimisation contributed to a positive balance between underwriting revenues and costs in this period. This was reflected in low levels of combined ratios (i.e. incurred losses and expenses as a proportion of premiums earned), which remained well below 100% for most large euro area insurers (see **Chart 3.29**).

Chart 3.28

Underwriting business slightly picked up at the end of 2016

Growth of gross premiums written for a sample of large euro area insurers

(2013 – Q4 2016; percentages; median, interquartile range and 10th-90th percentile range)



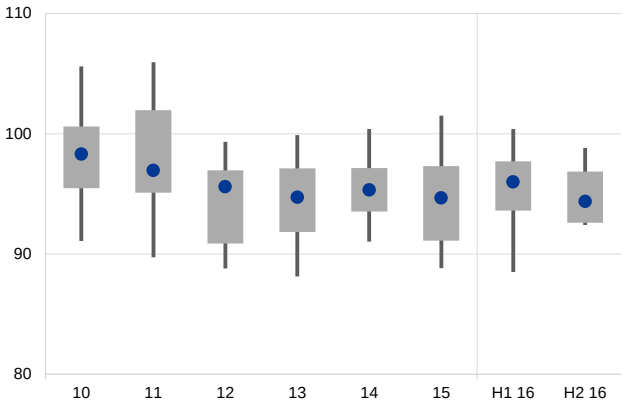
Sources: Bloomberg, individual institutions' financial reports and ECB calculations.

Chart 3.29

Benign developments in insured losses in Europe contributed to a positive balance in non-life business

Combined ratio for a sample of large euro area insurers

(2010 – H2 2016; percentages; median, interquartile range and 10th-90th percentile range)



Sources: Bloomberg, individual institutions' financial reports and ECB calculations.
Notes: The combined ratio expresses the sum of incurred insurance losses and expenses as a share of net premiums earned. A ratio of below 100% indicates an underwriting profit.

Despite limited losses in Europe, reinsurers in the euro area were impacted by the highest global natural catastrophe losses in four years. The insured losses across the globe amounted to USD 50 billion and thus exceeded somewhat the ten-year historical average of USD 45 billion.[56] A number of strong earthquakes, powerful storms and devastating floods, mainly in Asia and North America, were the most significant contributors. As a result of the above-average losses in 2016, the decline in reinsurance pricing moderated in the early 2017 renewal rounds (see

[56] For more details, see "Global natural catastrophe losses highest in four years. 160 North American loss events are most since 1980", MunichRe, 4 January 2017.

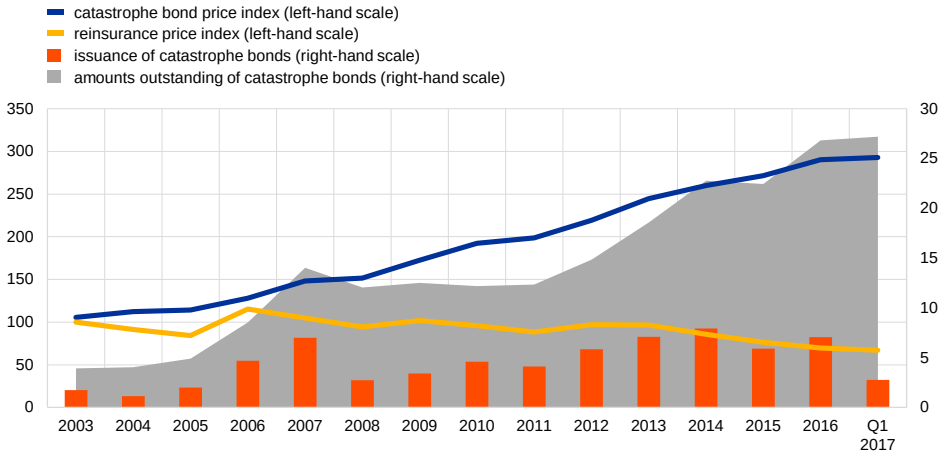
Chart 3.30). The price declines, however, have not fully come to a halt as there remains abundant reinsurance capacity in the traditional business and in alternative capital sources such as catastrophe bonds. The amounts outstanding of catastrophe bonds further increased in 2016, to over USD 26 billion, reflecting strong issuance activity of over USD 7 billion during the year. The strong issuance activity and increasing pricing of catastrophe bonds indicate that this type of instrument continues to attract investors owing to the diversification benefits and high yields it offers.

Chart 3.30

The decline in reinsurance pricing is slowing as global natural catastrophe losses picked up in 2016

Catastrophe bond pricing, issuance and amounts outstanding and reinsurance pricing

(2003 – Q1 2017; prices indexed to 100 in 2003, issuance and outstanding amounts in USD billions)



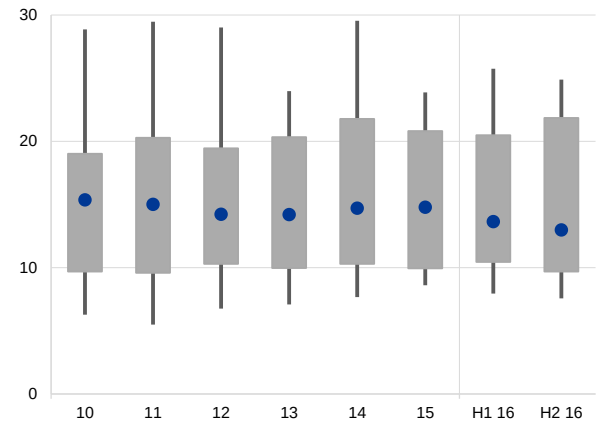
Sources: Bloomberg, Guy Carpenter and ECB calculations.
Notes: The Guy Carpenter World Property Catastrophe RoL Index tracks changes in property catastrophe reinsurance premium rates on a worldwide basis. The last observation for catastrophe bond issuance reflects the issuance only in the first quarter of 2017 (i.e. not over the whole year).

Chart 3.31

Capital positions have slightly declined

Capital distribution for a sample of large euro area insurers

(2010 – H2 2016; percentages of total assets; median, interquartile range and 10th-90th percentile range)



Sources: Bloomberg and ECB calculations.
Note: Capital is the sum of borrowing, preferred equity, minority interests, policyholders' equity and total common equity.

Although the capital positions of most large euro area insurers remain solid, the levels slightly deteriorated in 2016. The median capital-to-assets ratio declined from around 15% at the end of 2015 to around 13% at the end of 2016 (see **Chart 3.31**). While these positions remain solid, the declining trend could become difficult to reverse, should insurers not adequately adapt their business models to the challenging operating environment. The traditional business model of many euro area life insurers with a focus on saving products with long-term guaranteed rates is a particular source of concern, given that the prolonged low-rate environment implies an elevated level of liabilities and feeble investment income. In such an environment, it has become difficult for life insurers to generate a margin above the average guaranteed rate on existing business, especially if they have a high share of liabilities with guaranteed returns contracted when rates were higher.

Insurance sector outlook: profitability headwinds from the still low level of yields

Looking forward, market-based indicators suggest a stable profitability outlook for large euro area insurers. Supported by a gradual and more broadly-based economic recovery, analysts expect the average level of euro area insurers' earnings in the next two years to be in line with their current performance (see **Chart 3.32**). This is also consistent with the relatively low volatility of other market-based measures. For instance, credit default swaps (CDSs) of large euro area insurers have also remained broadly unchanged over the last half-year. The profitability outlook, however, significantly differs by type of insurer. In an environment of historically low yields, the profitability outlook remains challenging for small and medium-sized life insurers with high policyholder guarantees that operate in countries with limited scope to lower these guarantees.[57]

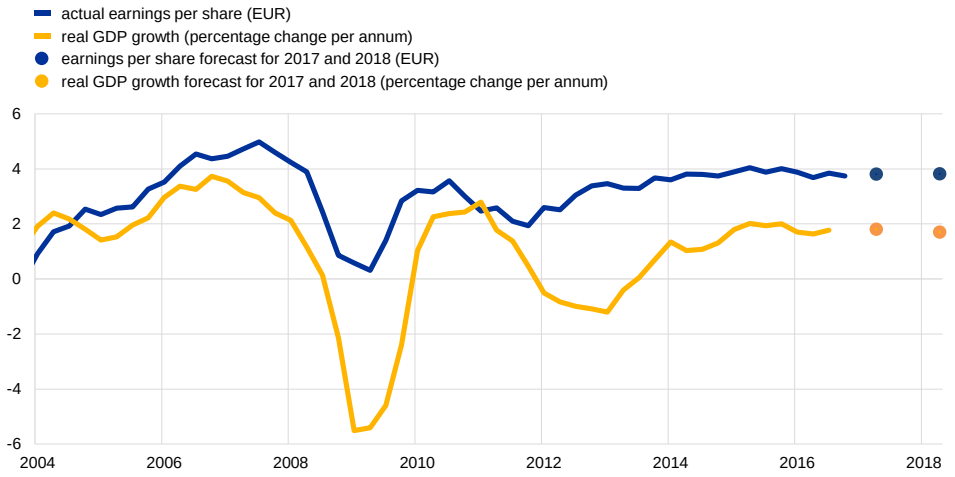
[57] See Special Feature B by Berdin, E., Kok, C., Mikkonen, K., Pancaro, C. and Vendrell Simon, J. M., entitled "Euro area insurers and the low interest rate environment", *Financial Stability Review*, ECB, November 2015, pp. 134-146.

Chart 3.32

Analysts expect the profitability of large euro area insurers to be stable

Earnings per share of selected euro area insurers and euro area real GDP growth

(Q1 2004 – 2018)



Sources: ECB, Thomson Reuters Datastream and ECB calculations.
Note: Real GDP growth forecast is based on the March 2017 ECB staff macroeconomic projections for the euro area.

To shed more light on the resilience of the life insurance industry, EIOPA conducted a stress test of 236 European insurers in 2016. The results under the baseline scenario provided important insights into insurers' capital positions from a Solvency II perspective, i.e. from the perspective of the new, harmonised regulatory regime in the European Union. At an aggregated level, EU insurers were adequately capitalised with an overall Solvency Capital Requirement (SCR) ratio of 196% as at end-2015.[58] However, the results also revealed the significant impact of the long-term guarantee (LTG) and transitional measures, which were put in place to mitigate artificial volatility in insurers' balance sheets and to facilitate the transition to the Solvency II regime.[59] The exclusion of these measures reduced the aggregate SCR ratio from 196% to 136%, with the impact being due to the LTG and the transitional measures to an approximately equal extent. The impact of the exclusion varied significantly across countries. Euro area countries for which the impact was found to be the largest were Belgium, Germany, Greece and Spain. On average, the SCR ratios in these countries increased by more than 50 percentage points owing to the inclusion of these measures.

In addition to the baseline scenario, EIOPA considered two stress scenarios. The first was a "low-for-long" scenario, envisaging a situation of secular stagnation with low productivity growth and low yields. The second was a so-called "double-hit" scenario, which considered an abrupt increase in risk premia on top of a prolonged

58 The SCR ratio is also often referred to as the "Solvency II ratio" and values above 100% indicate that capital levels exceed the regulatory requirement for a "healthy" insurer. The Solvency II framework, however, considers two types of regulatory ratio: (i) the Solvency Capital Requirement (SCR) ratio; and (ii) the Minimum Capital Requirement (MCR) ratio. The SCR reflects a capital level that enables insurers to absorb significant losses, while the MCR is a lower, minimum level of capital.

59 For more details, see "Solvency II overview – Frequently asked questions", European Commission, press release, 12 January 2015.

low-yield environment. On average, the low-for-long scenario resulted in an 18% drop in the total excess of assets over liabilities, while the severity of the decline increased to 29% in the double-hit scenario. In both scenarios, capital remained positive for most of the insurers. However, when excluding the benefit of LTG and transitional measures, 6% and 31% of insurers lost their entire capital base in the low-for-long and double-hit scenarios, respectively.[60]

The adoption of a new methodology by EIOPA for deriving the ultimate forward rate (UFR) could pose medium-term challenges to some insurers, but generally enhances the credibility of balance sheet valuations.[61] Based on this methodology, the calculated UFR for the euro is 3.65%, while annual changes to the UFR are limited to 15 basis points to allow for a gradual phase-in. As a result, the applicable UFR for the euro will decrease from the current level of 4.2% to 4.05% in 2018. Since the UFR is used for extrapolating rates to discount insurance liabilities in euro with maturities over 20 years, the change will mainly affect insurance business with long durations such as life and health insurance. The overall impact on the insurance sector is expected to be limited, at least in the first step of the gradual phase-in. According to EIOPA's impact assessment carried out on 336 European insurers at the end of 2016, a change in the UFR by 20 basis points would, on average, be associated with a decrease of 2 percentage points in the SCR ratio (from 203% to 201%). However, from a medium-to-long-term perspective, the gradual changes in the UFR are expected to have a significant cumulative effect on the solvency positions of some insurers. In general, the new methodology is a welcome step forward, since it takes into account the significant changes in long-term interest rate expectations in insurers' balance sheet valuations.

Insurers' balance sheets are sensitive to an abrupt increase in risk premia

Insurers' portfolios are particularly sensitive to interest rate risk as they are dominated by fixed income instruments. Government and corporate bonds account for nearly two-thirds of euro area insurers' securities portfolios on aggregate. Furthermore, another important asset class – investment fund shares – partly serves as another (indirect) channel for investment in fixed income instruments (see **Chart 3.33**).[62]

60 For more details, including the results under the two stress scenarios, see "2016 EIOPA Insurance Stress Test Report", EIOPA, 15 December 2016.

61 See EIOPA's press release on 5 April 2017. Under Solvency II, the UFR is used to determine long-term risk-free interest rates, which are not directly observable in the market and thus require extrapolation towards a specific level (the UFR). The extrapolated rates are then used to discount insurers' long-term liabilities, i.e. the higher the UFR, the lower the present value of those liabilities. For insurers' liabilities in euro, the current UFR is 4.2% and the extrapolation starts at a maturity of 20 years.

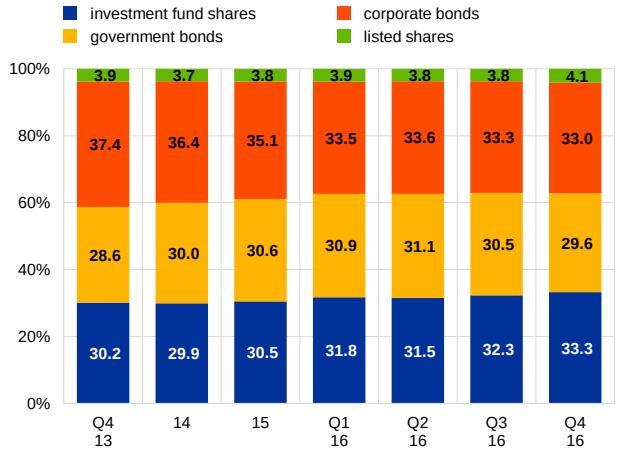
62 Data on the exact share of fixed income investment in investment fund shares held by the euro area insurance sector are not available. However, debt securities holdings accounted for nearly half (48%) of the securities portfolio of euro area investment funds at the end of 2016.

Chart 3.33

Fixed income instruments dominate portfolios of euro area insurers

Holdings of securities by euro area insurers broken down by main asset classes

(Q4 2013 – Q4 2016; percentages of total holdings of securities)



Sources: ECB Securities Holdings Statistics by Sector and ECB calculations.
Note: Data prior to 2016 may include indirect reporting (i.e. custodian data).

Nevertheless, a gradual further increase in interest rates may have an overall positive impact on insurers' financial position. This would be the case especially if long-term interest rates were to gradually rebound on the back of a broad-based economic recovery and stable inflation outlook (in line with the ECB's definition of price stability) rather than due to an increase in risk premia. In such a scenario, there would be an increase in the "risk-free" rate of interest, which is used as the discount rate for the bulk of insurers' liabilities. Hence, a rise in interest rates would reduce the values of both assets and liabilities, while the drop on the liabilities side would typically be larger than that on the assets side, especially for life insurers with negative duration gaps. In addition to this immediate "balance sheet" effect, higher interest rates would gradually strengthen insurers' investment income and thus help overcome the current difficulties in generating margins above the average guaranteed rate on existing business. Still, one drawback of rising interest rates would be an elevated risk of policy lapses. Policies that were underwritten during the prolonged period of low yields would be particularly affected, as they offer guaranteed rates that are low from a historical perspective.

A sharp and unexpected rise in interest rates triggered by a shift in risk premia could, however, have a detrimental impact on insurers. Such an abrupt repricing could stem from political uncertainty leading to higher credit risk premia. In such a scenario, widening credit spreads and mass rating migration could force some insurers to liquidate parts of their portfolios. The reason is that widening credit spreads and falling bond prices would reduce the value of insurers' assets and thus their available operating capital. At the same time, credit rating downgrades would increase the required solvency capital. Hence, in order to restore their solvency capital ratios, insurers would be forced to sell assets with a deteriorating credit quality. Moreover, defaults – should they occur – would trigger actual losses on insurers' balance sheets. The LTG measures under Solvency II, particularly the volatility and matching adjustments, were designed to mitigate the impact of widening credit spreads and, more generally, of short-term price movements on insurers' assets, especially if those are unrelated to default. However, their effectiveness under adverse market and economic shocks is yet to be tested in practice.[63]

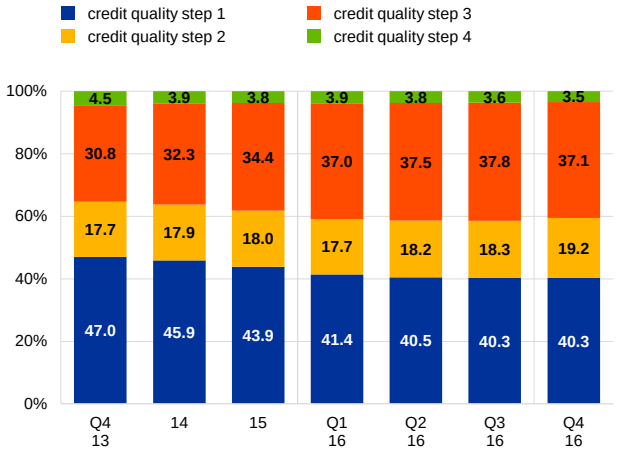
[63] For instance, the volatility adjustment provides a tool to adjust the discounting rates on insurers' liabilities, should bond prices deteriorate owing to low liquidity or an exceptional expansion of credit spreads. In addition, the matching adjustment allows insurers to offset price movements on the assets and liabilities sides, if their liabilities are cash flow-matched by fixed income assets.

Chart 3.34

Exposures to higher-yielding bonds have increased…

Holdings of debt securities by euro area insurers broken down by rating

(Q4 2013 – Q4 2016; percentages of total holdings)



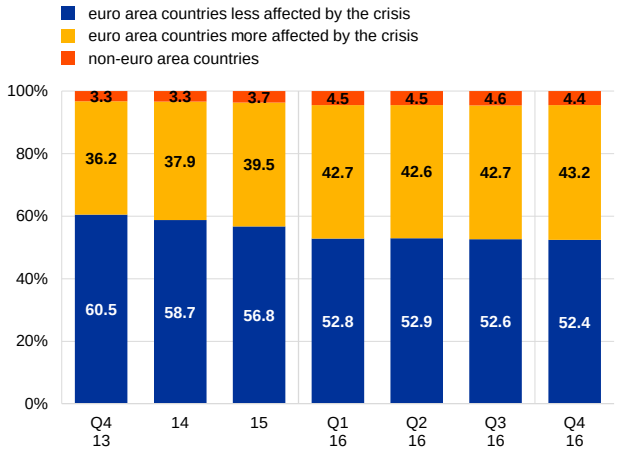
Sources: ECB Securities Holdings Statistics by Sector and ECB calculations.
Note: Credit quality steps are defined in accordance with the Eurosystem credit assessment framework (ECAF), which provides a harmonised rating scale classifying ratings into three credit quality steps. The first category includes securities rated from AAA to AA-, the second from A+ to A- and the third from BBB+ to BBB-. A fourth category is added which includes all rated securities with a rating below credit quality step three. The chart is based on the nominal amounts of euro- and foreign currency-denominated securities.

Chart 3.35

…and so have exposures to sovereigns more affected by the crisis

Holdings of government debt securities by euro area insurers broken down by issuer country

(Q4 2013 – Q4 2016; percentages of total holdings)



Sources: ECB Securities Holdings Statistics by Sector and ECB calculations.
Notes: Euro area countries more affected by the crisis include Cyprus, Greece, Ireland, Italy, Portugal, Slovenia and Spain. Euro area countries less affected by the crisis include all other euro area countries. The split into the two different groups is on the basis of whether a country experienced a significant deterioration in its long-term credit rating since the onset of the financial crisis (see also *Financial integration in Europe*, ECB, May 2017). Data prior to 2016 may include indirect reporting (i.e. custodian data).

Insurers' vulnerability to credit risk has increased, owing to portfolio shifts towards riskier assets. For instance, the share of BBB+ to BBB- rated bonds in the aggregate euro area insurers' bond portfolio increased from around 31% at the end of 2013 to over 37% at the end of 2016, while the share of AAA to AA- rated bonds declined from around 47% to around 40% over the same period (see **Chart 3.34**).[64] In the same vein, exposures towards euro area sovereigns more affected by the crisis stood at a four-year high at the end of 2016 (see **Chart 3.35**).

Some euro area insurers are also reaching out for alternative investment opportunities. In certain euro area countries, insurers have become more active in granting loans – either directly or indirectly through investment funds (see **Box 7** for evidence from the Netherlands). Anecdotal evidence also suggests that insurers have been investigating options to invest more in other illiquid assets such as property and infrastructure investments. These trends could bring diversification benefits to the sector but, at the same time, insurers should ensure an appropriate risk assessment and build in-depth knowledge of these market segments in order to avoid an underestimation of risks stemming from such alternatives.

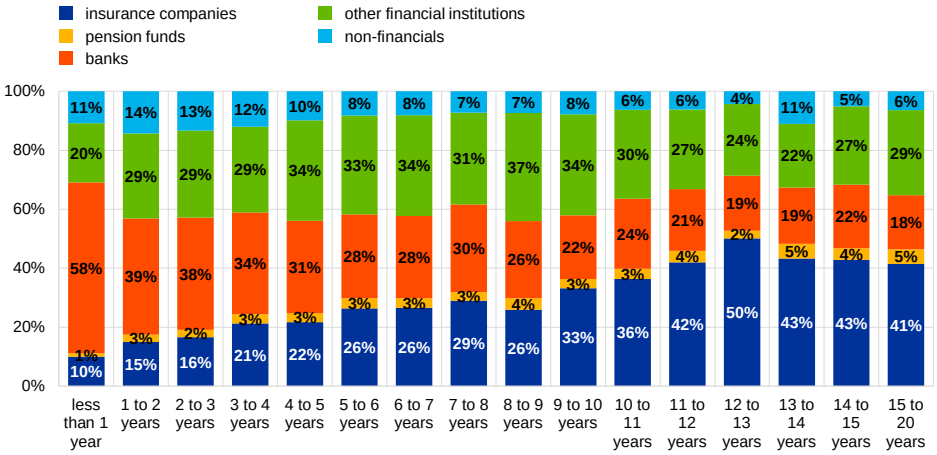
64 The shifts have been largely driven by an actual reduction in the holdings of higher-rated securities and an increase in lower-rated securities, rather than by a decline in the rating quality of the securities held. See also Box 7, *Financial Stability Review*, ECB, November 2015, pp. 93-95.

Chart 3.36

Insurers are one of the most important sectors investing in long-maturity bonds

Euro area holdings of debt securities broken down by residual maturity and holder sector

(Q3 2016; percentages of total holdings of securities)



Sources: ECB Securities Holdings Statistics by Sector and ECB calculations.
Notes: Holdings of debt securities are included only if they have an ISIN reported and have a residual maturity up to 20 years. Banks hold a large share of securities with reported maturity exceeding 20 years for which precise information is less reliable (e.g. for securities without a definite date of maturity) and which are therefore excluded. Data for pension funds may include indirect reporting (i.e. custodian data).

Given the major role of insurers in some market segments, their increased exposure to credit risk has systemic relevance. Since insurers are large institutional investors, their investment behaviour plays an important role with regard to the stability of the financial system. For certain asset classes, such as bonds with long maturity/duration, they represent the most important investor sector. For instance, holdings by insurance companies account for more than 40% of all euro area holdings of bonds with residual maturity between 11 and 20 years, whereas the corresponding share for banks (MFIs) is around 20% (see **Chart 3.36**). Therefore, if several large insurers were simultaneously forced to liquidate some of these long-term bonds, the sales could trigger sharp price falls with potential negative spillovers to other investors holding these assets. Moreover, bond issuers could face difficulties in accessing the bond markets at these long maturities.

Box 7

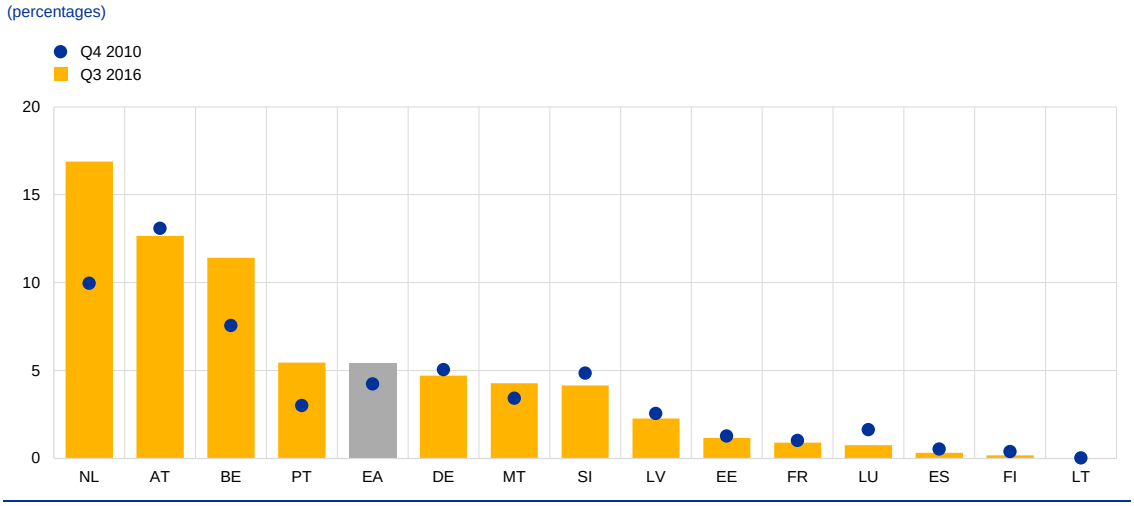
The growing role of non-bank lending to households – a case study on the Netherlands

Non-bank lending to households is increasing. In the euro area, the share of non-banks in long-term lending to households grew from 4.2% in 2010 to 5.4% in 2016. Behind this overall increase are large differences between countries, both in terms of the share of non-bank lending and in terms of its growth since 2010 (see **Chart A**). In most countries, the provision of long-term loans to households is still dominated by banks. In the Netherlands, where insurance companies have long since played a role in mortgage lending, non-banks provide a relatively large share of these loans. Based on joint analysis with De Nederlandsche Bank (DNB), this box describes the shift towards

non-bank lending in the Dutch mortgage market and discusses the implications for financial stability and macroprudential policy.[65]

Chart A

Share of non-banks in domestic long-term household lending in selected euro area countries



Source: ECB quarterly sector accounts.
Notes: Non-bank lending refers to total economy lending minus loans from MFIs and OFIs (except investment funds). In the case of Austria, the high share of non-bank lending refers to the state and not to insurance companies.

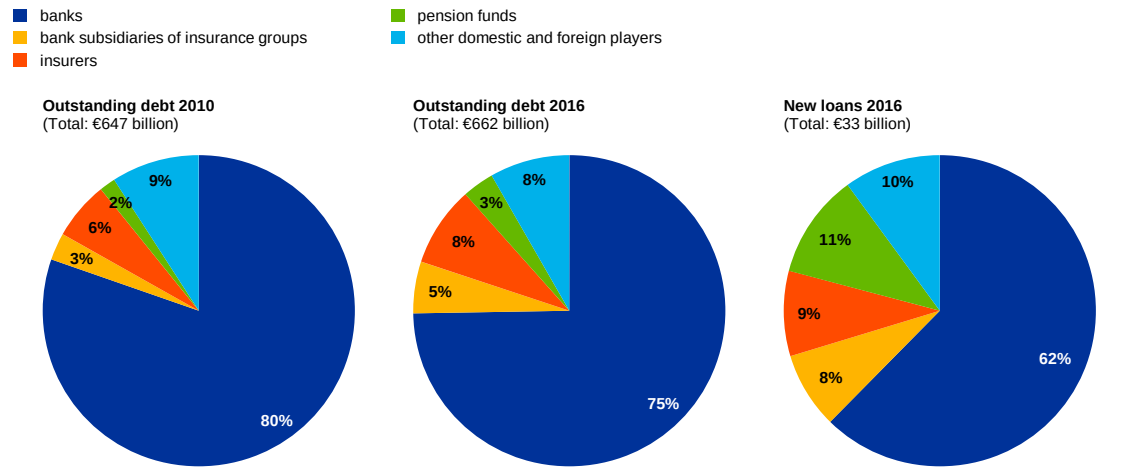
Insurance companies and pension funds (ICPFs) have recently become more active in the Dutch mortgage market.[66] ICPFs currently finance 28% of new mortgages in the Netherlands (see **Chart B**), either directly through dedicated mortgage originators or banking subsidiaries or indirectly through investments in mortgage funds. As a result, the (non-securitised) exposure of ICPFs to the Dutch mortgage market doubled from €35 billion in 2010 to €73 billion in 2016. These institutions mainly finance loans with fixed interest rate periods of more than fifteen years and have a relatively high share of loans covered by the Dutch National Mortgage Guarantee (NHG) scheme. Since banks and non-banks are subject to the same loan-to-value (LTV) and debt service-to-income (DSTI) regulations, the risk that ICPFs may try to gain market share through overly lax lending standards is limited. Nevertheless, it remains important to ensure that the lending of these new players is based on sound origination and risk management practices, especially in cases where the origination of loans is outsourced to third parties.

65 This box is based on *Loan markets in motion*, DNB, November 2016.

66 See also the article entitled “Non-banks shake up Dutch mortgages”, *Financial Times*, 27 December 2016.

Chart B

Overview of shifts in the Dutch mortgage lending market



Source: DNB.

The growth in mortgage investments by institutional investors is partly driven by a search for yield and changes in regulatory frameworks. With interest rates at historically low levels, mortgage lending activities offer institutional investors an attractive risk/return profile.[67] Moreover, given their long investment horizons, pension funds and insurers have an advantage when it comes to bearing the liquidity risk of investments in mortgage loans. There is evidence that the portfolio choices are to some extent driven by changes in and differences between regulatory frameworks. For example, under Solvency II, capital requirements for an investment in a portfolio of non-securitised mortgage loans are lower than for an investment in a similar portfolio of securitised loans. This may explain the increasing interest of insurers in investing in direct mortgage loans rather than in securitisations. In addition, stricter capital requirements for banks and uncertainty about possible future increases in risk weights for mortgages may have induced banks to reduce their mortgage lending. However, other factors also play a role. Insurers and pension funds invest to a large extent in NHG mortgages, even though banks typically have lower capital requirements for guaranteed loans. This may be driven by differences in risk appetite.

The increased competition from ICPFs has some important ramifications for financial stability and macroprudential policy. In the short run, increased competition puts downward pressure on interest margins and hence on bank profitability. So far, banks have been able to maintain their margins by benefiting from the increase in demand for loans with longer fixed interest rate periods, which typically have higher margins. However, given the dominant role of ICPFs in this market segment, it is unlikely that this strategy will continue to work for banks going forward. From a longer-term perspective, a larger role for institutional investors may be beneficial to the financial system. It could contribute to a more diverse financial system with less maturity transformation and leverage, and help to reduce the funding gap in the banking sector. However, the growing role of non-banks also poses important challenges. First, a shift in lending may potentially lead to accumulation of credit risk for parties who are not equipped to manage or fully understand the risks

[67] For an international perspective, see *Global Financial Stability Report*, IMF, April 2016, Chapter 3.

that they are exposed to. Second, banks must take account of the potential impact of lending market shifts on their business models. And, third, the growing market shares of non-bank players may limit the effectiveness of some macroprudential measures that apply only to banks. For example, an increase in risk weights applied to mortgage loan exposures for the calculation of bank capital ratios, intended to address a build-up of vulnerabilities in the mortgage market, could lead to an increase in mortgage lending by ICPFs. This underlines the importance of taking a cross-sectoral view when it comes to supervision and macroprudential policies. The cross-sectoral nature of LTV and DSTI limits in the Netherlands prevents such "leakage" between banks and ICPFs.

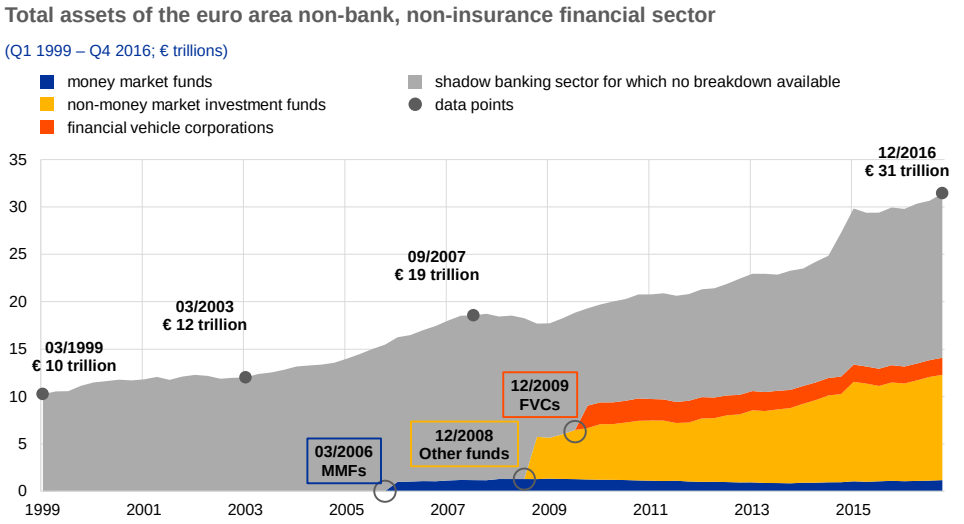
It remains to be seen whether the role of ICPFs in lending to households will continue to grow. On the one hand, mortgage loans offer an attractive yield for ICPFs, whose solvency is under pressure from current low interest rates. Moreover, Dutch ICPFs have room to further increase their exposure to Dutch mortgages, which currently correspond to 15% (insurers) and 1.8% (pension funds) of their total assets. In principle, this also holds for other euro area ICPFs. On the other hand, institutional investors may be reluctant to engage in direct lending to households, especially in countries where credit risk is higher or where it is more difficult to outsource the origination and servicing of the loans to reliable third parties.

3.1.3 Continued, albeit more moderate, growth in the euro area non-bank financial sector

The euro area non-bank, non-insurance (NBNI) financial sector has further expanded, albeit at a moderate pace compared with the exceptionally strong expansion in the period between 2014 and 2015. Total assets held by the NBNI financial sector (excluding insurance corporations and pension funds) grew by 2.4% year on year at the end of 2016, bringing growth nearly back to its long-term trend since the global financial crisis (see **Chart 3.37**). Changes in global interest rates, shifts in the euro exchange rate and evolving risk perceptions affecting net investment positions and flows in the euro area and globally have all contributed to the observed slowdown since 2015. Looking at the main sub-sectors (non-MMF investment funds, money market funds (MMFs) and other financial institutions), all three experienced positive net transactions during 2016. The slowdown in growth has, in fact, been mainly driven by valuation effects, while investment flows remained positive on a net basis. Reductions in bond prices as well as the somewhat weaker euro more than offset the higher equity prices. Growth in the investment fund sector has picked up again, driving the expansion of the non-bank financial sector, while the much smaller MMF sector has also continued to grow. The somewhat stronger loan origination and securitisation activity by euro area credit institutions has arrested the further shrinking of financial vehicle corporation (FVC) assets over the past quarters.

Chart 3.37

The assets of the non-bank, non-insurance financial sector continued to grow, albeit at a moderate pace



Sources: ECB and ECB calculations.
Notes: A breakdown of statistical data for MMFs, other funds and FVCs is available only from the indicated dates onwards. The non-bank, non-insurance financial sector includes MMFs and all other non-monetary financial institutions apart from insurance corporations and pension funds. Further statistical breakdowns are available at national level, including for non-securitisation special-purpose vehicles (SPVs) in Ireland and special financial institutions (SFIs) in the Netherlands.

The importance of the non-bank, non-insurance financial sector has increased significantly, as its size is almost on a par with that of the banking sector. Total assets of the NBNI sector amounted to €31 trillion at the end of 2016, including those held by investment funds, money market funds, financial vehicle corporations and a large residual of other financial institutions. Overall, assets held by these institutions represented approximately 43% of the total assets of the euro area financial sector at the end of 2016. Total assets of non-MMF investment funds accounted for 35%, MMFs for 4% and FVCs for 6% of the NBNI sector assets, respectively. The NBNI financial sector represented about 96% of total banking sector assets in the euro area in 2016. While the NBNI financial sector is growing, the precise drivers and implications of this growth cannot be fully assessed, as a significant proportion (more than 50%) of the sector's assets cannot be classified by type of entity, i.e. it is attributed to the residual of the "other financial intermediaries" (or OFIs) sub-sector. It is estimated that a predominant share of these assets is held by entities that facilitate intragroup transactions for financial and non-financial corporates.[68]

Concerns remain that vulnerabilities may be building up in parts of the financial system for which a detailed statistical breakdown by type of entity is not readily available but which is growing in size. While the ECB collects balance sheet data which allow some light to be shed on the composition of and notable shifts within non-bank financial sector assets, the lack of granular information about

[68] Public data are available at national level for non-securitisation SPVs in Ireland and SFIs in the Netherlands which are included within the residual based on euro area data.

the type of entities within the OFI residual prevents a definitive assessment of risk.[69] Initiatives to better understand the types of entities within the OFI residual have concentrated mainly on enhancing data reporting and statistical work at the national level. In Luxembourg, other financial institutions include holding companies and other financial entities, mainly linked to non-financial corporates, for which statistics are not publicly available. A recent paper by the Luxembourg authorities finds that the majority of entities included in the OFI residual are set up by large resident and non-resident non-financial multinational corporates to channel funds from or via Luxembourg to other entities of the group domiciled abroad.[70] Statistical information on the OFI sector is available publicly for the Netherlands, Ireland and Belgium. In the Netherlands, the other financial institutions comprise largely (non-financial) special financial institutions; in Ireland, they comprise treasury companies, finance leasing companies, holding companies and SPVs; for Belgium, the majority are captive financial institutions mainly effecting intragroup transactions for fiscal reasons, not necessarily engaging with entities external to the group. The share of entities in the euro area financial system engaged in credit intermediation and liquidity transformation outside the banking sector is thus much lower than the overall volume of the OFI residual would suggest.

The repricing in global fixed income markets had a limited impact on the flows into the euro area investment fund sector

Positive net inflows into bond funds at the beginning of 2017 suggest that the so-called "great rotation" from bond to equity funds observed in the United States following the presidential election has thus far had only a limited impact on the euro area fund sector. While in the United States investors started rotating out of low-yielding bonds into equities after the presidential election, market sentiment shifted considerably less in the euro area. Repricing in global fixed income markets has thus only temporarily been reflected in euro area investment fund flows, but has not led to a market-wide rotation out of bond funds. In spite of net outflows from bond funds in the third quarter and some outflows from equity funds in the fourth quarter of 2016, euro area investment funds have overall received net inflows throughout 2016 (see **Chart 3.38**). Growth in the investment fund sector, which was previously spurred by credit disintermediation and the low interest rate environment in the aftermath of the global financial crisis, has resumed its longer-term growth path following a period of intermittent stagnation in 2015. The continued inflows into bond funds, amid squeezed risk premia in fixed income markets, may raise concerns about sudden redemptions in response to a more widespread repricing of global risk premia, if it were to become broad-based.

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69 See Doyle, N., Hermans, L., Molitor, P. and Weistroffer, C., "Shadow banking in the euro area: risks and vulnerabilities in the investment fund sector", *Occasional Paper Series*, No 174, ECB, June 2016, and Grillet-Aubert, L., Haquin, J.-B., Jackson, C., Killeen, N. and Weistroffer, C., "Assessing shadow banking – non-bank financial intermediation in Europe", *Occasional Paper Series*, No 10, European Systemic Risk Board, July 2016.

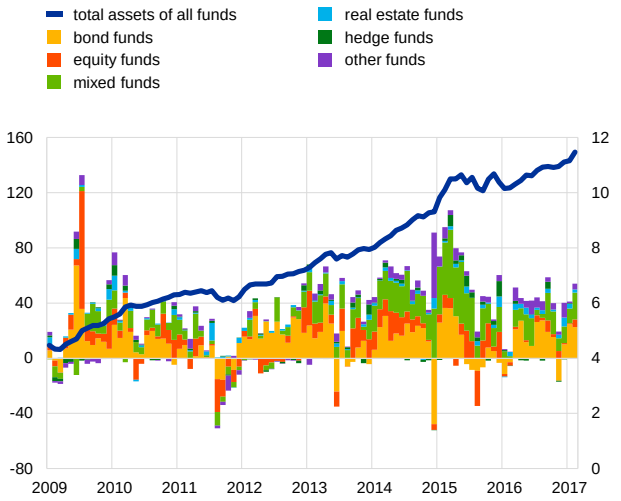
70 See Duclos, C. and Mohrs, R., "Analysis of the shadow banking content of captive financial companies in Luxembourg", working document, Comité du Risque Systémique, 2017.

Chart 3.38

Growth in the euro area investment fund sector resumed its longer-term growth path

Monthly net flows by type of fund and total assets

(Jan. 2009 – Feb. 2017; net flows in € billions (left-hand scale), total assets in € trillions (right-hand scale))



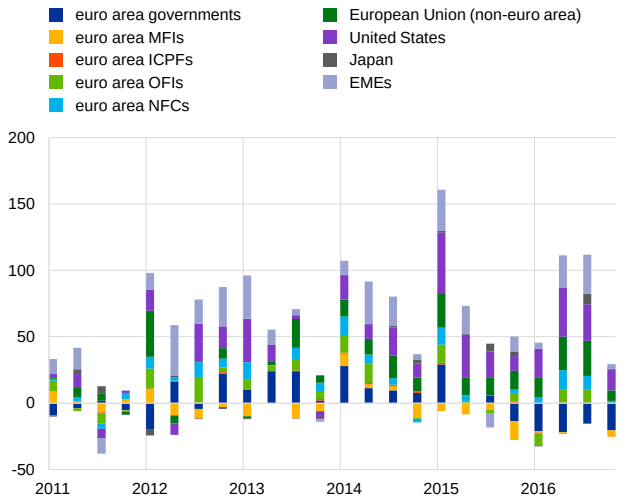
Source: ECB investment fund statistics.
Note: The data do not cover money market funds.

Chart 3.39

Euro area investment funds have further reduced their domestic government bond holdings

Quarterly net purchases of fixed income securities by euro area investment funds

(Q1 2011 – Q4 2016; net transactions in € billions)



Source: ECB investment fund statistics.
Notes: The data do not cover money market funds. EMEs stands for emerging market economies and is calculated as a residual from non-euro area debt securities, excluding debt securities issued in the EU (non-euro area), United States and Japan. EA stands for euro area, MFIs for monetary financial institutions, ICPFs for insurance corporations and pension funds, OFIs for other financial institutions and NFCs for non-financial corporations.

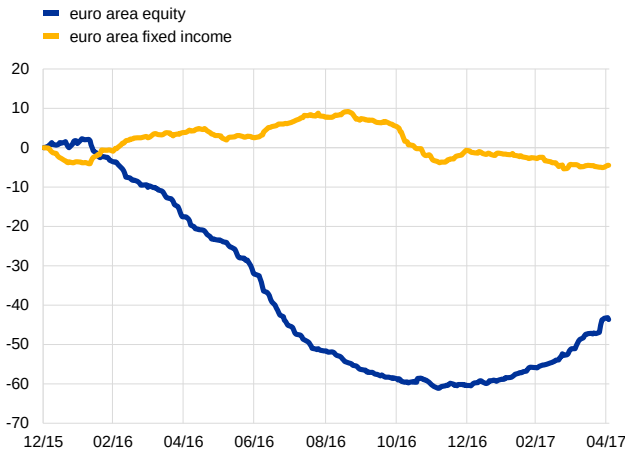
Some repercussions from the "great rotation" from bonds to equities following the US presidential election in November 2016 could be observed in investment flows across currency areas. Global investors stopped allocating money away from euro area equities following the US election (see **Chart 3.40**). The overall sentiment for euro area equities seems to have improved, reflecting enhanced growth prospects for the euro area as well as possible reflation spillovers from the United States to the euro area. At the same time, global investment flows into euro area bond funds started to abate around the US election. By contrast, euro area flows into US equity funds have picked up (see **Chart 3.41**), possibly in anticipation of changes in US policy, with a stronger emphasis on lower taxes and lighter regulation of markets, which could result in higher nominal growth prospects. While initially after the US election, euro area investors withdrew money from US fixed income funds on a net basis, flows have reversed and turned positive in recent months. The more recent uptick in cross-border flows from the euro area to US fixed income funds may be explained by the increasing rate differential between the United States and the euro area.

Chart 3.40

Global investors stopped allocating money away from European equities

Cumulated weekly net flows from the rest of the world into euro area investment funds

(Dec. 2015 – May 2017; USD billions)

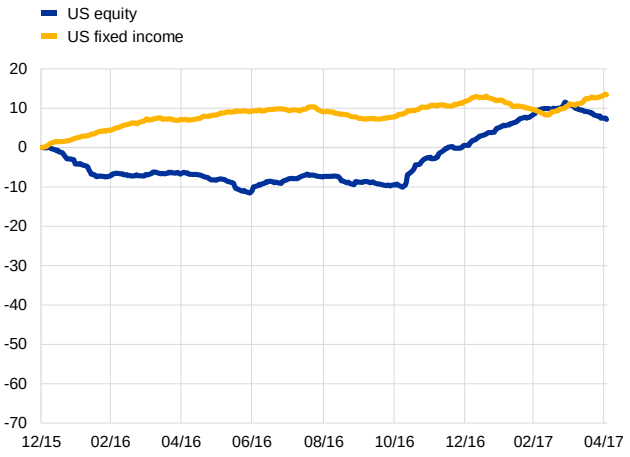


Sources: EPFR Global and ECB calculations.

Chart 3.41

Investment fund flows from the euro area to the United States have picked up recently

Cumulated weekly net flows from the euro area to US investment funds



Sources: EPFR Global and ECB calculations.

Risk-taking in the investment fund sector has picked up again

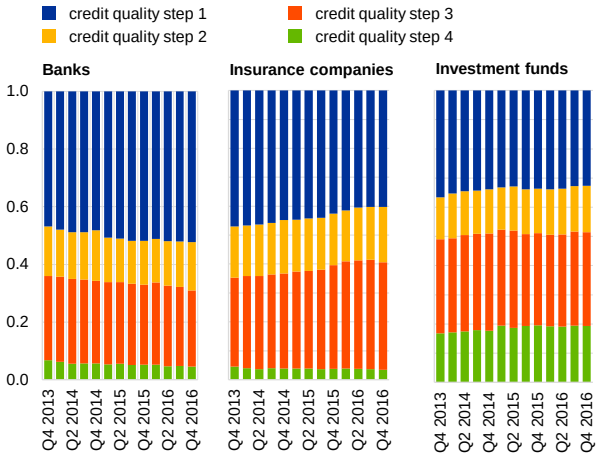
For some time now, euro area asset managers have been rebalancing their asset allocations towards higher-yielding assets in view of continued central bank asset purchases. Euro area bond funds and mixed investment funds, in particular, increased their exposure to the euro area non-financial corporate (NFC) sector and to non-euro area debt securities in the course of 2016, while these funds have reduced their holdings of euro area government and bank debt securities. As low and negative-yielding government bonds appeared increasingly unattractive to investors, euro area investment funds have divested from domestic sovereign bond markets for five consecutive quarters since the fourth quarter of 2015 (see **Chart 3.39**). Holdings of domestic sovereign debt have been reduced by a total net amount of €93 billion over the past five quarters, while in this period euro area investment funds have also sold €21 billion worth of MFI debt securities. These amounts correspond to a reduction by 10% of euro area government bonds held by investment funds and by 6% for MFI debt securities. Meanwhile, investment funds have increased their exposures to the NFC sector and non-euro area bond markets including those of the United States, emerging markets and the rest of the European Union. In the last quarter of 2016, equity funds significantly increased their exposure to euro area banks' equity (a 31% increase quarter on quarter), reflecting both acquisitions and valuation effects from the recovery of share prices in this sector. Around 49% of total euro area investment funds' financial assets are held in non-euro area equities and debt securities, while 27% of investors are from non-euro area countries. This suggests that investment funds are being used as a vehicle by euro area residents to acquire exposure to non-euro area assets, which also exposes them to exchange rate risk.

Chart 3.42

Some slowdown in the portfolio shifts of investment funds towards lower-rated debt securities

Euro area financial institutions' holdings of debt securities, broken down by rating and sector

(Q4 2013 – Q4 2016; percentages of total assets)



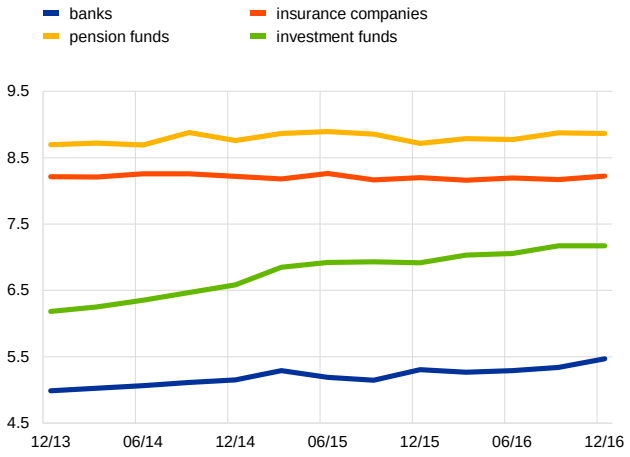
Sources: ECB Securities Holdings Statistics by Sector and ECB calculations.
Notes: The legend denotes credit quality steps defined in accordance with the Eurosystem credit assessment framework (ECAF). The first category includes securities rated from AAA to AA-, the second from A+ to A- and the third from BBB+ to BBB-. A fourth category is added which includes all rated securities with a rating below credit quality step three. The analysis is based on the nominal amounts of euro- and foreign currency-denominated securities, including "alive" and "non-alive" securities. The investment fund sector excludes money market funds.

Chart 3.43

Investment funds continued to increase residual maturities in their portfolios

Average residual maturity of debt securities held by the euro area financial sector

(Q4 2013 – Q4 2016; average residual maturity in years)



Sources: ECB Securities Holdings Statistics by Sector and ECB calculations.
Notes: Long- and short-term, euro- and foreign currency-denominated debt securities are included only if they have an ISIN reported, are considered "alive" and have a residual maturity of up to 30 years. Banks hold a particularly large share of securities with a reported maturity exceeding 30 years for which precise information is less reliable (e.g. for securities without a definite date of maturity) and which are therefore excluded. In order to estimate the average, residual maturities are weighted by the nominal amount held of each security by each sector over the total debt holdings of each sector.

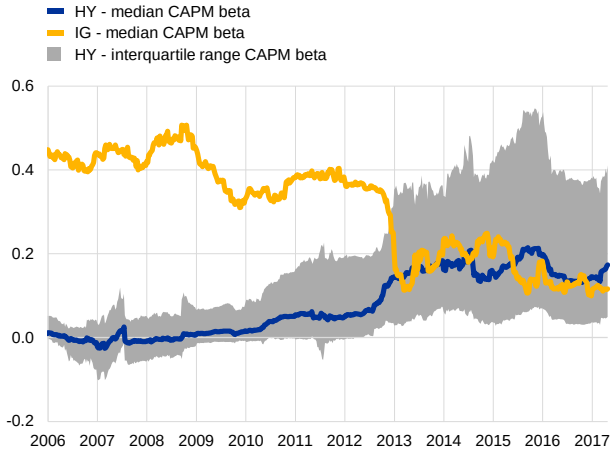
In the current low-yield environment, investment funds have been venturing further down the credit risk spectrum and into longer maturities. A common pattern observed during the past few years is that some institutional investors, including insurance corporations, pension funds and investment funds, have shifted their asset allocation from higher- to lower-rated debt securities (see **Chart 3.42**). As regards exposures to the banking sector, a clear shift could be observed from debt securities with higher to those with lower seniority levels. Higher risk-taking is also evident in estimated market betas for corporate bond funds – measuring the exposure to common benchmark indices – which have, on average, increased relative to the high-yield segment (see **Chart 3.44**). In addition, a rise in residual maturities by almost one year can be observed since 2013 (see **Chart 3.43**). The increased exposure to interest rate risk, combined with the current low-rate environment, leaves bond fund investors particularly vulnerable to a reversal in global bond yields. This is because an increase in rates would affect the value of a bond portfolio more, the lower its average yield and the longer its duration. Over the past year, it seemed that risk-taking by the investment fund sector had levelled off. However, the last two quarters have showed a slight uptick in residual maturities and a rise in the share of lower-rated debt securities. Increased risk-taking has thus left investors in fixed income funds more exposed to any changes in global risk premia.

Chart 3.44

Corporate bond funds' market betas relative to the high-yield segment have not strengthened further

Estimated market betas for euro area bond funds relative to high-yield and investment-grade benchmark indices

(Jan. 2006 – Apr. 2017; median coefficient estimates and interquartile range)



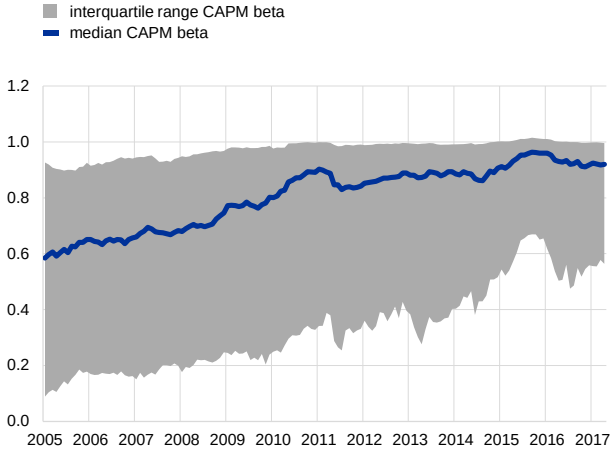
Sources: Thomson Reuters Lipper, Datastream and ECB calculations.
Notes: Median and interquartile range of CAPM (capital asset pricing model) betas calculated from weekly fund excess returns for a rolling window of 52 weeks (see equation below). The sample includes approx. 3,000 bond funds, which are EUR-denominated, with a euro area investment focus, and are not flagged as government bond funds. The underlying market benchmarks used are Barclay's pan-European high-yield (HY) and investment-grade (IG) indices. Coefficient estimates from an augmented CAPM model: $(r - r_f) = \alpha + \beta_{HY}(r_{HY} - r_f) + \beta_{IG}(r_{IG} - r_f) + \varepsilon$

Chart 3.45

Fixed income mutual funds have become increasingly exposed to market-wide risk

Estimated market betas for UCITS bond funds relative to fund-specific benchmark indices

(Jan. 2005 – Apr. 2017; median coefficient estimates and interquartile range)



Sources: Thomson Reuters Lipper and ECB calculations.
Notes: Median and interquartile range of CAPM betas calculated from daily fund excess returns for a rolling window of 250 business days, i.e. one year (see equation below). The beta is estimated for each fund on the last business day of every month. The sample includes 3,525 UCITS bond funds domiciled in the European Union. The underlying market benchmarks (MB) are fund-specific as specified in the funds' prospectuses. Coefficient estimates from a CAPM model: $(r - r_f) = \alpha + \beta_{MB}(r_{MB} - r_f) + \varepsilon$

Market-wide pressures from a global risk repricing could mount due to investor herding and a rise in passive strategies affecting the ability to diversify risk. Estimated market betas for a large sample of UCITS (undertakings for collective investment in transferable securities) fixed income funds relative to fund-specific benchmark indices point to a gradual increase in market-wide risk exposures over the past years (see **Chart 3.45**). This has made bond funds increasingly exposed to market-wide risk factors, strengthening channels for the transmission of shocks though correlated exposures. Although cross-asset correlations between market segments have recently weakened as a result of the "great rotation" out of bonds into equities (see also Section 2), the potential for spillovers within market segments remains high. These channels are also becoming more important with the rise of ETF (exchange-traded fund) products, which facilitate passive investment strategies and positioning in market-wide indices. In fact, ETFs have become a central factor in asset pricing in some market segments, e.g. emerging market bonds but also US equities, where price signals feed back from ETFs to related products and the underlying securities. In the euro area, the market for ETFs has also been developing rapidly, but it remains relatively small to date. The implications for financial stability may, therefore, also be limited. Nevertheless, as the market continues to grow, ETF products are expected to play an increasing role in price discovery and liquidity transformation which can entail risks for financial stability (see **Box 8**).

Concerns remain that demand for liquidity in fixed income markets could suddenly rise, amid selling pressures from investors amplified by large and

mounting outflows from bond funds. Fund-level data suggest that correlations between flows and past returns are positive and, moreover, tend to increase during stress periods and in anticipation of market-moving events, as investors position themselves in line with signals they receive from fund returns (see **Overview, Chart 14**). These correlation features indicate procyclicality in investment patterns and may amplify any feedback spirals between flows and returns, at times when vulnerabilities are building up or stress is mounting. The buffers available to deal with outflows have been gradually shrinking since 2009. Sector-wide indicators point to a decrease in the most-liquid positions of bond funds, including cash holdings, debt securities issued by euro area governments and short-term instruments (see **Overview, Chart 13**). Liquidity and maturity transformation has thus grown among bond funds, while less-liquid portfolios and lower cash holdings have resulted in smaller buffers against large outflows.

Box 8

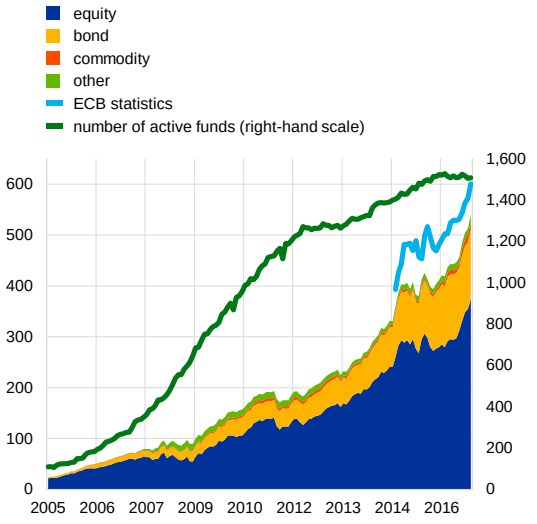
Exchange-traded funds in the euro area – recent trends and vulnerabilities

Chart A

Total assets of euro area ETFs have risen sharply…

Breakdown by asset class

(Jan. 2005 – Feb. 2017; monthly data; left-hand scale: € billions; right-hand scale: number)



Sources: Thomson Reuters Lipper, ECB investment fund statistics and ECB calculations.
Notes: The coloured areas represent total net assets of ETFs domiciled in the euro area according to data from Thomson Reuters Lipper. The blue line represents total assets according to the ECB investment fund statistics. Data are available from December 2014 onwards for the latter.

Concerns about exchange-traded funds (ETFs) amplifying potential stress in financial markets have resurfaced recently in view of the rapid growth of the industry. Over the past decade, the market for exchange-traded funds has grown to more than €3 trillion of assets under management globally, of which almost €550 billion is accounted for by ETFs domiciled in the euro area. The growth of the sector has been accompanied by a more general increase in the role of passive investment strategies. This box reviews the main features of the ETF market in the euro area and discusses some potential financial stability risks associated with an expanded role for this asset class in the euro area financial landscape.[71]

The ETF segment is still small compared with the market for open-ended mutual funds in the euro area, representing about 5% of total assets, but market concentration is high. In the equity sub-segment, the role of ETFs is somewhat higher, as they accounted for approximately 10% of all equities held by euro area investment funds at the end of 2016, while, in the bonds sub-segment, the corresponding figure is only 4%. Equity and bond ETFs are by far the

[71] For an overview of the ETF operational structure, including funded and unfunded replication strategies, see Ramaswamy, S., "Market structures and systemic risks of exchange-traded funds", BIS Working Paper No 343, April 2011.

largest types of ETF in the euro area, and together represent about 95% of ETF total assets (see **Chart A**).

While the number of euro area-domiciled ETFs has risen sharply over the past decade, more than 70% of all euro area ETF assets are managed by just three asset management companies. Overall, the ten largest asset management companies account for more than 90% of ETF total net assets in the euro area.

ETF products mainly track the more liquid market segments, including major European and global stock market indices. The three stock market indices most frequently tracked by euro area ETFs include the S&P 500, EURO STOXX and MSCI World. Holdings of euro area-domiciled equity ETFs are mostly focused on developed markets, with more than two-thirds of equity assets allocated to Europe, the United States and Japan and only 10% allocated to emerging markets. Euro area-domiciled bond ETFs mainly hold liquid assets, such as investment-grade corporate bonds (25%), as well as euro area and US government bonds (18% and 5%, respectively). Less liquid high-yield corporate bonds account for 10% of euro area bond ETFs' total net assets.

While the euro area ETF market is expanding rapidly, in terms of size and relative importance within the broader asset management sector, it lags far behind its US counterpart. Total net assets of US-domiciled ETFs are four times larger than those of euro area-domiciled ETFs. In the United States, ETFs represent 15% of total investment fund assets, compared with only about 5% in the euro area. United States and euro area ETFs also differ in terms of replication strategies; synthetic strategies represent approximately one-fifth of the market in the euro area, but only a negligible proportion in the United States (see **Chart B**). For the more illiquid markets, such as emerging market debt or equities, the majority of euro area ETFs use synthetic replication strategies. Synthetic replication strategies, while offering lower costs, can expose investors to counterparty risk, including from unbundling of collateralised transactions.

Another discernible difference between the United States and the euro area relates to domestic retail use of ETFs, which is lower in the euro area than in the United States. In the euro area, holdings by institutional investors, such as investment funds, insurance corporations, pension funds and deposit-taking corporations, account for three-quarters of the ETF shares held domestically (see **Chart C**). According to the ECB's Securities Holdings Statistics (SHS), almost half of the ETF shares held domestically are held by other investment funds, of which some may use ETF shares for liquidity transformation purposes, e.g. to gain access to less liquid markets or to be able to trade more frequently at a lower cost. Almost 40% of the shares issued by ETFs domiciled in the euro area are in fact held by non-euro area investors, for which a decomposition by sector is not available in the statistics, while euro area households hold approximately 13% of all euro area ETF shares. Investor composition can be relevant from a financial stability perspective, in particular if risks are borne by investors who are unaware of the risks associated with investing in ETF products or are unable to bear potential losses in times of stress.

While the offer of intraday liquidity is an attractive feature of the ETF market from an investor perspective, liquidity transformation may entail some risk to financial stability. Only authorised market participants (APs) are allowed to create and redeem shares. Most APs accept redemption in kind, i.e. in the form of the underlying assets corresponding to the volume of ETF shares redeemed, rather than in cash. This can mitigate the liquidity risk posed by ETFs, since fund managers usually do not have to sell assets in response to redemption requests. On the other hand, liquidity risks are shifted to market-makers who have to warehouse the risk. Market-makers,

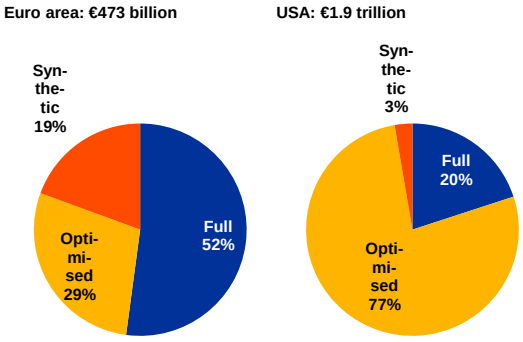
which are sometimes also APs, effectively act as arbitrageurs, ensuring that the stock exchange value of the ETF's shares on the secondary market does not vary significantly from its net asset value (NAV). Liquidity is thus determined, on one hand, by supply and demand in ETF secondary markets and, on the other, by the willingness and ability of market-makers to provide liquidity by creating or redeeming shares through APs in the primary market. Ultimately, liquidity risks are, therefore, borne by the end-investors, who may have to accept a widening of the NAV spread if the underlying market becomes illiquid.

Chart B

…while differences in size and product mix prevail between the United States and the euro area

Index replication strategies of euro area and US ETFs

(Dec. 2016)



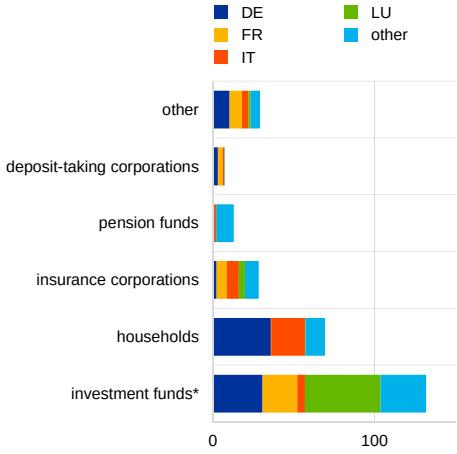
Sources: Thomson Reuters Lipper and ECB calculations.
Notes: Physical ETFs hold 90% or more of their assets in the constituents of the underlying index, whereas ETFs using an optimised replication strategy hold a representative sample of the index with less than 90% of their assets invested in the index. Synthetic ETFs use derivatives to replicate the index return.

Chart C

Investment funds and households are the largest euro area investors in euro area ETFs

Breakdown by sector and country

(Dec. 2016, € billions)



Sources: ECB SHS data and ECB calculations.
Notes: ECB SHS data only cover holdings of euro area investors, representing nearly 60% of shares issued by euro area-domiciled ETFs.
* The investment fund sector excludes money market funds.

Further risks to financial stability may arise from the role of ETFs in price discovery in particular in market segments where ETFs have become a major factor in asset trading. A key transmission channel for stress to spread to the wider financial system can be the abrupt selling of ETF shares into markets where the share of ETF trading in price discovery is high, including the main stock indices in advanced economies. In the past, price signals feeding back from ETFs to the underlying markets have contributed to stress in major stock indices.[72] Stress can also be amplified by the abrupt selling of ETFs in markets where the underlying liquidity is structurally low and ETF shares referencing an index are traded at a much higher frequency than the underlying securities, such as high-yield corporate or emerging market debt.

72 For example, a joint Commodity Futures Trading Commission and Securities and Exchange Commission report on the causes of the 6 May 2010 "flash crash" highlighted, among other factors, the amplifying role played by the rapid decline in liquidity in the E-Mini S&P 500 futures contracts (E-Mini) and the S&P 500 SPDR exchange-traded fund (SPY), the two most active stock index instruments traded in electronic futures and equity markets. The report is available at: http://www.sec.gov/news/studies/2010/marketevents-report.pdf.

Overall, in spite of its rapid growth, the euro area ETF sector still remains relatively small, and the incremental financial stability risks stemming from ETFs in addition to existing risks in the fund sector may, therefore, also be limited. Nevertheless, if the ETF market continues to grow at the current pace, risks to financial stability may arise from its increasing role in price discovery and from the sector's engagement in liquidity transformation.

The euro area money market fund sector continued to grow amid inflows from euro area and foreign investors

Growth in the MMF sector has stabilised, as MMFs experienced three consecutive quarters of positive net inflows in 2016 for the first time since 2007. Following the onset of the global financial crisis in 2008 and until 2014, the euro area MMF sector contracted, in an environment of sharply declining short-term interest rates (see **Chart 3.46**). Cumulated net flows then levelled off in 2014 and MMFs started to attract substantial net inflows again in 2015. While in the second quarter of 2016 some net inflows could be observed from non-euro area investors, MMFs received more broad-based net inflows also from domestic investors in the third and fourth quarter, with the annual growth rate in notional assets (excluding valuation effects) reaching 9% for the euro area as a whole. MMFs in all major fund domiciles, including Ireland (+8%), France (+9%) and Luxembourg (+16%), have contributed to this recent expansion of the MMF sector. By the fourth quarter of 2016, total assets of euro area MMFs stood at €1,170 billion, still below the March 2009 peak level (€1,330 billion) but about 40% above the trough reached at the end of 2013 (€830 billion).

Lower competition from banks in an environment of ample liquidity and few alternatives for cash-like instruments have contributed to the expansion of MMFs in the past two and a half years. Some MMFs are receiving inflows from financials and large non-financial corporates, amid a growing demand for the short-term placement of funds by investors who are sensitive to relative performance. Some corporates are reportedly shifting cash balances previously held in overnight bank accounts to money market funds. It is noteworthy that, on average, bank deposits are still slightly higher yielding than MMFs (see **Chart 3.47**). While bank deposit rates for non-financial corporates are still slightly positive on average, MMF returns have in fact been negative since 2015. These average rates, however, conceal the heterogeneity of bank deposit rates offered to different depositor types, with some banks passing on negative policy rates to large cash-rich corporate and institutional clients.

MMF balance sheet data suggest that the funds have shifted portfolios over the past two years, possibly in search of higher-yielding assets. The share of MMFs' holdings of non-financial corporate debt in the amounts outstanding has risen since 2014 mainly at the expense of holdings of debt securities issued by credit institutions. In 2016, MMFs increased the provision of short-term funding to the euro area banking sector and now hold nearly 40% of the banking sector's outstanding

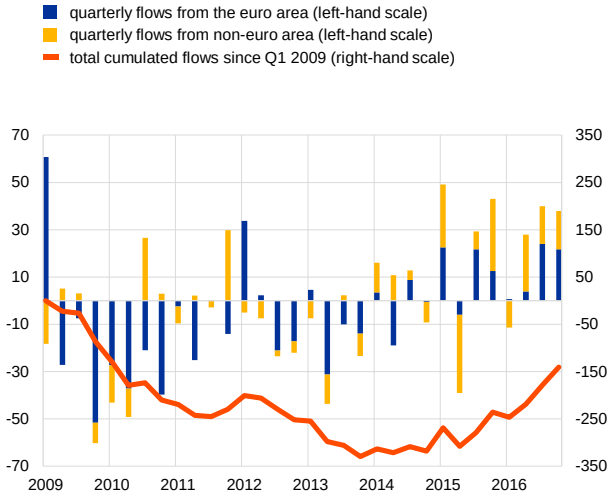
short-term debt securities, although this is still below the 2010 peak. MMFs have also shown a tendency to engage more in maturity transformation, albeit within the relevant regulatory limits on residual maturity and residual life of securities held.[73] As regards foreign currency-denominated MMFs, USD MMFs expanded more rapidly than funds investing in the euro-denominated money market. The Irish and French MMF holdings of USD securities, in particular, have been on the rise since 2011. This notwithstanding, some of the increase in USD assets underlying the more recent growth of the sector was also driven by exchange rate effects, i.e. the US dollar appreciating against the euro.

Chart 3.46

Money market funds have received substantial net inflows from domestic and foreign investors

Quarterly net flows into and out of MMFs

(Q1 2009 – Q4 2016; shares issued (flows) in € billions)



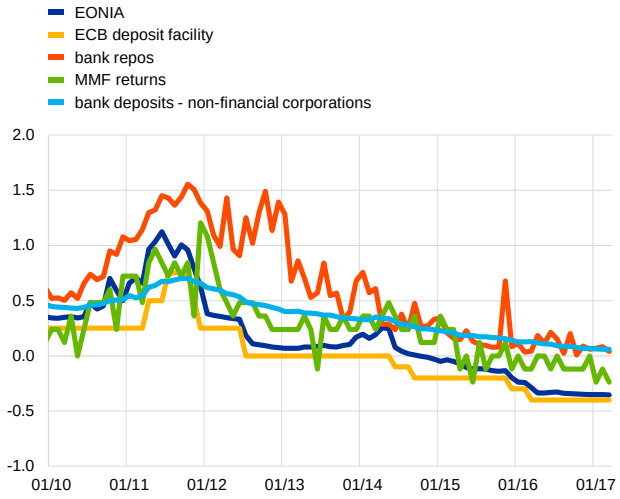
Sources: ECB balance sheet item statistics and ECB calculations.

Chart 3.47

Average rates in money markets may conceal the relative attractiveness of MMFs

Annualised returns of euro-denominated MMFs in comparison with interbank, policy and deposit rates

(Jan. 2010 – Mar. 2017; percentages)



Sources: EPFR Global, ECB and ECB calculations.
Notes: MMF returns are based on EPFR data for euro-denominated funds. Bank repo and deposit rates are based on the ECB MFI interest rate statistics using the narrowly defined effective rate.

Some shifts in the composition of EU MMFs expected in light of tighter EU regulation from 2018

New regulation that will enter into force in 2018 will impose stricter prudential requirements on MMFs.[74] Under the new regulation, the constant net asset value

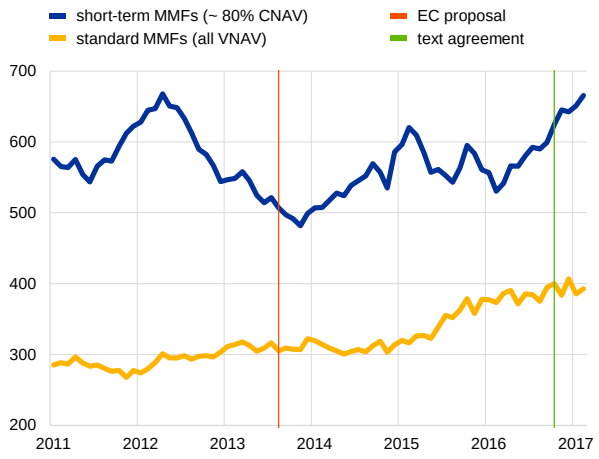
[73] MMFs are governed by the UCITS Regulation and the CESR (Committee of European Securities Regulators) Guidelines on a common definition of European money market funds until the new EU regulation on MMFs becomes effective. CESR's Guidelines establish a classification creating two types of MMFs: "short-term money market funds" (ST-MMFs) and "money market funds" (MMFs). Both types of funds are subject to specific standards in terms of portfolio quality and maturity, risk management and disclosure. Short-term MMFs have to ensure their portfolio has a weighted average maturity (WAM) of no more than 60 days and a weighted average life (WAL) of no more than 120 days. Other MMFs must ensure a WAM of no more than 6 months and a WAL of no more than 12 months.

[74] Proposal for a regulation of the European Parliament and of the Council on Money Market Funds, Council of the European Union, Brussels, 30 November 2016.

(CNAV) designation will only be applied to funds holding at least 99.5% of their assets in government bonds, government bond-backed repos or cash (public debt CNAV funds). All other existing CNAV funds will need to transform into either a variable NAV fund or the new low-volatility NAV (LVNAV) fund concept. LVNAV funds are permitted to quote a CNAV price as long as the NAV of the underlying assets does not deviate by more than 20 basis points from the CNAV price. Notably, both public debt CNAV and LVNAV funds will be subjected to stricter daily and weekly liquidity requirements than VNAV funds. When similar rules were introduced in the United States, i.e. abolishing the use of CNAV and introducing stricter liquidity requirements for non-government MMFs (so-called "prime MMFs") as of October 2016, these regulatory changes resulted in a substantial reallocation away from prime MMFs and into government MMFs.

Chart 3.48

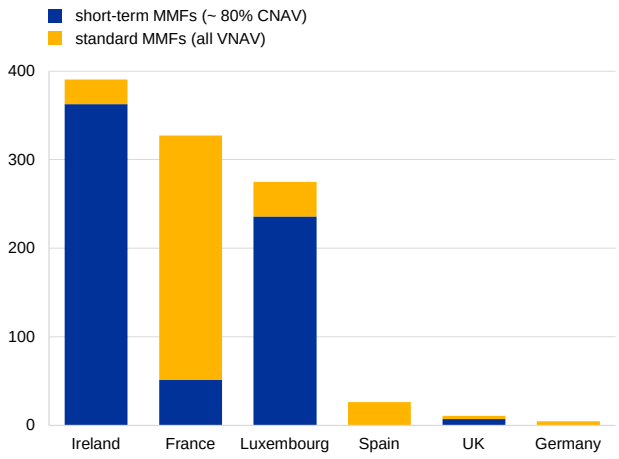
Some reduction in CNAV funds prior to the publication of the Commission's first proposal in 2013



Sources: Thomson Reuters Lipper and ECB calculations.
Notes: The first vertical line represents the European Commission's publication of the first draft proposal for the MMF regulation in September 2013, while the second one represents the agreement on the final text between the European Parliament, Commission and Council in November 2016.

Chart 3.49

Significant differences in composition of the MMF sector across fund domiciles



Sources: Thomson Reuters Lipper and ECB calculations.

The announcement of the new regulation has not so far triggered any material shifts in the sector's composition. Total net assets for CNAV and VNAV MMFs have in fact increased by around 16% and 21% respectively since the European Commission published its first draft proposal for the regulation in September 2013 (see **Chart 3.48**).[75] During the same period, CNAV investor flows evolved largely in

[75] Based on a sample of 2,391 European MMFs from Thomson Reuters Lipper (LIM).
The distinction between CNAV and VNAV MMFs is based on a regulatory proxy since no direct flag for CNAV is available in LIM. In the European Union, MMFs must be classified as either standard MMFs or short-term MMFs. While all standard MMFs are required to have a variable NAV, short-term MMFs may either use a constant or a variable NAV. This analysis treats short-term MMFs as CNAV funds. It is estimated that 80% of current short-term MMFs use CNAV. It is thus important to bear in mind that there might be short-term MMFs which use a variable NAV.

parallel with flows into VNAV MMFs[76]. CNAVs make up more than 60% of total net assets of MMFs in the European Union. The composition of the MMF sector in the European Union has so far remained relatively stable, while large differences prevail across countries (see **Chart 3.49**). Since the recent EU agreement on the final MMF regulation text in November 2016, CNAV assets have somewhat increased, following the previous upward trend which is most likely not causally linked to the MMF regulation, while VNAV assets have remained nearly constant.

Despite stricter liquidity requirements, the public debt CNAV funds and in particular the new LVNAV funds seem to provide viable alternatives to the current CNAV format, potentially limiting investors' incentives to switch to VNAV MMFs. In essence, the public debt CNAV funds as well as the new LVNAV funds, at least under certain criteria, remain CNAV types. Large outflows from the CNAV funds which currently invest in non-government-issued debt could cause spillovers to the underlying markets and create bottlenecks in the short-term funding of financials and non-financial corporates. However, unlike in the United States, where all prime funds had to switch to fluctuating NAVs, investors accustomed to existing CNAV funds may be comfortable with the proposed LVNAV funds, as this would allow their MMFs to hold non-government debt while maintaining a constant NAV, provided that the funds' NAV remains within the 20 basis point limit. Overall, given that the final regulation text was only agreed upon recently, investors might only react to the regulatory changes when they enter fully into force, i.e. in the course of 2018.

3.2 Evaluating the resilience of euro area financial institutions through scenario analysis

This section provides a quantitative assessment of four macro-financial scenarios that map the main systemic risks identified in the analysis presented in the previous sections of this Review (see Table 3.1). The assessment of the impact of macro-financial shocks on euro area banks and insurers is based on a macroprudential simulation exercise involving top-down stress-testing tools.[77] The aggregate results presented for the euro area financial institutions should not be compared with the results of the supervisory stress-test exercises, such as those coordinated by the European Banking Authority or the European Insurance and Occupational Pensions Authority, owing to methodological, scenario and sample differences. Due to the limited availability of disaggregated data on assets, liabilities, capital and profitability of financial institutions other than banks and insurers, this section does not assess the resilience of these parts of the financial

[76] The average net fund flows for VNAV funds were around 0.2 percentage point less than CNAV average net flows between September 2013 and February 2017.

[77] The tools employed are: (i) a forward-looking solvency analysis, similar to a top-down stress test, for euro area banks; and (ii) a forward-looking analysis of the assets and liabilities side of the euro area insurance sector. For a more detailed description of the tools, see Dees, S., Henry, J. and Martin, R. (eds.), "STAMP€: Stress-Test Analytics for Macroprudential Purposes in the euro area", ECB, February 2017.

sector or possible feedback from banks and insurers to other non-bank financial institutions.

Table 3.1

Mapping the main systemic risks into adverse macro-financial scenarios

Risk	Scenario	Key assumptions driving impact on GDP and on solvency of financial institutions
Repricing in global fixed income markets – triggered by changing market expectations about economic policies – leading to spillovers to financial conditions	Global bond market repricing	Shocks to fixed income market (US and euro area government bond yields), domestic demand shocks in the EU driven by lower confidence, and wholesale funding cost shocks
Adverse feedback loop between weak bank profitability and low nominal growth, amid structural challenges in the euro area banking sector	Weak bank operating environment	Shocks to private investment and consumption, lower commodity prices
Public and private debt sustainability concerns amid a potential repricing in bond markets and political uncertainty in some countries	Sovereign and private sector debt crisis	Renewed rise in sovereign bond spreads to elevated levels triggered by heightened political uncertainty, a rise in corporate bond yields and lower residential property prices
Liquidity risks in the non-bank financial sector with potential spillovers to the broader financial system	Non-banking financial sector spillovers	Reversal of the improvement in euro area bank funding conditions, and shocks to the user cost of capital and household net wealth

Source: ECB.

Main features of the adverse macro-financial scenarios

The four macro-financial scenarios are designed using a range of tools. Statistical simulations are used to derive shocks to government bond yields, stock prices, and asset values of non-bank financial institutions, as well as responses of other financial market parameters to these shocks. International spillovers of financial shocks from non-EU countries are modelled using Bayesian vector autoregression (BVAR) models and a global vector autoregression (GVAR) model,[78] while the impact of global developments outside the European Union on euro area foreign demand is assessed using the NiGEM (National Institute Global Econometric Model). The impact of the shocks on euro area economies has been derived using stress-test elasticities (STEs).[79] The baseline scenario used in the assessment is derived from the European Commission's winter 2017 (February 2017) economic forecast.

The global bond repricing scenario reflects the risk of a disorderly reversal of the low long-term interest rate conditions in advanced economies. An unexpected and rapid increase in risk-free long-term interest rates in the main monetary areas (the euro area and the United States) would act as a trigger for this scenario. In Europe, yields on long-term sovereign debt would increase by 140 basis points, affecting all sovereigns in the same way. Despite an initially stronger risk appetite, stock prices would remain unchanged.[80] Driven by higher global interest rates, capital would flow away from emerging market economies, leading to a severe

78 For details of the GVAR model, see Dees, S., di Mauro, F., Pesaran, M. H. and Smith, L. V., "Exploring the International Linkages of the Euro Area: A Global VAR Analysis", *Journal of Applied Econometrics*, Vol. 22, 2007, pp. 1-38.

79 STEs are a multi-country, EU-wide simulation tool. They are based on impulse response functions (from ESCB central banks' models) of endogenous macroeconomic variables responding to predefined exogenous shocks. They also incorporate intra-EU trade spillovers.

80 In recent history, increases in long-term interest rates often coincided with increases in stock prices. That co-movement is, however, assumed not to materialise under the global bond repricing scenario.

economic slowdown and resulting in a drop in imports. Due to the combination of the interest rate shocks and trade shocks, the euro area economy would enter into a period of stagnation, with GDP growth barely above zero in 2017 and 2018. The overall deviation of euro area GDP from its baseline level would amount to 2.8% by end-2018.

The weak bank operating environment scenario captures the risk of persistently weaker-than-anticipated domestic economic activity in many euro area countries. It includes a sharp decline in private consumption and investment, and assumes that commodity prices would return to the very low levels observed in early 2016. Following these developments, deflationary pressures in the euro area economy would be rekindled and the level of euro area real GDP would stand about 3.3% below the baseline by end-2018. Interest rates and bank funding costs would remain low, evolving in line with the baseline projection in this scenario, but would not be pushed lower by monetary policy, which – as under all adverse scenarios – is assumed not to react to the deteriorating economic conditions.

The sovereign and private sector debt crisis scenario envisages that the vulnerabilities related to high government, corporate and household indebtedness crystallise. It would be initiated by heightened concerns about future political developments that would call into question the course of economic and fiscal policy and, in turn, the debt sustainability of some weaker euro area sovereigns. On average in the euro area, long-term government bond yields are assumed to increase by about 89 basis points above current market expectations. This would be due to the widening of sovereign credit spreads, which in some countries would increase by about 200 basis points, while risk-free rates would remain at their baseline levels. Responding to the adverse developments in the sovereign debt markets, euro area stock prices would fall sharply, by about 15%. Private sector debt sustainability concerns would trigger a demand shock in residential property markets, leading to a decline in house prices by nearly 13% below the baseline levels. These developments would reduce euro area GDP by about 1.1% compared with the baseline by the end of 2018.

The non-bank financial sector spillover scenario covers the risk of transmission of stress from the non-bank financial sector to the euro area banking sector via the funding channel and lower asset valuations. Unexpected increases in redemptions by investors in investment funds would lead to forced sales, which would put lasting pressure on equity and commodity prices.[81] Funding constraints in the euro area banking sector would emerge and the cost of funding – in particular through short-term and long-term unsecured instruments – would increase. Banks would adjust to tighter funding conditions by increasing their lending spreads, thus increasing the cost of capital of the private sector. At the same time, the sustained fall in commodity prices would provide uplift to consumption, so that, on aggregate, euro area GDP would remain broadly unchanged compared with the

[81] As data on the composition of balance sheets of these institutions are scarce, statistical simulations are employed to calibrate this scenario. These simulations are based on historically observed relationships between returns on investment of shadow banking entities and financial market variables, such as stock prices or interest rates.

baseline level by the end of 2018. Bank long-term funding spreads would increase by about 45 basis points, and short-term unsecured money market spreads would widen by about 33 basis points.

The weak bank operating environment scenario would have the strongest impact on euro area economic activity (see Table 3.2). The sovereign and private sector debt crisis scenario would lead to the most pronounced impact on property prices, while the global risk aversion scenario would cause the largest increase in government bond yields (see **Table 3.3**). These three scenarios correspond to medium-level systemic risks. The probability of materialisation and the associated impact are therefore higher than that of the fourth scenario, which is associated with a potential systemic risk (see the **Overview**).

Table 3.2

Overall impact on euro area GDP growth under the adverse macro-financial scenarios

	2016	2017	2018	Q4 2018
	percentage point dev. from baseline growth			% dev. from baseline level
Global bond market repricing scenario		-1.3	-1.5	-2.8%
Weak bank operating environment scenario		-1.2	-2.1	-3.3%
Sovereign and private sector debt crisis scenario		-0.4	-0.7	-1.1%
Non-bank financial sector spillover scenario		0.1	-0.2	-0.1%
Baseline (annual percentage growth rates)	1.7	1.6	1.8	

Sources: European Commission and ECB.

With regard to key financial market parameters, the global risk aversion scenario involves a steepening of the yield curves in the euro area, with limited cross-country variation (see Table 3.3). By contrast, the degree of steepening of the yield curve under the debt sustainability crisis scenario exhibits a large dispersion across individual euro area countries. Under the weak bank operating environment scenario, the yield curve would remain unchanged, while in the case of the investment fund spillover scenario, a slight flattening and a mild upward shift of the curve would occur. Stock prices fall, to a similar extent, under the sovereign and private sector debt crisis scenario and the non-bank financial sector spillover scenario, and increase slightly under the global bond repricing scenario.

Table 3.3

Overall impact of the adverse macro-financial scenarios on interest rates and asset prices

	Global bond repricing scenario	Weak bank operating environment scenario	Sovereign and private sector debt crisis scenario	Non-bank financial sector spillover scenario
Average euro area increase in short-term interest rates (basis points, peak deviation from baseline)	0	0	0	33
Average euro area increase in long-term government bond yields (basis points, peak deviation from baseline)	140	0	89	18
Change in euro area residential real estate prices (% deviation from baseline, 2018)	-2	-2	-13	-1
Change in euro area equity prices (% deviation from baseline)	0	0	-19	-20

Source: ECB.

The four risks may act as triggers for each other, so that the scenarios may materialise jointly, reinforcing the already severe macro-financial conditions prevailing under each of the individual scenarios.

Solvency results for euro area banking groups

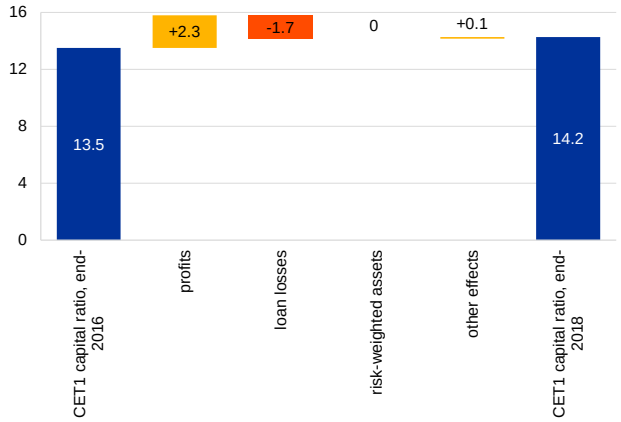
The impact of the four scenarios on bank solvency is broken down into the direct impact on the capital of individual banks, on the one hand, and indirect effects stemming from cross-institutional contagion, on the other. The direct impact is obtained from a projection of the main variables that determine banks' solvency, such as credit risk parameters, profits and risk-weighted assets. The indirect effects are related to the hypothetical defaults by banks breaching the minimum capital requirements as a result of losses borne through the direct impact, thereby amplifying the losses of other institutions.

Under the baseline scenario, the capital position of euro area banking groups is projected to improve. The aggregate common equity Tier 1 (CET1) capital ratio is projected to increase by about 0.7 percentage point, to 14.2% by the end of 2018 (see **Chart 3.50**). This improvement would be driven by positive operating profits, which, despite some reduction in net interest income compared with 2015 and 2016, would still outweigh the negative contribution of credit losses by about 0.6 percentage point. The flow of credit losses would slowly decrease from the 2016 levels. Other effects on capital play a marginal role.[82]

Chart 3.50

Under the baseline scenario, the euro area bank solvency position would continue to improve

Average contribution of changes in profits, loan losses and risk-weighted assets to the CET1 capital ratios of euro area banking groups under the baseline scenario
(percentages of CET1 capital ratio and percentage point contributions)

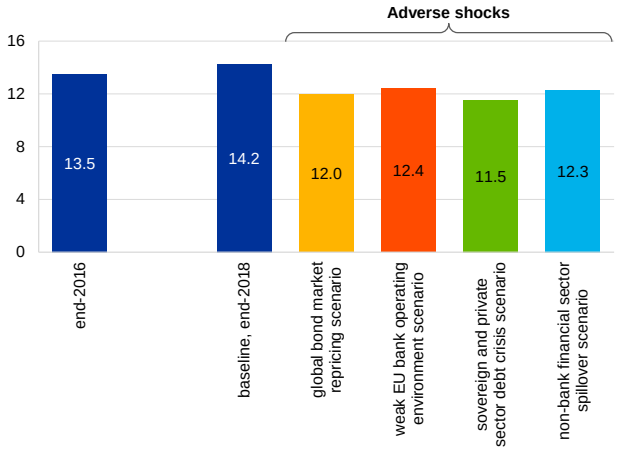


Sources: Individual institutions' financial reports, European Banking Authority, ECB and ECB calculations.

Chart 3.51

The adverse scenarios would reduce the aggregate capital ratio by between 1.8 and 2.7 percentage points

Average CET1 capital ratios of euro area banking groups under the baseline and adverse scenarios
(2016-18; percentages, average of euro area banking groups)



Sources: Individual institutions' financial reports, European Banking Authority, ECB and ECB calculations.

[82] The scenario analysis covers about 100 large and medium-sized banking groups directly supervised by the ECB. The starting point for the analysis is end-December 2016.

The debt sustainability crisis scenario would lead to the most severe outcome in terms of bank solvency (see Chart 3.51). It would be followed by the global risk aversion scenario and the investment fund spillover scenario. While the impact of the weak bank operating environment scenario would be the least severe, the repercussions of that scenario would be likely to persist beyond the two-year horizon presented here owing to the transmission lag between economic conditions and bank solvency.

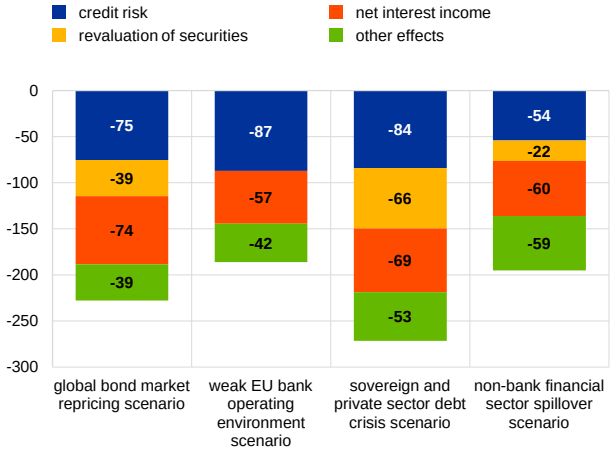
The adverse scenarios would lead to an increase in the cost of credit risk. Higher impairment provisions on loans, together with an increase in risk weights on performing loans, contribute most to the reduction in the aggregate CET1 capital ratio (see **Chart 3.52**), i.e. between 0.5 and 0.9 percentage point compared with the baseline result. These provisions would be particularly high under the weak bank operating environment scenario, reflecting the sharp deterioration in economic conditions assumed under that scenario.

Chart 3.52

Credit risk and net interest income contribute most to the deviation in capital ratios

Average contribution of risk factors to the change in the CET1 capital ratio under the adverse scenarios

(basis points, deviation from baseline)



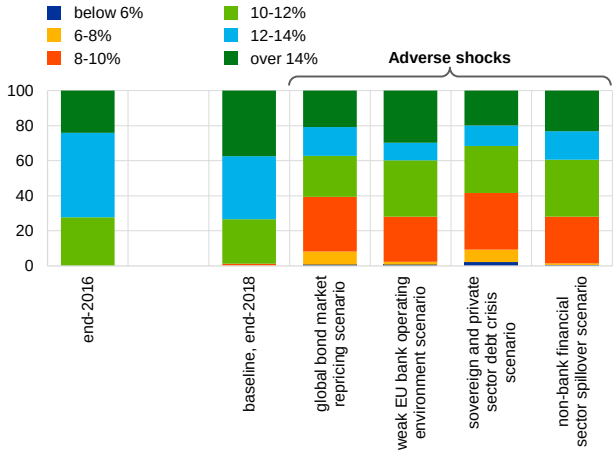
Sources: ECB calculations.
Notes: Credit risk includes impairments on loans and increases in risk exposure amounts. Revaluation of securities includes sovereign debt and other securities held as available for sale and designated at fair value through profit and loss. These effects are gross of tax and do not take into account prudential filters. Other effects include mainly trading income, fee and commission income, operational risk, taxes and dividends.

Chart 3.53

The vast majority of banks would remain well capitalised under the four adverse scenarios

Distribution of banks' assets by CET1 capital ratio

(percentages)



Sources: Individual institutions' financial reports, European Banking Authority, ECB and ECB calculations.

Net interest income would contract under all adverse scenarios. The most pronounced impact would be observed under the global bond market repricing scenario (-0.7 percentage point compared with the baseline), where the positive effects of the steepening of the yield curve on income from maturity transformation would be offset by higher wholesale funding spreads, narrowing lending spreads and the effect of heightened credit risk. The weak bank operating environment scenario

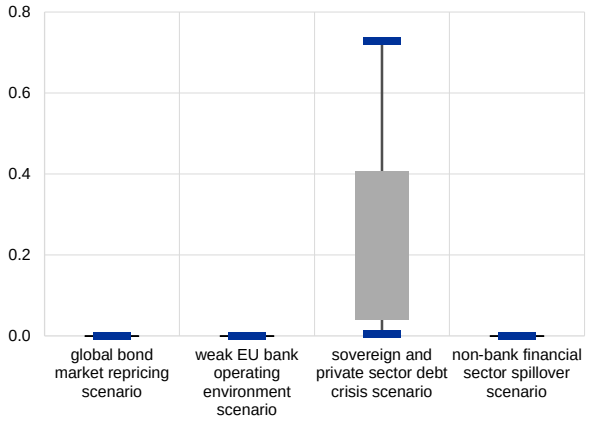
would be the most benign of the four scenarios with respect to net interest income, deviating by less than -0.6 percentage point from the baseline.[83]

Chart 3.54

Contagion through interbank exposures would lead to a minor increase in the total solvency impact

Reduction of the CET1 capital ratio of euro area banks due to interbank contagion: dispersion across simulations

(basis points of CET1 capital ratio; box: interquartile range; bars: 5th-95th percentile range)



Sources: Individual institutions' financial reports, European Banking Authority, ECB and ECB calculations.

Losses on securities would be an important factor under the sovereign and private sector debt crisis scenario. They would contribute about 0.7 percentage point to the decline in the CET1 ratio, mainly owing to the widening of sovereign credit spreads. Although the movements in bond yields are larger under the global bond repricing scenario, they mainly reflect general interest rate risk, which tends to be hedged to a much larger proportion than the spread risk. For this reason, the impact is substantially smaller, at 0.4 percentage point, under that scenario. The impact of other effects would be rather similar across the four scenarios. These effects, related mainly to the reduction in trading and fee income, and on the positive side to tax and dividend effects, would contribute between 0.4 and 0.6 percentage point to the overall reduction in the capital ratio.

Only a few small banks would face solvency difficulties under the adverse scenarios. Almost all banks would maintain a CET1 ratio above the current average maximum distributable amount threshold.[84] Nonetheless, the share of banks with a CET1 ratio above 12% would decline from three-quarters of the sector to between 30% and 40% (see **Chart 3.53**).

The impact of interbank contagion on bank solvency is therefore projected to be weak (see Chart 3.54).[85] Very few banks are projected to drop below the minimum capital requirements (see **Chart 3.53**). The direct contagion effect is thus weak. However, some impact could be expected to arise under the sovereign and private sector debt crisis scenario. It should nonetheless be noted that this simulation is restricted to direct contagion via bilateral exposures, and does not capture contagion through other channels such as asset prices or the price and availability of funding.

83 The broadly similar impact of all scenarios on net interest income is partly related to constraints imposed on the pass-through of changes in risk-free interest rates to both lending and deposit rates, similar to those discussed in section 4.4.3 of the stress-test methodology. As the pass-through constraints operate on both the assets and liabilities side of a bank's balance sheet, the effect on net interest income may result in similar impacts across scenarios.

84 The maximum distributable amount threshold, laid down in Article 141 of the Capital Requirements Regulation, is the point where banks are no longer permitted to pay out dividends. In the 2016 Supervisory Review and Evaluation Process, it was set on average at 8.3% for the euro area significant institutions.

85 For a description of the methodology, see Hałaj, G. and Kok, C., "Assessing interbank contagion using simulated networks", *Working Paper Series*, No 1506, ECB, 2013, and Computational Management Science (10.1007/s10287-013-0168-4). In the absence of actual bilateral exposure data, this approach relies on statistical simulations of plausible bilateral interbank lending networks derived from aggregate data.

Assessing the resilience of euro area insurers

The assessment of the impact of the main euro area financial stability risks on large euro area insurers is conducted using publicly available data for ten major euro area insurance groups up to the fourth quarter of 2016. Shocks to the insurers in the sample are assumed to be instantaneous and to hit the valuation of both the assets and liabilities of insurance corporations. In the absence of sufficiently granular data, this impact assessment focuses on the main risks in economic terms rather than trying to gauge the impact in terms of prudential solvency ratios. This assessment uses the four scenarios that were presented earlier in this section. The scenarios are implemented by appropriately calibrating the following market, credit and underwriting risks: (i) an increase in interest rates; (ii) a fall in equity and property prices; (iii) a deterioration of the creditworthiness of borrowers through a widening of credit spreads for marketable instruments; (iv) an increase in lapse rates[86]; and (v) an increase in loss rates of loan portfolios. **Table 3.4** summarises the key technical assumptions used in this exercise.

Table 3.4

Methodological assumptions regarding the individual risk drivers of insurers' balance sheets

Risk drivers	Methodological assumptions
Credit risk	Credit risk assessment carried out using: (i) breakdowns by rating or region, depending on data availability; and (ii) loss rate starting levels, which are stressed using the same methodology as that applied for assessing the resilience of euro area banks.
Interest rate risk transmission	Sensitivities to interest rate changes computed for each interest rate-sensitive asset and liability exposure. Relevant yield curves used to project asset and liability cash-flow streams, to calculate internal rates of return, and to discount the cash flows using yield curve shocks.
Market valuations of securities	Haircuts for debt securities derived from changes in the value of representative securities implied by the increase in interest rates under each shock and uniformly applied across the sample of large euro area insurers. Valuation haircuts applied to government bond portfolios estimated on the basis of representative euro area sovereign bonds across maturities. Haircuts for corporate bonds derived from a widening of credit spreads. Stock prices estimated using a representative euro area benchmark.
Lapse risk	Lapse risk quantified by projecting insurers' cash flows over a two-year horizon, assuming a static composition of contracts and the reinvestment of maturing assets without a change in the asset allocation. Lapse rates linked to macroeconomic variables.[87] Unexpected component of lapses[88] leads to surrender payments.[89] In the case of negative cash flows from surrender payments, the insurer is obliged to use cash reserves or sell assets to meet obligations. Lapse risk equals the cash or other assets needed to cover surrender payments.
Other assumptions specific to the sensitivity of investment income	Investment income earned from reinvested assets shocked on the basis of investment income earned at the beginning of the simulation horizon. All other assets assumed to earn the initial investment income throughout the simulation horizon. Maturing fixed income assets reinvested retaining the initial asset composition. Underwriting business component of operating profit assumed to remain constant throughout the simulation horizon. No distribution of dividends assumed.

Source: ECB.
Note: See **Table 3.2** for the calibration of the four main scenarios.

An insurance-specific scenario complements the set of scenarios, by focusing on the key risks to the insurance sector. The four macro-financial scenarios discussed in this issue of the FSR do not fully capture the main sources of

86 The lapse rate is defined as the fraction of contracts terminated prematurely by policyholders.

87 Sensitivities of lapse rates to GDP and unemployment were derived by taking the mean of a number of elasticity values, collected from the literature (e.g. Honegger, R. and Mathis, C., "Duration of life insurance liabilities and asset liability management", *Working Paper*, Actuarial Approach for Financial Risks (AFIR), 1993; Kim, C., "Report to the policyholder behaviour in the tail subgroups project", *Technical Report*, Society of Actuaries, 2005; and Smith, S., "Stopping short? Evidence on contributions to long-term savings from aggregate and micro data", *Discussion Paper*, Financial Markets Group, London School of Economics, 2004) or calculated by the ECB.

88 The unexpected component of lapses is defined as the difference between the projected lapse rate and the average lapse rate reported by large European insurers.

89 It is assumed that 50% of the total amount represented by the extra lapse rates has to be paid due to the existence of penalties in the contracts, which lower the insurers' risk.

vulnerability for the euro area insurance sector, which is related to a concurrent flattening of the risk-free yield curve and widening of risk premia. These events would, simultaneously, reduce the value of assets relative to the value of liabilities of euro area insurers. The flight-to-safety scenario is designed to address that vulnerability.

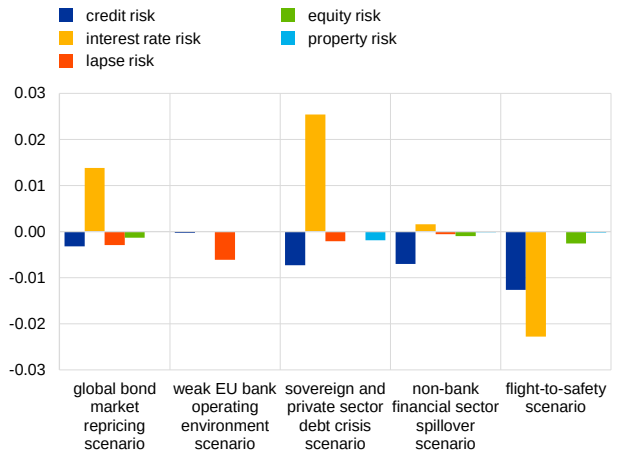
The flight-to-safety scenario is triggered by a sharp drop in stock prices in EU stock markets. Stock prices would fall by about 25%. The stock market turmoil is assumed to cause an increased demand for safe assets. As a result, long-term AAA sovereign bond yields would fall by some 40 basis points and, as short-term interest rates would remain unchanged, yield curves would flatten. Increasing risk premia lead to a widening of corporate and bank credit spreads.

Against this background, the risks for insurance companies are transmitted through three channels, namely: (i) valuation effects on financial securities and liabilities owing to changes in stock prices, sovereign yields and swap rates; (ii) sales of assets due to unforeseen redemptions resulting from increased lapse rates; and (iii) changes in the credit quality of loan portfolios.[90]

Chart 3.55

Change in the net asset values of large euro area insurers under different scenarios

(Q4 2016, percentages of total assets)



Sources: Individual institutions' financial reports and ECB calculations.

The flight-to-safety scenario generates by far the most detrimental impact on the insurance sector. Euro area insurers would suffer a decline in their net asset value amounting to 3.8% of their total assets. Additionally, two of the four macro-financial scenarios – the non-banking financial sector spillover and the weak EU bank operating environment scenarios – would also result in a negative, though milder, impact (see **Chart 3.55**), with a drop in net asset value by respectively 0.7% and 0.6%. Both the sovereign and private sector debt crisis in the EU and the global bond market repricing scenarios would benefit insurers, as their net asset values are projected to increase under these scenarios by respectively 1.4% and 0.6% of their total assets.

Interest rate risk is the major contributor to the sharp negative decline in net asset value under the flight-to-safety scenario. It accounts for 60% of the impact on net asset value. However, the effect of interest rate movements is more positive under the other four scenarios, even compensating fully for the adverse impact of the other risks in the global bond market repricing scenario and in the sovereign and private sector debt crisis scenario. The transmission of the interest rate shock reflects the overall longer duration of liabilities of insurance companies, relative to the duration of assets. A steepening of the yield curve would therefore be positive for insurers, as their liabilities would fall in value by more than the assets.

[90] For a comprehensive explanation of the underlying assumptions, please refer to Section 3.2 of the May 2015 FSR.

The magnitude of the positive impact on insurers' balance sheets reaches 2.5% of total assets in the scenario featuring a sovereign and private sector debt crisis in the EU and 1.4% in the global bond market repricing scenario. By contrast, under the flight-to-safety scenario, the negative effect of a flattening of the yield curve is significant, with net asset values declining by 2.3% of total assets.

Overall, across all scenarios, credit risk contributes negatively to the solvency of insurers. The impact on credit risk varies in intensity across scenarios, the most significant impact being suffered under the flight-to-safety scenario. Losses related to credit risk account for 1.3 percentage points of the decline in net asset values expressed as a percentage of total assets, while they do not exceed 0.7% under the other scenarios.

The impact of other risk types on insurers is rather muted. The negative impact of the adverse equity price shocks would reach, at most, 0.3% of net asset value under the flight-to-safety scenario. The weak impact relative to the main two risks, interest rate and credit risks, reflects the limited exposure of euro area insurers to equity assets. Finally, lapse risk-related losses would be the highest under the weak EU bank operating environment scenario, reflecting the more adverse developments in GDP growth and the unemployment rate under this scenario.

The inclusion of an insurance-specific scenario highlights the differences between the banking and insurance sectors, and their respective structural sensitivity to specific macro-financial shocks. As already indicated by the findings of the EIOPA 2016 stress-test exercise,[91] insurance companies would be most vulnerable to a scenario featuring both a fall in the risk-free interest rate and a widening of risk premia. However, the results presented in this section suggest that insurers are resilient to the main systemic risks for the euro area financial system that have been identified in this issue of the FSR and may even benefit if some of these risks materialise.

3.3 Regulatory framework

This section provides an overview of a number of regulatory initiatives in the areas of banking, insurance, financial markets and financial infrastructures that are of particular importance for enhancing financial stability in the European Union. The initiatives aim at both reducing systemic risk and strengthening the resilience of the financial system as a whole.

[91] The EIOPA stress test builds upon different scenarios, methodologies and samples. As such, comparability of its results with those presented in this issue of the FSR is naturally limited.

3.3.1 Regulatory initiatives for the banking sector

1. Prudential rules for banks

Macroprudential review

A key regulatory initiative from a financial stability perspective is the review of the EU macroprudential framework. One of the key lessons from the financial crisis in Europe was the inadequacy of the institutional and policy framework to prevent and address imbalances within the European Union. Against this background, the ECB pointed out in its response to the European Commission's consultation document[92] that the establishment of an appropriate institutional and macroprudential policy framework is key to safeguard financial stability within the European Union.

The ECB identified a number of key issues that the review should address. First, in order to improve the consistency of the macroprudential framework, the ECB suggested that the new institutional landscape created by the establishment of the banking union should be properly reflected in all relevant pieces of EU law. In particular, the role and powers of the ECB as designated authority for macroprudential risk analysis and supervision for the SSM area should be recognised. Second, in order to avoid a blurring of responsibilities, a clear allocation of tools and responsibilities between the macro- and microprudential supervisors is necessary. Third, the macroprudential toolkit should be broadened to ensure that authorities have all the necessary tools to address existing and emerging risks. For banking, such instruments could include sectoral risk weights and requirements; sectoral concentration limits; the net stable funding ratio; the leverage ratio; and borrower-based instruments. There could also be merit in making definitions of loan-to-value, loan-to-income and debt service-to-income ratios more consistent across EU countries. For the non-banking domain, such instruments could include margin and haircut requirements for derivatives and securities financing transactions and leverage and liquidity requirements for investment funds. However, the stage of defining precisely macroprudential instruments in this regard has not yet been reached and more analysis is needed before coming up with concrete proposals for legal texts. In any event, national central banks should be closely involved in the whole process.

In addition, in order to make the framework more efficient, the ECB considers it important that the procedures for the activation of macroprudential measures are simplified and streamlined. This would include: (i) removing the mandatory sequencing for the activation of the instruments to allow for their use on the basis of their relative effectiveness to address the risk at hand; (ii) establishing more harmonised activation procedures for the instruments laid down in the Capital

92 "ECB contribution to the European Commission's consultation on the review of the EU macroprudential policy framework", December 2016.

Requirements Regulation (CRR) and the Capital Requirements Directive (CRD IV); (iii) broadening the scope of mandatory reciprocity in the European Union, to mitigate cross-border spillover effects and reduce regulatory arbitrage; and (iv) simplifying EU notification procedures, by centralising them via the European Systemic Risk Board (ESRB).

CRR/CRD review

The European Commission published on 23 November 2016 a comprehensive package of banking regulation reforms. The package aims to complete the reforms implemented in the European Union following the financial crisis. The European Commission is proposing amendments to: (i) the CRR and the CRD, which were adopted in 2013 and define prudential requirements for institutions as well as rules on the governance and supervision of institutions; and (ii) the Bank Recovery and Resolution Directive (BRRD) and the Single Resolution Mechanism Regulation (SRMR), which were adopted in 2014 and define the rules on the recovery and resolution of failing institutions and established the Single Resolution Mechanism.

The proposed reforms would transpose certain international standards into EU law. These include a binding 3% leverage ratio, a binding net stable funding ratio (NSFR), a new framework for market risk capital requirements (Fundamental Review of the Trading Book), and the new standards on total loss-absorbing capacity (TLAC) for global systemically important banks (G-SIBs).

The package also introduces some EU-specific elements. Key issues in this regard include: (i) the requirement to establish an intermediate EU parent undertaking for specific third-country banking groups with two or more institutions established in the European Union; (ii) the introduction of the possibility for the competent authority to waive, under certain conditions, the application of prudential requirements on an individual basis to a subsidiary which has its head office in a different Member State (“cross-border waiver”); (iii) the creditor hierarchy proposal; and (iv) changes in the Pillar 2 framework, including the introduction of Pillar 2 capital guidance.

Review of the ESAs

The European Commission has recently launched a public consultation on the operation of the European Supervisory Authorities (ESAs). These are the European Banking Authority (EBA), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Securities and Markets Authority (ESMA). The purpose of the consultation is to: (i) gather evidence on the operations of the ESAs to evaluate their operations and to see whether they are delivering as expected in view of their objectives; and (ii) understand where the effectiveness and efficiency of the ESAs can be improved. The results may provide a basis for concrete and coherent action by way of a legislative initiative.

The consultation focuses on four broad categories of issues. The first relates to the ESAs' current tasks and powers, and their potential extension. The second addresses governance issues, and explores the possibility to appoint permanent members to the ESAs' boards and strengthen the role of the management boards and the chairpersons to improve supranational decision-making. The third relates to the current supervisory architecture of the ESAs and explores the option of merging the EBA and EIOPA ("twin-peaks" model), while consolidating ESMA's consumer protection powers. The fourth relates to the funding structure of the ESAs and whether they should be fully or partially funded by the relevant industry.

The ECB welcomes the consultation on the operations of the ESAs. The establishment of the ESAs in 2011 was a significant achievement, leading to a better coordination of financial regulation and supervision in the European Union. The ECB has been collaborating very closely and successfully with these authorities, in particular the EBA. Now that the ESAs have been operational for six years, it is a good time to review and build on the experience gained over this time. The ECB supports further integration of the supervisory framework at the EU level, both in banking and in the area of capital markets. In this context, the aim of the review should be to reinforce the EU dimension of supervision. The ECB is currently assessing the issues raised in the consultation document and will provide its contribution in due course.

Review of the assessment framework for G-SIBs

The Basel Committee on Banking Supervision (BCBS) has launched a public consultation on proposals for revising the assessment framework for global systemically important banks. The review was envisaged when the G-SIB assessment framework was last updated in 2013 and is meant to ensure that the framework remains consistent with its objectives taking into account any structural changes to the global banking system or banks' business models.

Basel III finalisation

The BCBS is still working on the finalisation of the remaining elements of the Basel III framework. This work aims to strengthen the credibility of the capital framework by tackling the excessive and unwarranted variability in risk-weighted assets, reducing the complexity of the regulatory framework and improving the comparability of banks' capital ratios. To achieve these goals, the BCBS has revised the standardised approach (SA) and the internal ratings-based (IRB) approach for credit risk and the operational risk framework. It has also finalised some elements of the leverage ratio. Furthermore, the BCBS has been discussing the possibility of setting an aggregate floor (the "output floor") for capital requirements calculated under the IRB approach based on requirements obtained under the standardised approach.

The BCBS's oversight body, the Group of Central Bank Governors and Heads of Supervision (GHoS), requested that the reforms should not significantly increase overall capital requirements. In this context, the BCBS conducted in the course of 2016 a cumulative quantitative impact study (QIS) aimed at testing the effects of the proposed new rules on capital levels, taking into account all the changes introduced to finalise the Basel III framework.

A final agreement on the Basel reform package has yet to be reached. The January 2017 GHoS meeting, at which it was planned to agree on a final package of Basel reforms, has been postponed. In its statement, the GHoS noted that more time was needed to finalise work and that the BCBS was expected to complete the work in the "near future". A key element of the package which is still under discussion is the calibration of the output floor.

2. Crisis management and resolution of banks

BRRD/MREL

In response to the financial crisis, regulatory changes have been made to ensure sufficient and credible loss-absorbing capacity among financial institutions. At the global level, the G20 and the Financial Stability Board (FSB) have agreed on a total loss-absorbing capacity (TLAC) requirement for G-SIBs. In the European Union, the BRRD, which has been transposed by all Member States, introduces the minimum requirement for own funds and eligible liabilities (MREL) for all EU credit institutions. These requirements will help to ensure that in cases of bank resolution the costs are shouldered by banks' shareholders and creditors, rather than taxpayers, and will contribute to the resolvability of banks and to safeguarding financial stability.

On 23 November 2016, the European Commission published a legislative proposal on amendments to the BRRD and the Single Resolution Mechanism Regulation. The main purpose of this proposal is to implement the TLAC standard in the European Union, including by amending some parts of the MREL requirement in the BRRD. In this context, the European Commission has proposed a change to the creditor hierarchy. The ECB was consulted on this in January and published its opinion on 10 March 2017.[93] In February 2017, the ECB was formally consulted on the other parts of the proposal and is currently in the process of forming an ECB opinion.

[93] The ECB Opinion (CON/2017/6) on the proposal amending Directive 2014/59/EU as regards the ranking of unsecured debt instruments in insolvency hierarchy was adopted on 8 March and published on the ECB's website on 10 March 2017.

3. European deposit insurance scheme

In November 2015, the European Commission published a proposal for a regulation establishing a European Deposit Insurance Scheme (EDIS). It is important that the EDIS is in place and operational as soon as possible. A rapid implementation of the EDIS is necessary to ensure a high level of depositor protection that is uniformly applied across the banking union, so as to promote the completion of the banking union with its third pillar and to further enhance and safeguard financial stability. Deposit insurance is both an ex ante tool to enhance confidence and prevent bank runs and an ex post tool to protect against the adverse consequences of individual bank failures. Establishing a European deposit insurance scheme is the logical complement to elevating responsibility for banking supervision and resolution to the European level. A European deposit insurance scheme may also help to break the bank-sovereign nexus.

Table 3.5

Selected regulatory initiatives at the international level and new legislation and legislative proposals for the banking sector in the European Union

Initiative	Description	Current status
CRR/CRD review	The European Commission is proposing amendments to: (i) the CRR and CRD; and (ii) the BRRD and the Single Resolution Mechanism Regulation.	Technical discussions are ongoing in the relevant Council Working Groups. No exact timeline for a legislative proposal is available.
Basel reforms	The BCBS has undertaken a strategic review of the bank capital framework to strengthen its credibility, notably by tackling excessive RWA variability, reducing complexity and increasing comparability. The reform package under discussion includes a review of the standardised approach (SA) and of internal ratings-based (IRB) models for credit risk, as well as revisions to the operational risk framework and the finalisation of certain elements of the leverage ratio. A key element of the reforms is the setting of an aggregate output floor based on the risk weights obtained under the SA.	Final agreement on the Basel reform package has yet to be reached. In its press release of 3 January 2017, the GHoS noted that more time was needed and that the BCBS was expected to complete the work in the "near future".
TLAC standard and MREL review	In the EU, TLAC will be implemented through the ongoing MREL review, in accordance with the BRRD. The European Commission legislative proposal to implement TLAC and revise MREL was published on 23 November 2016 and the legislative process is ongoing.	The Council has begun work to adopt a "general approach" to the legislative proposal from the Commission. The European Parliament has appointed rapporteurs to prepare a report. Once these are adopted, the trialogue discussions will start.
EDIS	The EDIS proposal foresees the establishment of a fully fledged European depositor protection scheme as of 2024, via an increased mutualisation in three steps (reinsurance, coinsurance, full EDIS).	The European Commission published a legislative proposal for a European Deposit Insurance Scheme on 24 November 2015, together with a communication on completing banking union. The EDIS is considered the third pillar of a fully fledged banking union, as notably outlined in the Five Presidents' Report.[94] The EDIS proposal is currently being discussed at the Council in an Ad Hoc Working Party, which is also discussing so-called risk-reduction measures. Discussions at the European Parliament have also started. The ECB's legal opinion on the proposal was published on 20 April 2016.[95]

In parallel to the creation of such a scheme, it is important to make progress on the risk-reduction agenda, in order to promote a level playing field and to avoid moral hazard. Work should continue on implementing reforms that will contribute to reducing risks in the banking system, such as implementing remaining banking reforms (e.g. TLAC) but also further measures such as the reduction of non-performing loans and a harmonisation of insolvency laws. In this context, a key role

94 "Report on Complementing Europe's Economic and Monetary Union", 22 June 2015.

95 Opinion of the European Central Bank of 20 April 2016 (CON/2016/26).

will be played by the European Commission's aforementioned review of the bank regulatory framework (i.e. the CRD IV, CRR, BRRD and SRMR).

Box 9

Who would pay more for a European deposit insurance scheme: small, medium or large banks?

On 24 November 2015, the European Commission published a proposal for a European Deposit Insurance Scheme (EDIS). The proposal concerned the creation of a European system of deposit insurance supported by a European fund and managed by the Single Resolution Board (SRB). One issue frequently raised in connection with this concerns how much various different banks should contribute to such an EDIS. In particular, one of the questions asked is whether, in order to reduce the reporting burden, smaller banks should make a lump-sum, rather than a risk-based, contribution. Another question is whether large banks, which are more likely to go into resolution than insolvency, should be charged a lower percentage of their covered deposits in contributions to the deposit insurance fund, given that these banks already contribute more to the Single Resolution Fund (SRF) and are less likely to need assistance from the EDIS.

These two questions have implications for financial stability. First, a lump-sum contribution could lead to increased moral hazard and incentivise risk-taking behaviour by banks; risk-based contributions, on the other hand, address moral hazard by ensuring that riskier banks pay more. Second, a non-risk-related reduction in the contribution to the EDIS in favour of large banks which hold a large share of euro area deposits could limit the capacity of the EDIS and thus reduce its beneficial effect on depositor confidence. In order to mitigate these concerns, a fully risk-based approach to the calculation of contributions should be adopted. The Commission's proposal follows this approach, providing for risk-based contributions to the Deposit Insurance Fund (DIF) at banking union level.

Using the methodology proposed by the European Banking Authority (EBA) for national deposit guarantee schemes,[96] risk-based contributions for a sample of 1,675 euro area banks were calculated in order to see whether small banks or large banks would contribute more in relative terms to the EDIS. Building on the EBA methodology, the leverage ratio, the total risk-based capital ratio, the ratio of liquid assets to total assets, the return on equity (ROE), the ratio of risk-weighted assets (RWAs) to total assets and a measure of eligible liabilities for the minimum requirement for own funds and eligible liabilities (MREL) were used to construct a bank-specific risk weight that, in addition to the bank's amount of covered deposits, determines the contribution to be paid by each bank to the EDIS.[97] This combination of indicators is comparable to the list of indicators proposed for the EDIS. The rationale for including the MREL is that it is an indicator of the potential EDIS exposure once a bank fails. The higher the MREL, the higher is the likelihood of resolution rather than liquidation and the higher the expected loss-absorption capacity, thus lowering the potential exposure for the EDIS. The study

[96] See the "EBA Guidelines on methods for calculating contributions to deposit guarantee schemes". In this analysis, the sliding scale approach is used, as this approach needs fewer assumptions and uses a normalisation method that is better suited to preserving the level of information of the indicators. The 25th and 75th percentiles are taken as lower and upper bounds, respectively.

[97] MREL-eligible liabilities only include senior unsecured bonds. Regulatory capital is not included to avoid double consideration, given that it is already included in the risk-based capital ratio.

uses criteria and assumptions which are still under discussion and does not prejudge the final calculation method that will be decided by the European Council and Parliament.

Table A shows, for each decile of banks (grouped by total assets) in our sample of 1,675 banks, the sum of contributions, the average contribution per euro of covered deposits and the smallest and largest value of contributions per euro of covered deposits. Column 3 shows the aggregate amount of contributions paid by banks in each decile. The numbers suggest that the lowest decile (the smallest 10% of banks) in our sample would pay €0.11 billion or 0.28% of the €38 billion target size of the EDIS (corresponding to 0.8% of covered deposits in the sample). In contrast, the highest decile (the largest 10% of banks) would pay €28.5 billion or 75.09% of the overall EDIS target for the sample. These numbers should be seen in relation to the actual covered deposits of the banks in each decile to avoid the impression that the largest banks bear the brunt of the cost of the EDIS. In fact, the figures in column 4 suggest that the contributions of the smallest and largest banks are relatively low on average at approximately 1 cent and 0.83 cent, respectively, per euro of covered deposits on their balance sheet.[98] Instead, it is the banks in the intermediate deciles that pay slightly more, ranging from 1 to 1.14 cents per euro of covered deposits. This finding is further underpinned by the lowest and highest contributions per euro of covered deposits in column 5, which demonstrate that the ranges for each decile are, by and large, comparable.

Table A

Absolute and relative risk-based contributions for different bank sizes

1) Decile of banks by total assets	2) Interval of total assets		3) Total contribution to the EDIS per decile	4) Average contribution per euro of covered deposits	5) Interval of contribution per euro of covered deposits	
	Smallest (€ billions)	Largest (€ billions)	(€ billions and percentage of EDIS target size)	(€)	Lower bound (€)	Upper bound (€)
1st	0.02	0.15	0.11 (0.28%)	0.0097	0.0024	0.0183
2nd	0.15	0.26	0.25 (0.65%)	0.0107	0.0035	0.0176
3rd	0.26	0.38	0.34 (0.90%)	0.0104	0	0.0181
4th	0.38	0.56	0.48 (1.25%)	0.011	0.003	0.0184
5th	0.56	0.76	0.61 (1.62%)	0.01	0.0003	0.0182
6th	0.76	1.08	0.96 (2.52%)	0.0109	0	0.019
7th	1.09	1.66	1.39 (3.66%)	0.0114	0.0024	0.0185
8th	1.66	2.77	2.03 (5.34%)	0.0109	0.0024	0.0178
9th	2.77	6.49	3.3 (8.69%)	0.0104	0.0007	0.0183
10th	6.6	1807.57	28.5 (75.09%)	0.0083	0.0003	0.0165

Sources: COREP and Bankscope,
Notes: Based on data for Q4 2015. Each decile corresponds to about 167 banks.

In summary, and under the caveat that the criteria and assumptions used for this study are not yet the final ones that will be adopted for the EDIS, the numbers indicate that small and large banks would not contribute excessively to the EDIS, relative to their volumes of covered deposits. This finding suggests that measures to reduce contributions for the smallest and/or largest banks, or the introduction of a (low) flat-rate contribution for the smallest banks,

[98] This contribution is not payable upfront, but is built up over the years that the EDIS is being funded.

would be unwarranted in view of the relative contributions of those groups when compared with the group of medium-sized institutions.[99]

Finally, the specificities of a banking system, such as the availability of large MREL cushions,[100] can be taken into account in the risk-based contributions to the DIF, which is preferable from a financial stability perspective to lowering the EDIS target level.

3.3.2 Regulatory initiatives for financial markets and financial infrastructures

In addition to the initiatives in the area of banking regulation, several steps have been taken to address risks in financial markets and to strengthen the resilience of financial infrastructures.

1. Market-based finance/investment funds and investment firms

In the field of market-based finance, the FSB has continued its work on the deliverables laid out in the roadmap on "Transforming shadow banking into resilient market-based financing", published on 14 November 2014. On 12 January 2017, the FSB published its final policy recommendations to address the risks associated with asset management activities. This work focuses on addressing vulnerabilities related to: (i) the mismatch between the liquidity of fund investments and redemption terms and conditions for fund units; (ii) leverage within investment funds; (iii) operational risk and challenges in transferring investment mandates in stressed conditions; and (iv) securities lending activities of asset managers and funds. The ECB actively supports this work, given the growing importance of this part of the financial system and the need to extend the macroprudential toolkit to mitigate risks to financial stability beyond those stemming from banking activity.

The EBA is working on advice to the European Commission on a new prudential framework for MiFID (Markets in Financial Instruments Directive) investment firms, which will be submitted to the European Commission. The EBA published a first report in December 2015, recommending the development of a new categorisation of investment firms distinguishing between: (i) systemic and "bank-like" investment firms to which the full CRD/CRR requirements should be applied; (ii) other investment firms ("non-systemic") with a more limited set of prudential requirements; and (iii) very small firms with "non-interconnected" services. The EBA published a Discussion Paper on 4 November 2016 that put forward a

99 A similar analysis that excludes the MREL indicator in the contribution calculation leads to a higher, though still relatively low, average contribution per euro of covered deposits for the highest decile of banks.

100 For a broader analysis of risk-based contributions to the EDIS, also taking the MREL into account, see Carmassi, J., Dobkowitz, S., Evrard, J., Silva, A. and Wedow, M., "Exposure of the European Deposit Insurance Scheme to bank failures and the benefits of risk-based contributions", *Macroprudential Bulletin*, Issue 3, ECB, April 2017, Chapter 3.

basis for the new categorisation of investment firms and a specific prudential regime for investment firms that are not systemic and bank-like and for very small, non-interconnected investment firms outside the CRD/CRR. The ECB welcomes the work aimed at ensuring that the prudential regime correctly captures all the risks relevant to prudential supervision as well as any systemic risks posed by investment firms.

2. Financial infrastructures

The ECB Regulation on oversight requirements for systemically important payment systems entered into force on 12 August 2014, aiming at, inter alia, ensuring efficient management of legal, credit, liquidity, operational, general business, custody, investment and other risks of systemically important payment systems (SIPSs). The Regulation is currently being reviewed and a public consultation on the draft amending regulation ended on 20 February.

Implementation of the European Market Infrastructure Regulation (EMIR) has continued to progress. Since 9 February 2017, certain types of standardised credit default swaps (CDSs) are required to be cleared through central counterparties (CCPs). On 4 January 2017, the European Commission Delegated Regulation specifying how margin should be exchanged for over-the-counter (OTC) derivative contracts that are not cleared by a CCP entered into force. The obligations related to the exchange of margin will be gradually phased in.

The European Commission has initiated the process for a review of EMIR. On 23 November 2016, it published a report describing the main areas in which it plans to propose changes to the Regulation. The ECB's priorities for the EMIR review were published in its September 2015 response to the European Commission's public consultation, in which it proposed amending the Regulation in order to fully recognise the ECB's role in the field of banking supervision (most notably regarding voting modalities in the supervisory colleges, which under their current interpretation grant the ECB a single vote and hence do not reflect the principle of separation), to address issues related to the quality and availability of derivatives data and to further enhance the requirements for mitigating procyclicality (in this regard, the ECB supports the inclusion of macroprudential intervention tools in EMIR in order to prevent the build-up of systemic risk).

The European Commission has published a proposal for the recovery and resolution of central counterparties. The proposal, which was released on 28 November 2016, is based on the guidance adopted by international standard-setting bodies, and seeks to ensure that risks related to the failure of central counterparties can be managed effectively, while preserving the stability of the financial system. It aims to lay out rules for the preparation of recovery and resolution plans, to provide CCP supervisors with early intervention powers, to define a set of effective resolution powers, and to establish principles for cooperation between national authorities.

Table 3.6

Selected new legislation and legislative proposals for financial markets and financial infrastructures in the European Union

Initiative	Description	Current status
ECB Regulation on oversight requirements for systemically important payment systems	The aim of the Regulation is to ensure the efficient management of all types of risk that SIPSs face, together with sound governance arrangements, objective and open access, as well as the efficiency and effectiveness of SIPSs.	The Regulation entered into force on 12 August 2014. The Regulation is currently being reviewed and the public consultation on the draft amending regulation ended on 20 February 2017.
EMIR	The aim of the Regulation is to bring more safety and transparency to the OTC derivatives market. It sets out rules for, inter alia, central counterparties and trade repositories.	The Regulation entered into force on 16 August 2012. On 23 November 2016, the European Commission published a report defining priorities for the upcoming review of the Regulation.
CCP recovery and resolution regulation	The aim of the regulation is to ensure that risks related to the failure of central counterparties can be managed effectively, while preserving the stability of the financial system.	The European Commission's legislative proposal was published on 28 November 2016.

3.3.3 Regulatory initiatives for the insurance sector

In Europe, EIOPA has launched a project on the review of the Solvency Capital Requirement (SCR).[101] This project will answer the call for technical advice by the European Commission[102] by providing advice on: (i) the proportionate and simplified application of the Solvency II requirements, in particular in relation to small insurance undertakings, which would ensure that all requirements are proportionate to risks; and (ii) the removal of technical inconsistencies, which would help maintain the competitiveness of EU insurers and remove undesirable effects, such as the reliance on ratings. With this consultation, EIOPA starts the process of post-evaluation of Solvency II as foreseen in the Directive and its Delegated Acts.

In addition, the European Commission has also published a request to EIOPA for technical advice as regards unjustified constraints on financing in the context of the capital markets union.[103] The request aims to gather advice on how to remove barriers to long-term investments supporting jobs and growth, in particular investments in unrated bonds and loans and in unlisted equity.

Furthermore, EIOPA published a Discussion Paper on the potential harmonisation of recovery and resolution frameworks for insurers.[104] The Discussion Paper is based on a previous survey on existing recovery and resolution frameworks conducted by EIOPA in the first half of 2016 among national supervisory authorities. The survey revealed that the existing heterogeneity in national recovery and resolution frameworks could affect the resolution of insurers, and in particular of

101 "Discussion Paper on the review of specific items in the Solvency II Delegated Regulation", 8 December 2016.

102 "Request to EIOPA for technical advice on the review of specific items in the Solvency II Delegated Regulation (Regulation (EU) 2015/35)", European Commission, 18 July 2016.

103 "Request to EIOPA for technical advice on the review of specific items in the Solvency II Delegated Regulation as regards unjustified constraints to financing (Regulation (EU) 2015/35)", European Commission, 22 February 2017.

104 "Discussion Paper on potential harmonisation of recovery and resolution frameworks for insurers", 2 December 2016.

cross-border groups, as uncoordinated decision-making processes between national authorities in different Member States could impact financial stability, affect policyholders or require the use of public funds. In its paper, EIOPA recommends a minimum degree of harmonisation applied in a proportionate manner which would give Member States the flexibility to address any national specificities of their insurance market at the national level.

At the international level, the International Association of Insurance Supervisors (IAIS) is developing an activity-based approach to systemic risk assessment in the insurance sector.[105] This approach would complement the current entity-based approach. For this purpose, the IAIS has adopted a systemic risk assessment and policy workplan which would allow the IAIS to take into account systemically risky activities in the development of "ComFrame"[106] and, in particular, the Insurance Capital Standard (ICS). Following the adoption of the revised systemic risk assessment methodology, the Higher Loss Absorbency (HLA) requirements would be revised as well to be based on the ICS.

Table 3.7

Selected new regulatory initiatives for the insurance sector

Initiative	Description	Current status
Final advice by EIOPA on the review of specific items in the Solvency II Delegated Regulation	EIOPA will advise on three areas: (i) the proportionate and simplified application of the requirements laid down in the Solvency II Delegated Regulation; (ii) the removal of unintended technical inconsistencies; and (iii) the removal of unjustified constraints on financing.	The final advice by EIOPA will be submitted to the European Commission by February 2018.
Revised systemic risk assessment methodology	The revised methodology would take into account systemically risky activities and would represent the basis for a comprehensive assessment and mitigation of systemic risk.	The revised methodology should be adopted in 2019 and applied starting from 2020.
Higher Loss Absorbency (HLA) requirements	The HLA requirements are meant to help reduce the probability and impact on the financial system of the distress or failure of a global systemically important insurer (G-SII).	The HLA requirements should be implemented starting in 2022 and would apply to any G-SIIs identified in 2020.

Other initiatives

Capital markets union

The ECB has been a strong supporter of the CMU project since its inception. A well-functioning, diversified and deeply integrated capital market is of key relevance for the ECB. In particular, CMU could facilitate the transmission of monetary policy in the euro area, contribute to macroeconomic and financial stability, and increase private risk-sharing via cross-border equity investment across countries. Consequently, the ECB has been supportive to the European Commission's Action Plan, as well as many initiatives which have already been undertaken, such as its proposal on simple, transparent and standardised securitisation, actions to foster

105 "IAIS Announces Systemic Risk Assessment and Policy Workplan", IAIS, 28 February 2017.

106 The Common Framework for the Supervision of Internationally Active Insurance Groups ("ComFrame") is a set of international supervisory requirements focusing on the effective group-wide supervision of internationally active insurance groups. See the IAIS website for more information.

further integration in financial market infrastructures or actions taken in the field of taxation.

Certainly, CMU requires a lot of ambition, also on the part of the Member States in showing preparedness to address barriers – including legislative ones – to the cross-border flow of capital. Establishing the right conditions for a true single market in this area, i.e. a situation where all market participants with the same relevant characteristics face a single set of rules, have equal access to markets and are treated equally when they are active in this market, thus requires a long-term vision and sustained effort beyond the Action Plan. All stakeholders should thus step up efforts towards achieving CMU to respond to current challenges. In terms of priorities, the ECB is committed to ensuring that action supporting CMU does not lead to a weakening of prudential standards. Instead, further progress towards achieving CMU should go hand-in-hand with an expansion of the macroprudential framework to include non-banks and a strengthening of financial market supervision at the EU level to avoid regulatory arbitrage between different market segments.