

3 Euro area financial institutions

Euro area financial institutions have continued to make steady progress in strengthening their balance sheets and building up their resilience to adverse shocks. Nevertheless, they still face challenges relating to weak economic growth prospects, legacy issues from the financial crisis, and a strengthened regulatory and prudential environment.

Notwithstanding a recent improvement in euro area banks' operating performance, finding sustainable sources of profitability remains a challenge in an environment of low nominal macroeconomic growth prospects and low interest rates across the maturity spectrum. Resolving a large stock of legacy problem assets also remains an issue, in particular in countries most affected by the financial crisis. Progress in removing non-performing loans (NPLs) from balance sheets remains moderate when measured against the stock of such loans, which remains an important obstacle to banks providing new credit to the real economy.

Similar to banks, the insurance sector faces profitability challenges. Although the latest reported profitability and capital positions remain solid, the prevailing low-yield environment is creating headwinds, and the market-consistent valuation approach of the forthcoming Solvency II regime will make these headwinds even stronger. In this environment, some insurers appear to be taking on more risks, with evidence of portfolio shifts towards infrastructure financing, equities and lower-quality bonds. On the liabilities side, life insurers are increasingly switching towards unit-linked policies and fee-based products for new business.

Amid ongoing repair in euro area banking and insurance sectors, the non-bank financial sector continues to grow apace. Commensurate to its growing size, it is also arguably becoming more central to the financial system. In the investment fund sector in particular, there are signs that rapidly growing exposures are accompanied by increased risk-taking.

Scenario analysis suggests that a materialisation of key risks to financial stability could have significant implications for banks and insurers alike in the euro area. At the same time, a complete assessment of financial stability risks remains hampered by a dearth of harmonised reporting outside these regulated sectors.

On the policy front, work continues apace to complete the regulatory foundations that foster financial system resilience and facilitate economic growth over the whole financial cycle. This includes not only a comprehensive regulatory overhaul for the banking sector both globally and in the EU in the wake of the global financial crisis, but also complementary parallel regulatory initiatives for non-bank financial entities. At the same time, there have been a variety of new macroprudential initiatives in euro area countries, mostly focused on mitigating risks originating from significant size, high concentration and interconnectedness in the banking sector.

3.1 Repair continues in the financial sector

3.1.1 Bank balance sheet repair continues, but challenges from low profitability and high legacy problem assets remain³⁴

Euro area banks' financial performance improved moderately in the first three quarters of 2015 and capital positions have been strengthened further. Nevertheless, many euro area banks continue to be challenged by low profitability, with their average return on equity remaining below the cost of equity. In an environment of low nominal growth and low interest rates, banks' earnings outlooks remain subdued owing to compressed net interest margins and sluggish loan growth. In this operating

environment, there is a clear need to reshape and rationalise their business mix and rethink their operational model in order to generate sustainable profitability in the medium term. However, execution risks in implementing new business strategies remain material in some cases and the pace of such adjustments remains rather uneven.

Compounding challenges in generating sustainable profitability growth, a large stock of legacy problem assets remains in the euro area banking sector, mainly in those countries most affected by the financial crisis. In some countries, improvements have been made towards a legal framework that is more conducive to effective NPL resolution. That said, progress in writing off and/or disposing of NPLs remains moderate when measured against the stock of such loans. In turn, the heavy burden of legacy problem assets remains an important obstacle to banks providing new credit to the real economy.

Overall, while the process of bank balance sheet repair continues at a steady pace, further progress is needed in parts of the banking system to address remaining fragilities and free up balance sheet capacity for new lending. This view is also in line with model-based evidence about vulnerabilities of euro area banks.

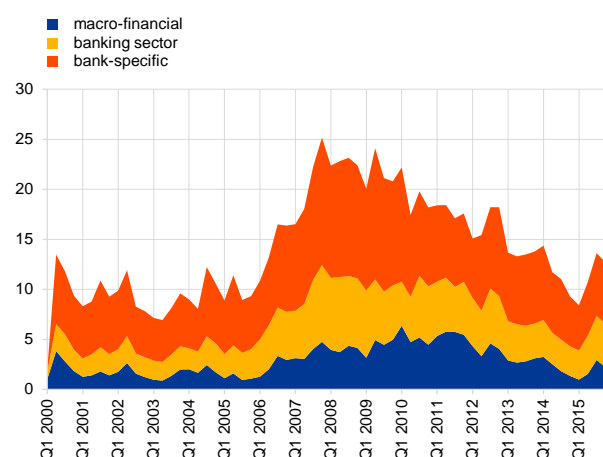
The latest results of a bank-level early warning model developed by the ECB's staff show that the aggregate forward-looking distress probability for euro area banks decreased slightly in the last quarter for which data are available and remains well below the peaks reached during 2007 (see [Chart 3.1](#)). This follows increases in the

Chart 3.1

Euro area banks' probability of distress within the next two years remains well below the peaks reached during 2007

Aggregate distress probability for euro area banks

(Q1 2000 – Q4 2015; percentage probability 1-8 quarters ahead; y-axis: weighted average distress probability)



Source: ECB calculations.

Notes: The results are based on a bank-level logit model with 11 risk drivers, built to indicate bank distress probabilities with a prediction horizon of one to eight quarters ahead. Bank distress events encompass bankruptcies, defaults, liquidations, state-aid cases and distressed mergers. The aggregation is done by weighting the bank-specific distress probabilities by the respective bank shares in aggregate bank assets of the euro area. The decomposition of individual distress probabilities into the different factors is done by using the (relative) distress probabilities that would prevail if all other variable blocks were set to their mean values. All results are derived from publicly available information. Further details about the underlying method and dataset can be found in Lang, J. H., Peltonen, T. and Sarlin, P., "A framework for early-warning modeling with an application to banks", Working Paper Series, ECB, forthcoming.

³⁴ The analysis in this sub-section is based on data for up to 94 significant banking groups (SBGs) in the euro area, including 18 large and complex banking groups (LCBGs). It should be noted that the sample of SBGs does not fully correspond to that of significant institutions that are under the direct supervision of the ECB. For instance, those significant institutions that are subsidiaries of other euro area SBGs or belong to non-euro area-based banking groups are not considered in the FSR analysis. For more details on the bank sample, see Box 5 in the November 2013 Financial Stability Review.

aggregate distress probability in the second and third quarters of 2015, which were partly driven by developments in Greece. A decomposition of the latest distress probabilities into contributing factors suggests that remaining fragilities in the euro area banking sector are mainly linked to bank-specific and country-level banking sector factors, while macro-financial factors, such as house prices or government bond yields, play a lesser role in most countries. A further breakdown of distress probabilities reveals that remaining bank-specific vulnerabilities are, in most cases, strongly linked with weak asset quality, further highlighting the need for dealing with NPLs in a comprehensive manner.

Euro area banks' financial condition

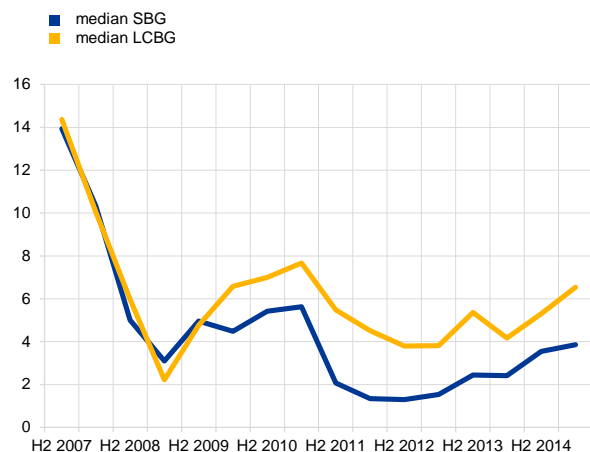
Euro area banks' **profitability** improved moderately in the first half of 2015 amid a gradual, albeit still fragile and uneven, economic recovery. The improvement in bank profitability was broad-based (see **Chart 3.2**), also extending to banks in countries most affected by the financial crisis. This, together with a further decline in banks' cost of equity, led to a narrowing of the negative return on equity gap for euro area banks (see **Chart 3.3**). Results for a sub-sample of quarterly-reporting SBGs indicate that, for the majority of these banks, profitability indicators also improved in the third quarter of 2015 in a year-on-year comparison, while showing a slight worsening compared with the second quarter.

Chart 3.2

Euro area banks' profitability showed signs of moderate improvement in the first half of 2015

Return on equity for euro area significant banking groups

(H2 2007 – H1 2015; percentages; median values)



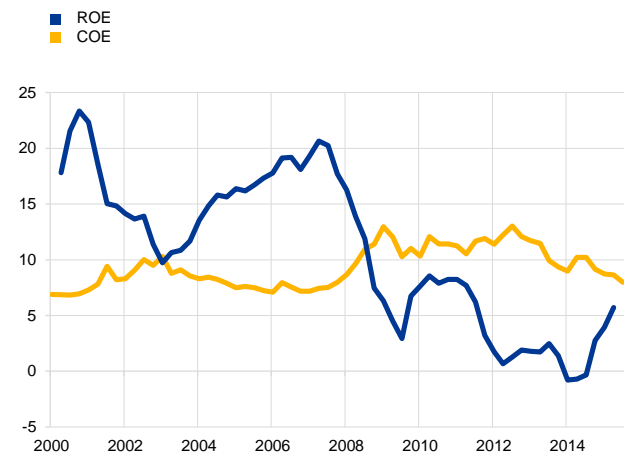
Source: SNL Financial.
Notes: Based on publicly available data on significant banking groups. Two-period moving averages.

Chart 3.3

Banks' cost of equity continued to decline, but the negative return on equity gap persists

Return on equity and cost of equity for listed euro area banks

(Q1 2000 – Q3 2015; percentages)



Sources: Bloomberg, Thomson Reuters Datastream, Consensus Economics and ECB calculations.
Notes: Based on the sample of all 33 euro area banks included in the EURO STOXX index. (Trailing) return on equity (ROE) is the weighted average (by market capitalisation) of individual ROEs. Cost of equity (COE) is the expected return on an investment in a weighted portfolio of all 33 banks, as implied by the capital asset pricing model (CAPM). Betas are estimated on rolling windows of one year of daily data, with the market portfolio proxied by the EURO STOXX index. The estimate of the equity premium, for the EURO STOXX index, is based on I/B/E/S earnings forecasts and Consensus Economics estimates of long-term real GDP growth. The latest observation is for Q3 2015.

A decomposition of the aggregate return on equity for euro area significant banking groups (SBGs) reveals that recent improvements in bank profitability were driven by a pronounced increase in non-interest income, a decline in loan loss provisions from historically high levels, as well as decreasing funding costs, which together outweighed the negative impact of asset yield compression and higher operating costs (see [Chart 3.4](#) and [Chart 3.5](#)).

Among the main sources of **operating income**, the contribution of net interest income to profitability moderately increased in the first half of 2015, on a year-on-year basis, as the decline in funding costs outpaced that of asset yields, in particular in countries most affected by the financial crisis. In particular, funding cost declines in these countries reflect a normalisation from the elevated levels experienced during the crisis. That said, net interest margins remain at a historically low level and the median ratio of net interest income to total assets dropped compared with the second half of 2014. This suggests that further improvements in net interest income may be difficult to achieve in an environment of low interest rates and flat yield curves, since associated declines in asset yields are less likely to be compensated for by a further fall in funding costs (see also Box 5).

Box 5

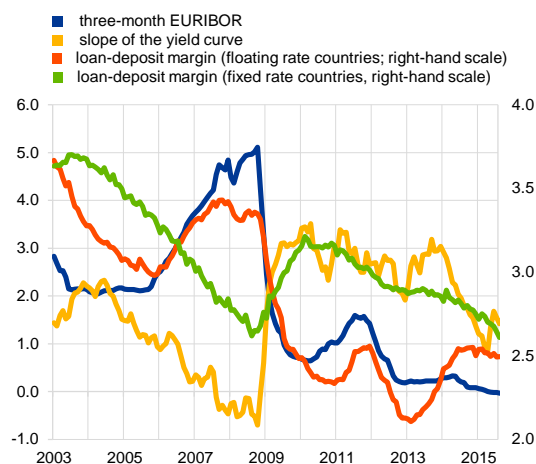
Euro area banks' net interest margins and the low interest rate environment

Chart A

Low interest rates have contributed to depressing banks' net interest margins

Short-term interest rate, slope of the yield curve and MFI loan-deposit margins

(Jan. 2003 – Sep. 2015; percentages)



Sources: ECB, Bloomberg and ECB calculations.

Notes: Loan-deposit margins are defined as the volume-weighted lending rates to households and non-financial corporations minus the volume-weighted deposit rates on deposits from households and non-financial corporations. Weights are based on outstanding amounts.

In recent years interest rates have fallen to historical lows across the maturity spectrum, which has been accompanied by a substantial flattening of the yield curve. Concerns have arisen that, should such a constellation continue for a protracted period of time, this may hamper euro area banks' ability to generate net interest income – further dampening profitability that is already depressed by low economic growth and lingering legacy asset quality issues.

Should this low interest rate environment persist over a longer period, banks could see a decline in their net interest margins, particularly smaller institutions that are less capable of hedging their interest rate risk than larger banks. Moreover, when assessing the impact of low interest rates on banks' net interest margins, it is important to distinguish between banks primarily granting loans at floating rates and banks primarily granting fixed rate loans. The level of short-term rates is more important for the net interest margins of banks with predominantly floating

rate loans, while the steepness of the yield curve plays a relatively larger role for those banks favouring fixed rate loans (see Chart A).

Table

Net interest margin regression results

	Net interest margin		
	(1)	(2)	(3)
Net interest margin (t-1)	0.60*** (0.08)	0.58*** (0.08)	0.56*** (0.09)
CPI inflation	0.05* (0.02)	0.01 (0.02)	0.01 (0.02)
Real GDP growth	0.04*** (0.01)	0.03** (0.01)	0.02 (0.01)
Short-term interest rate	0.07** (0.03)		0.49*** (0.14)
Slope of the yield curve	0.07*** (0.02)		0.80*** (0.28)
Market capitalisation as % of GDP	0.00** (0.00)	0.00** (0.00)	0.00*** (0.00)
Common equity over total assets	0.10*** (0.03)	0.09*** (0.03)	0.09*** (0.02)
Loan growth	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)
Bank size			0.09 (0.09)
Short-term rate * floating rate dummy		0.08*** (0.03)	
Short-term rate * fixed rate dummy		-0.03 (0.03)	
Slope of the yield curve * floating rate dummy		0.06*** (0.02)	
Slope of the yield curve * fixed rate dummy		0.11*** (0.04)	
Bank size * slope of the yield curve			-0.07*** (0.03)
Bank size * short-term rate			-0.04*** (0.02)
Chi2	34196.6	29470.5	13344.0
Hansenp	0.31	0.34	0.46
AR2p	0.43	0.44	0.19
Number of observations	846	846	846

Notes: The net interest margin is defined as the net interest income over total earning assets. Heteroskedasticity and autocorrelation robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. The Hansen test of over-identifying restrictions confirms that the (internal) instruments are valid, and the Arellano-Bond test rejects significant second-order serial correlation in the error term. The Wald test indicates that all the estimated coefficients are jointly significant.

A dynamic panel model can help to gauge the general effects of both the level of the short-term interest rate and the slope of the yield curve for a large number of banks. The analysis looks at the effects of bank-specific characteristics and of macroeconomic and financial conditions on the net interest margin.³⁵ In an empirical application to euro area banks over the 1994-2014 period,³⁶ two bank-specific variables (equity over total assets – as a proxy for the solvency position – and loan growth) and five macroeconomic variables³⁷ (real GDP growth, inflation, stock market capitalisation

³⁵ The regression includes bank fixed effects as well as time fixed effects.

³⁶ The banking data were taken from Bloomberg. The macroeconomic variables were sourced from the World Bank's World Development Indicators database. The inclusion of a lagged dependent variable in a panel framework might yield biased and inconsistent estimates owing to the correlation between the lagged dependent variables and the error terms. To address this issue and to tackle the possible endogeneity of the bank-specific explanatory variables, the model is estimated using a system GMM estimator. In this context, the explanatory variables are instrumented by using "internal" instruments.

³⁷ Other explanatory factors that could be taken into consideration when studying the relationship between banks' net interest margins and the interest rates are the maturity gap, the flexibility of contractual spreads, the amount of non-maturing deposits as a share of total deposits, and the residual maturity of loans granted.

as a ratio to GDP, the short-term interest rate and the slope of the yield curve) are included in a benchmark model for 72 institutions (column 1 in the table).³⁸

The regression analysis suggests that the net interest margin is positively and significantly related to both the level of short-term interest rates and to the slope of the yield curve (see column 1 in the table).³⁹ These results can be attributed to the two key services supplied by banks and reflected in their interest income earnings: maturity transformation services and deposit transaction services.

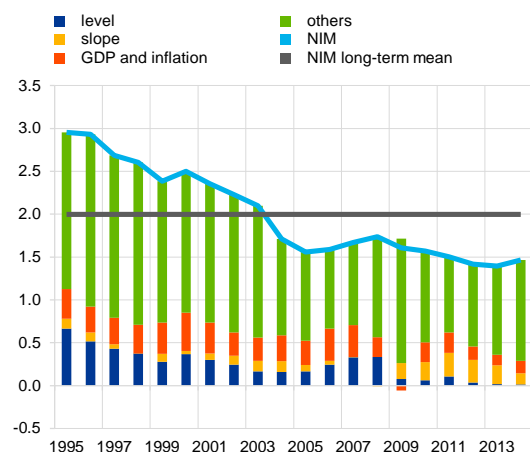
The short-term interest rate result may reflect the fact that bank deposit rates are typically lower and stickier than market rates (since banks provide transaction services). In particular, banks often fund a portion of their interest-earning assets with non-interest-bearing liabilities which primarily correspond to demand and transaction deposits. In addition, as bank deposit rates are constrained by the zero lower bound, low levels of market rates will tend to compress deposit margins (i.e. the spread between the market rate and bank deposit rates).

Chart B

The contribution of interest rates to net interest margins has diminished over time

Net interest margin decomposition over time

(1995-2014; percentages)



Source: ECB calculations.

Notes: The net interest margin (NIM) is defined as the net interest income over total earning assets. "Others" includes the lagged dependent variable, the capital ratio, loan growth, stock market capitalisation, time dummies and the residual.

The importance of accounting for the loan rate fixation periods when assessing net interest margin developments is further examined in column 2 of the table, where the short-term rate and the slope of the yield curve are interacted with dummy

The slope of the yield curve result is also not surprising. Owing to their maturity transformation activities, banks tend to benefit from a steep yield curve characterised by a wide spread between long-term and short-term interest rates. By contrast, a flattening of the yield curve exerts downward pressure on banks' net interest margins.

Moreover, based on the benchmark regression (column 1 in the table), Chart B shows a decomposition of the average contribution of the different explanatory factors to euro area banks' net interest margins over the period 1995-2014. While there was a steady decline in net interest margins in the pre-crisis period, the fall in short-term rates since 2008 has further reduced margins. More recently, especially in 2014, the yield curve flattening has also contributed to the compression of net interest margins.

³⁸ The slope of the yield curve is defined as the spread between the ten-year sovereign bond yield and the short-term money market rate.

³⁹ All the other explanatory variables have the expected positive signs and are significant. In particular, the positive coefficient of the lagged net interest margin suggests strong persistence of the dependent variable over time, and the positive coefficients of real GDP and inflation might indicate that improving macroeconomic conditions are associated with improved borrower financial conditions boosting banks' profitability. The positive coefficient of bank capital may reflect the fact that banks with higher capital ratios tend to have lower funding costs and a broader capacity to extend credit, and thus broader scope to generate interest income.

variables for countries where lending is predominantly done either with fixed rate loans⁴⁰ or with floating rate loans⁴¹. As expected, the results suggest that (i) changes in the short-term rate mainly affect banks' net interest margins in "floating rate countries", while (ii) the slope of the yield curve is more relevant for banks exposed to fixed rate lending.

Finally, as shown in column 3 of the table, when bank size (measured as the logarithm of the bank's total assets) is interacted with both the short-term interest rate and the slope of the yield curve, larger banks display a lower sensitivity to interest rate and yield curve changes than smaller banks. This could indicate that larger banks are able to undertake hedging activities which allow them to better offset some of their exposures to interest rate risk.⁴²

Overall, these findings indicate that the prolonged period of low interest rates is posing material challenges for banks' net interest income generation.⁴³ While some banks may be capable of coping with these challenges, the low interest rate environment may induce a number of banks to adjust their business models towards activities that rely less on traditional interest income-generating business.⁴⁴

⁴⁰ i.e. Belgium, France, Germany and the Netherlands. "Floating rate countries" and "fixed rate countries" are identified using the ECB's MFI interest rate statistics. More specifically, in "floating rate countries" the majority of new business loans to households for house purchase are given floating rates or an initial rate fixation period of up to one year, while in "fixed rate countries" a large share of new business loans to households for house purchase are granted with an initial rate fixation period of more than five years. However, it is worth mentioning that banks within the same country might have diverse business models and, thus, rate fixation periods that differ from those of their EU peers.

⁴¹ i.e. Austria, Cyprus, Finland, Greece, Ireland, Italy, Luxembourg, Slovenia, Spain and Portugal.

⁴² A similar result is found using data for US banks in Genay, H. and Podjasek, R., "What is the impact of a low interest rate environment on bank profitability?", *Chicago Fed Letter*, No 324, July 2014.

⁴³ However, it is important to note that the estimated negative effects on banks' net interest margins stemming from the low interest rate environment would be at least partly compensated for by the likely positive effects on net interest margins of low interest rates boosting economic activity.

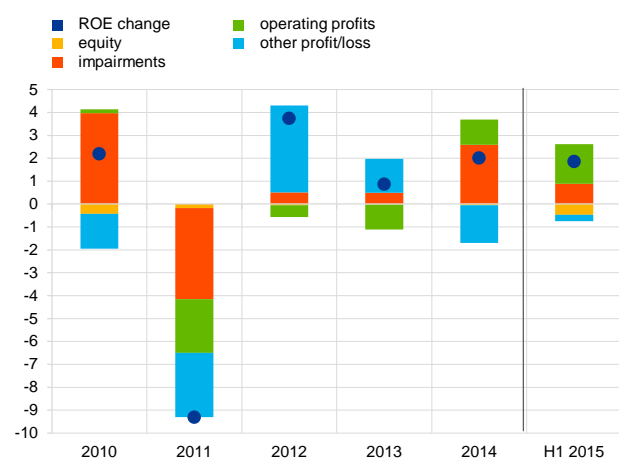
⁴⁴ For example, some banks may choose to rely more on fees and commissions to generate income; see also Kok, C., Mirza, H. and Pancaro, C., "Macro stress testing European banks' fees and commissions", *Working Paper Series*, ECB, forthcoming.

Chart 3.4

Recent profitability improvements were driven by both increasing operating profits and falling loss provisions

Decomposition of changes in the return on equity of euro area significant banking groups

(2010 – H1 2015; percentage points)



Sources: SNL Financial and ECB calculations.

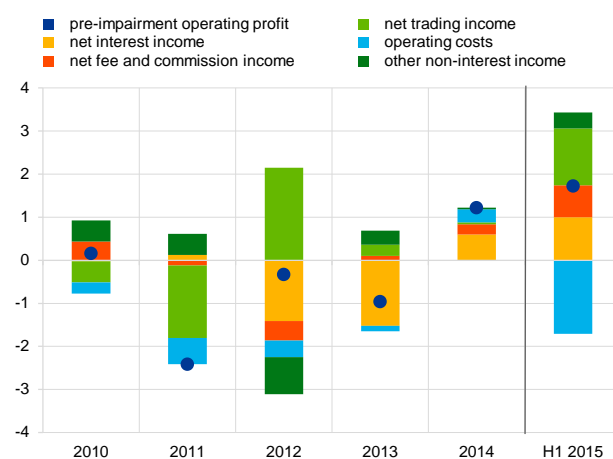
Notes: Based on aggregate data for 69 significant banking groups. The decomposition for H1 2015 is based on annualised half-yearly results. Changes in equity and impairments are shown with the opposite sign, i.e. higher (lower) equity and impairments contribute to lower (higher) return on equity.

Chart 3.5

The rise in operating profits was mainly due to a surge in non-interest income

Contribution of main operating profit components to the change in euro area significant banking groups' return on equity

(2010 – H1 2015; percentage points)



Sources: SNL Financial and ECB calculations.

Notes: Based on aggregate data for 69 significant banking groups. H1 2015 changes are based on annualised values.

Continued pressure on net interest margins was partly offset by higher non-interest income, with both fee and trading income showing an increase in the first half of 2015 (see [Chart 3.5](#)). Some banks benefited from an increase in asset management-related fee income on the back of higher inflows into investment funds. Data for a sub-sample of quarterly-reporting SBGs suggest that the trend of increasing fee income halted in the third quarter of 2015, partly related to a drop in investment fund inflows.

Banks' trading income followed a similar pattern in the first three quarters of 2015. Trading results showed a year-on-year increase in the first half of 2015, driven by higher equity (and equity derivative) revenues, realised gains from selling available-for-sale assets (e.g. sovereign bonds) as well as higher foreign currency gains. However, data for a sub-sample of quarterly-reporting SBGs show that, against the background of worsening financial market conditions between July and September, the contribution of trading income to banks' profits decreased in the third quarter of 2015.

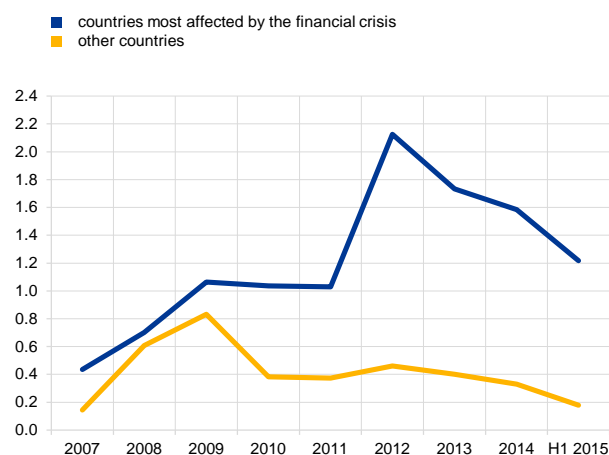
Given the continued subdued growth in revenue, banks are also looking to improve operating profits by containing costs. Following an improvement in 2014, progress in achieving cost efficiency gains halted in the first half of 2015, as the median ratio of operating costs to both total assets and operating income edged up from a year earlier. Looking ahead, some banks have announced cost-cutting targets as part of their restructuring plans, involving a reduction in the retail branch network in line with customers' increased propensity to use digital services.

Chart 3.6

Loan loss provisions continued to decline, but remain above pre-crisis levels in the countries most affected by the crisis

Loan loss provisions of euro area significant banking groups

(2007 – H1 2015; percentage of total loans; median values)



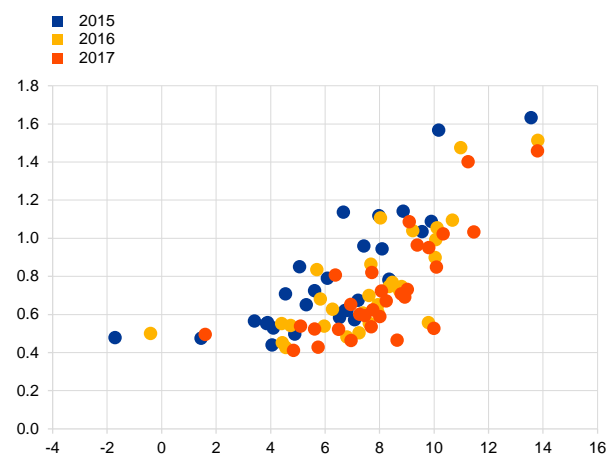
Source: SNL Financial.
Notes: Based on publicly available data for significant banking groups. H1 2015 ratios are based on annualised values. Countries most affected by the crisis include Cyprus, Greece, Ireland, Italy, Portugal, Slovenia and Spain.

Chart 3.7

Expectations of subdued bank profitability are reflected in low price-to-book ratios

Analyst forecasts for listed euro area banks' profitability and expected price-to-book ratios

(2015-2017; percentage and ratio; x-axis: return-on-equity forecast; y-axis: price-to-book ratio forecast)



Source: Bloomberg.
Note: Based on forecasts for 30 listed significant banking groups.

Loan loss provisions declined year on year for the majority of euro area SBGs in the first six months of 2015 (see [Chart 3.6](#)), thereby contributing to improving financial performance. This positive effect was more pronounced, on average, in countries most affected by the financial crisis, although provisioning levels remain elevated in many banks located in these countries. In other countries that were less affected by the crisis, loan loss provisions are close to pre-crisis levels for the majority of banks, which suggests that falling provisions in these countries are unlikely to lead to significant improvements in profitability in the period ahead.

Notwithstanding recent improvements, concerns remain about the outlook for euro area banks' profitability. Analyst forecasts for 2016 and 2017 earnings suggest only a moderate improvement in the next two years, with the low nominal growth and low interest rate environment still weighing on the outlook for bank profitability. Investor perceptions of a persistently subdued earnings outlook are also reflected in banks' current and forecasted price-to-book ratios (see [Chart 3.7](#)).

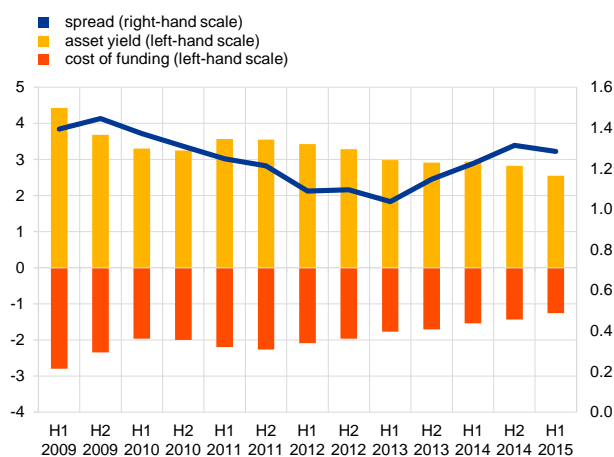
Concerns regarding the profitability outlook are partly related to continued pressures on net interest margins. While euro area SBGs' net interest income, on average, held up relatively well in the first half of 2015, the outlook for net interest income for 2016 remains subdued. In fact, the median interest spread (i.e. the difference between asset yield and cost of funding) for SBGs already tightened somewhat in the first half of the year as the decline in asset yields outpaced that of funding costs (see [Chart 3.8](#)).

Chart 3.8

Following an increase in 2014, bank margins tightened again in the first half of 2015 owing to an acceleration in asset yield declines

Interest spread and its components for euro area significant banking groups

(H1 2009 – H1 2015; percentages; median values)



Source: SNL Financial.

Notes: Based on publicly available data for significant banking groups. Two-period moving averages.

In a number of euro area countries, margins between new loans and deposits have narrowed so far in 2015, as lending margins have compressed, partly owing to intense competition, while the positive impact of deposit repricing is fading. In addition, the contribution of (sovereign) bond portfolios to net interest income – a significant income source for some banks – is expected to decline in the period ahead as banks reinvest funds obtained from the sale or the maturing of higher-yielding bonds back into lower-yielding securities.

Looking at structural factors, banks' return to sustainable profitability is also dependent on their ability to adapt their business mix to the new operating environment. Pre-crisis profitability levels of many banks were boosted by high leverage and/or reliance on relatively cheap wholesale funding as well as, in some cases, higher risk-taking (such as real estate lending or securitisation exposures) in order to generate revenues. For instance, the reduction in leverage and diminishing trading profits accounted for around one-third of the decline in euro area SBGs' aggregate return on equity between 2007 and 2014.

Progress in reshaping business models has continued, driven by stricter regulatory requirements, restructuring resulting from state-aid investigations as well as “voluntary” changes on account of banks' altered risk-return preferences. As a result, euro area banks have scaled back their activities in several areas. For instance, some cross-border banking groups reduced their international presence by selectively withdrawing from non-core markets, while several banks downsized certain investment banking activities as well as legacy securitisation exposures that were particularly affected by new regulatory requirements. Banks have also reduced certain lending activities in higher-risk sectors (e.g. commercial real estate, shipping) or those that used to rely on volatile wholesale funding.

Results of the latest EBA risk survey show that less than one-third of surveyed EU banks foresee further material changes to their business models going forward.⁴⁵ Survey responses by this sub-set of banks suggest a refocusing on core activities and markets, with certain wholesale lending activities (e.g. international leasing, shipping) and non-domestic activities mentioned most frequently among business lines to be scaled down. By contrast, retail activities are mentioned most frequently among business lines that banks are planning to expand.

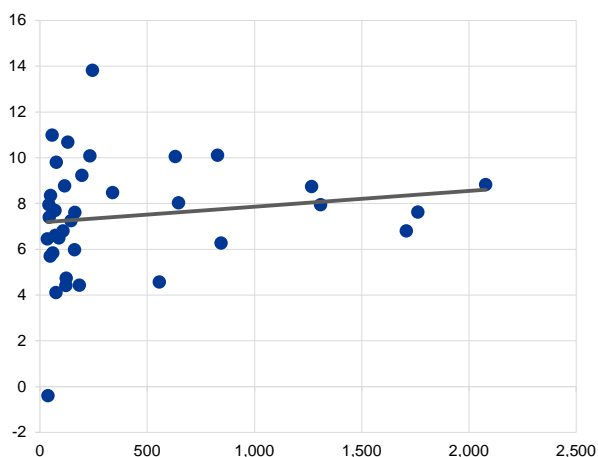
⁴⁵ See *Risk assessment of the European banking system*, EBA, June 2015.

Chart 3.9

Investor expectations for future bank profitability do not seem to correlate with bank size

Return-on-equity forecasts and total assets of listed euro area banks

(x-axis: 2014 total assets, EUR billions; y-axis: return-on-equity forecasts for 2016, percentages)



Sources: Bloomberg and SNL Financial.

In addition, certain aspects of regulation intended to make the system more resilient (e.g. by reducing too-big-to-fail risk) may diminish the benefits of scale. In fact, market participants' expectations for future bank profitability do not seem to correlate with bank size (see [Chart 3.9](#)). Measures needed to achieve sustainable profits vary across banks and include, among others, improving capital efficiency, lowering cost bases or focusing on core activities for revenue generation.

Banks' **solvency** ratios continued to improve in the first half of 2015, with the median phased-in CET1 ratio rising to 12.6% in June 2015 from 12.3% at the end of 2014 (see [Chart 3.10](#)). This can be mainly attributed to increases in CET1 capital, helped by both increasing internal capital generation and, in some cases, capital-raising. On average, increases in total assets made a small negative contribution, while the impact of the change in average risk weight (i.e. risk-weighted assets to total assets) was neutral (see [Chart 3.11](#)).

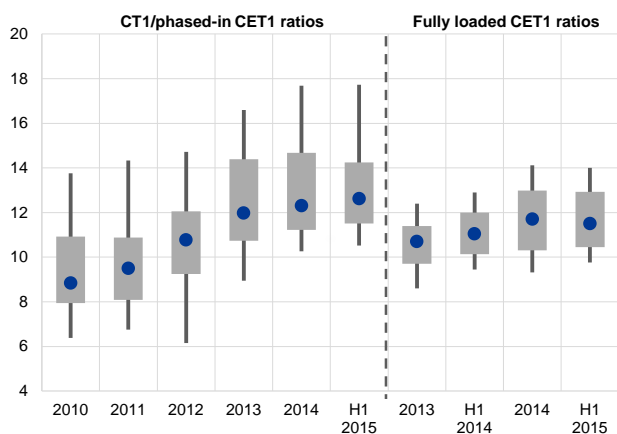
At the same time, the median Basel III fully loaded CET1 ratio, which will be a requirement as of 2018, remained broadly stable at 11.5% (see [Chart 3.10](#)). The different patterns in the phased-in and fully loaded ratios can be partly attributed to the fact that while part of the decline in unrealised gains on available-for-sale assets, related to the rise in sovereign bond yields in the second quarter of 2015, did not affect phased-in ratios owing to the use of prudential filters (at least by some banks), in the case of fully loaded ratios it has broadly offset the impact of capital increases.

Chart 3.10

Solvency ratios improved on a phased-in CET1 basis, but remained broadly stable on a fully loaded basis

Core Tier 1/common equity Tier 1 capital ratios of significant banking groups in the euro area

(2010 – H1 2015; percentages; 10th and 90th percentiles, interquartile distribution and median)



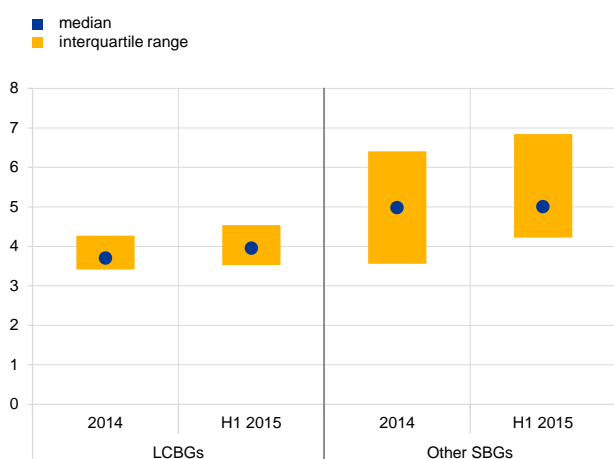
Source: SNL Financial.
Note: Based on publicly available data for a sample of 76 significant banking groups (phased-in CET1) and 55 significant banking groups (fully loaded CET1) respectively.

Chart 3.12

Leverage ratios edge up further, but large and complex banking groups continue to lag behind

Basel III leverage ratios of significant banking groups in the euro area

(2014 – H1 2015; percentages; medians and interquartile ranges)



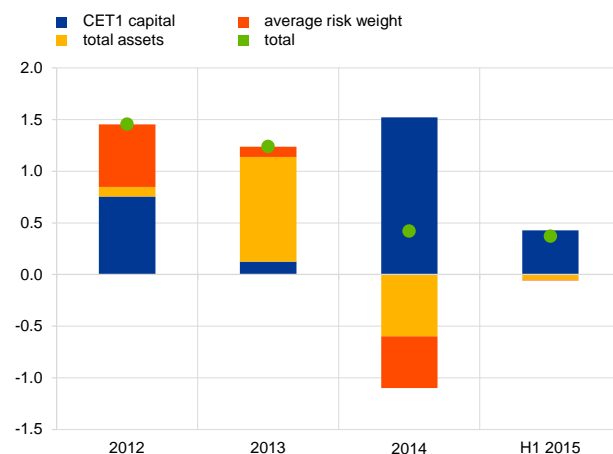
Source: ECB.

Chart 3.11

The improvement in phased-in CET1 ratios was mainly driven by capital increases

Contribution of changes in capital and risk-weighted assets to phased-in common equity Tier 1 capital ratios

(2012 – H1 2015; percentage points)



Sources: SNL Financial and ECB calculations.
Notes: Based on publicly available data for a sample of 76 significant banking groups. Changes in total assets and average risk weight are shown with a negative sign as their decline indicates a positive contribution to the capital ratios.

Paralleling developments in risk-weighted capital ratios, euro area banks' **leverage** ratios also continued to improve at a moderate pace in the first half of 2015. Differences across banks of different sizes persisted, with large and complex banking groups (LCBGs) still lagging behind other SBGs with median leverage ratios of 4% and 5% respectively at the end of June 2015 (see [Chart 3.12](#)). While most SBGs exceed the preliminary target level of 3% for the leverage ratio, market pressure remains for those large banks lagging behind their peers and some of these institutions intend to implement further significant reductions in their leverage exposures to reach the target ratio of at least 4% (for a discussion on the impact of the leverage ratio on risk-taking and bank stability, see Special Feature A).

At the same time, banks still face some uncertainty about future capital requirements, with possible implications for their lending behaviour in the period ahead. A key uncertainty relates to the review of the

risk-weighted capital ratio framework, the purpose of which is to improve internal models and increase the risk sensitivity of the standardised approach for credit, market and operational risks. Basel proposals stemming from this review could result

in higher capital requirements for banks, not least owing to the planned introduction of risk-weighted asset floors for mortgages and corporate loans.

These prospective changes are of key importance to reducing the excessive variability of risk weights across banks and countries, thereby improving the credibility of the risk-weighted capital framework. That said, the uncertainty around the magnitude of resultant changes in capital requirements is likely to have some implications for banks' capital management and risk-taking behaviour in the period ahead. In particular, some banks may need to continue focusing on building capital rather than expanding their balance sheet, not least owing to the fact that evolving capital requirements are being increasingly factored into investor perceptions.

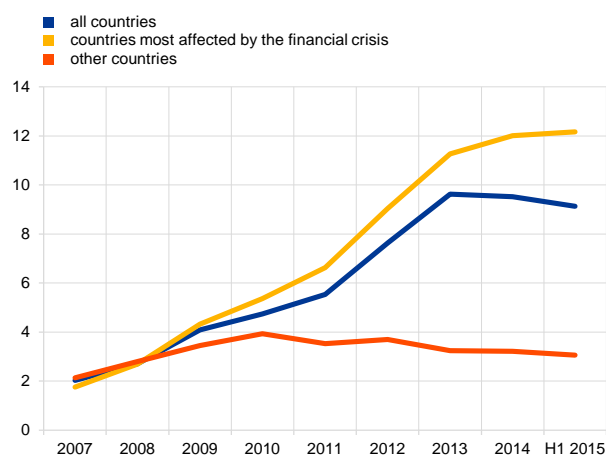
Credit risk

Credit risk conditions for the euro area banking sector have remained broadly unchanged since the finalisation of the May 2015 FSR. Despite the ongoing recovery, economic conditions remain weak in the euro area, implying heightened income and earnings risks for households and non-financial corporations (NFCs). This, coupled with legacy balance sheet issues, continues to negatively affect borrowers' debt servicing capacities, but is offset by favourable financing conditions. In addition, euro area banks face the prospect of rising credit risks emanating from foreign exposures, and in particular exposures to vulnerable emerging market economies (see Section 1).

Chart 3.13
Reported asset quality indicators suggest a modest improvement, but asset quality trends continue to diverge

Impaired loan ratios for euro area significant banking groups

(2007 – H1 2015; percentage of loans, median values)



Source: SNL Financial.
Notes: Based on publicly available data for a sample of 55 significant banking groups. Countries most affected by the crisis include Cyprus, Greece, Ireland, Italy, Portugal, Slovenia and Spain.

Asset quality trends continued to diverge in the euro area, although reported impaired loan ratios suggest a modest improvement in the first half of 2015 (see **Chart 3.13**). Similarly, the median NPL ratio of SBGs decreased to around 12% at end-June 2015 from 13.5% six months earlier. That said, around one-third of SBGs experienced a worsening in their asset quality in the first half of this year, suggesting that some banks have not yet “turned the corner” in terms of the stock of problem loans.

The coverage of non-performing loans by loan loss reserves improved slightly in the first six months of 2015 (from 47% to 48%), although dispersion across banks remains significant with the interquartile range of coverage ratios between 41% and 56%.

The sectoral breakdown of NPLs shows that the accumulation of such loans following the sovereign debt crisis was driven mainly by deteriorating credit quality in the corporate sector and, to a lesser extent, by the rise in delinquencies in the household segment (see **Chart 3.14**). A further breakdown of NFC exposures, by

economic activity, reveals that the construction and real estate sectors account for

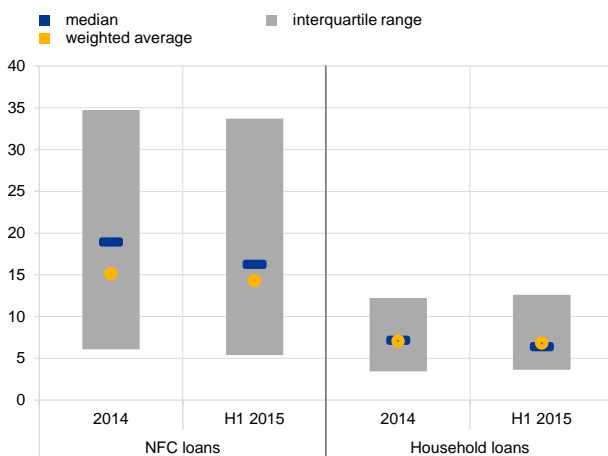
around 40% of euro area banks' corporate NPLs, with an average NPL ratio of nearly 20% (see [Chart 3.15](#)). This is followed by the transportation (mainly owing to shipping), manufacturing and trade sectors. While the credit risk outlook has deteriorated in some energy sectors, on aggregate the electricity and gas sector accounts for only 5% of total NFC loans and has a below-average NPL ratio.

Chart 3.14

Non-performing loan ratios remain elevated in the corporate sector...

Non-performing loan ratios of significant banking groups in the euro area, by sector

(2014 – H1 2015; percentage of loans; median, weighted average and interquartile range distribution across SBGs)



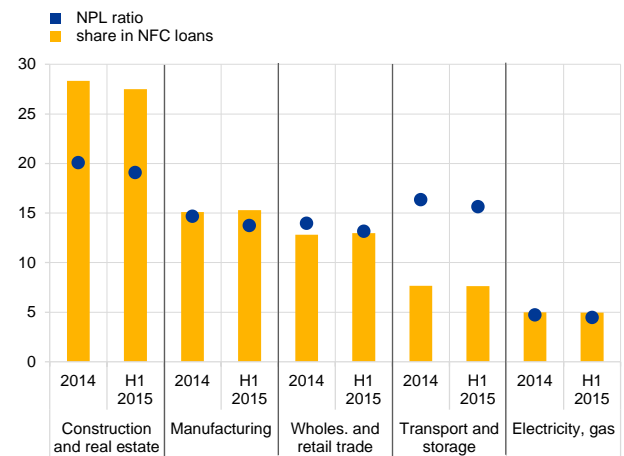
Source: ECB.

Chart 3.15

... with the construction and real estate sectors displaying the worst credit quality

Non-performing loan ratios of significant banking groups in the euro area, by economic activity

(2014 – H1 2015; percentage of loans)



Source: ECB.

Note: Weighted averages for those SBGs that reported the industry breakdown of non-performing loans in the NFC sector.

Regarding the level of NPL ratios, variation across banks and countries remains significant, with a number of banks still burdened by a large stock of NPLs that are mostly a legacy of the recession triggered by the sovereign debt crisis. The high level of NPLs weighs on profitability, as it entails additional operating costs and reduces the net interest margin, and it also holds back new lending. Furthermore, banks with a large volume of NPLs and moderate coverage ratios are more vulnerable to negative shocks affecting the credit quality of borrowers (see [Chart 3.16](#)).

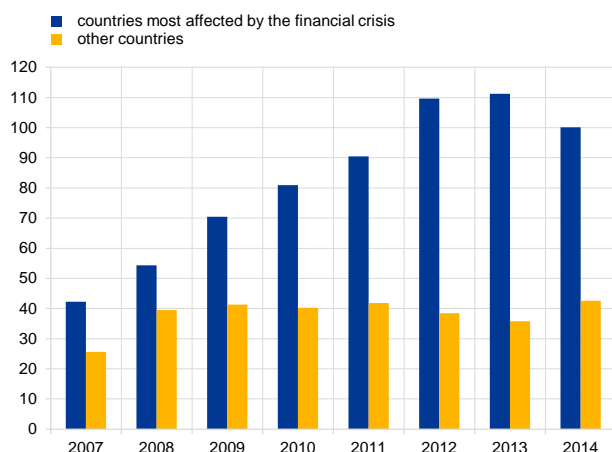
Positively, in some jurisdictions progress has been made in improving the legal framework to facilitate more effective NPL resolution. Notably, new legislation has been introduced in Italy that aims to reduce the fiscal disincentive for banks to provision for NPLs and write off bad debt and to improve insolvency procedures. In the medium term, this could also contribute to better loss recognition by banks and faster foreclosure of collateral underlying NPL portfolios, thereby contributing to a more effective NPL market.

Chart 3.16

Banks in countries burdened with a high level of non-performing loans have limited buffers against further credit losses

Ratio of non-performing loans to tangible equity and loan loss reserves for euro area significant banking groups

(2007-2014; percentages, median values)



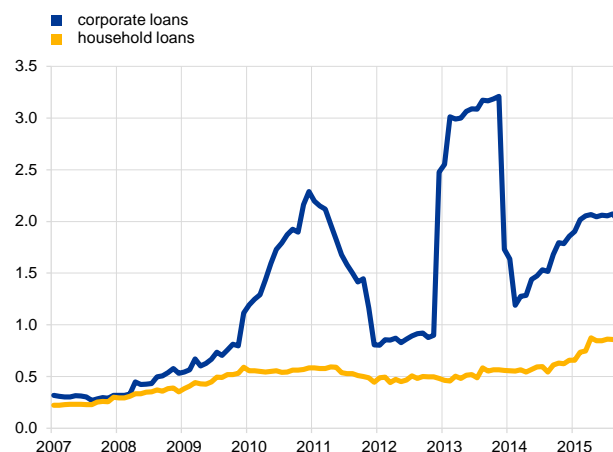
Source: SNL Financial.
Notes: Based on publicly available data for a sample of 60 significant banking groups. Countries most affected by the crisis include Cyprus, Greece, Ireland, Italy, Portugal, Slovenia and Spain.

Chart 3.17

Write-off rates levelled off in countries most affected by the financial crisis

Write-off rates on loans of euro area monetary financial institutions to the non-financial private sector in countries most affected by the financial crisis

(Jan. 2007 – Sep. 2015; percentage of loans; weighted averages)



Source: ECB.
Note: Countries most affected by the crisis include Cyprus, Greece, Ireland, Italy, Portugal, Slovenia and Spain.

That said, progress to date in NPL disposals remains moderate when compared with the volume of problem loans in euro area banks. Slow progress in selling and writing off NPLs may also reflect the limited buffers that some banks have against possible further losses (see [Chart 3.16](#)). In countries with a high level of NPLs, the median ratio of NPLs to tangible equity and loan loss reserves (known as the “Texas ratio”) stood at around 100% the end of 2014.

MFI data suggest that, after a steady increase starting in early 2014, write-off rates on corporate loans have levelled off since the second quarter of 2015 and in some countries with a high level of NPLs they remain at low levels (see [Chart 3.17](#)). Therefore, banks should take advantage of the current environment to clean up their balance sheets and free up balance sheet capacity for new lending.

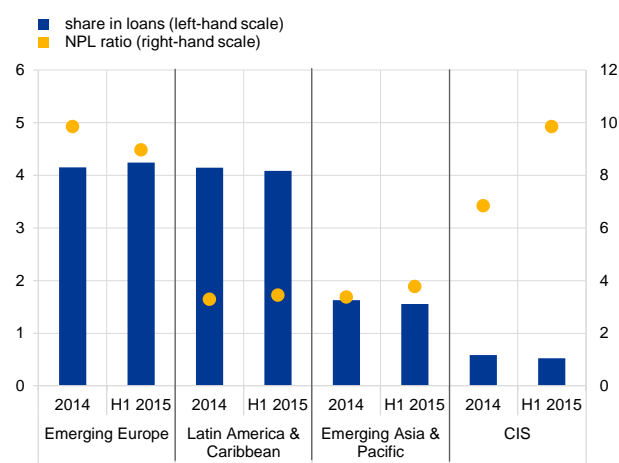
Against the background of increasing credit risks in [emerging economies](#) (see Section 1, including Box 1 on China), euro area banks with material exposures to vulnerable emerging market economies face heightened earnings risks and could see their loan losses rise in the period ahead.

Chart 3.18

Euro area banks' direct exposure to risks in emerging Asia and Latin America is relatively contained

Euro area banks' exposures and non-performing loan ratios in selected emerging market economy regions

(2014 – H1 2015; percentage of total loans; weighted averages)



Source: ECB.

Note: Based on a sample of significant banking groups that report the geographical breakdown of their exposures.

Aggregated bank supervisory data suggest that cross-border claims of euro area banks on emerging Asia are contained, accounting for less than 2% of euro area SBGs' assets, while the average NPL ratio stood close to 4% in the first half of 2015 representing a slight increase from end-2014 (see **Chart 3.18**). By comparison, euro area banks' exposures to Latin America are more significant, albeit with an average NPL ratio of slightly above 3% at the end of the first half of 2015, broadly unchanged from six months earlier.

While asset quality in these two regions compares favourably with those in CIS countries and emerging Europe, banks are likely to incur higher loan losses on their Asian and Latin American exposures in the period ahead. While the direct impact of worsening credit quality in these regions appears to be manageable, second-round effects (possibly involving a broader-based deterioration in emerging market economies) could be more significant.

Funding liquidity risk

Market-based bank funding conditions have become less favourable since the third quarter of 2015, with credit spreads widening amid uncertainty associated with developments in Greece and China. In bank debt markets, spreads on euro-denominated senior unsecured debt and, in particular, on subordinated debt widened more markedly, while spreads on covered bonds rose to a lesser extent (see **Chart 3.19**). The widening of spreads for both senior and subordinated debt was largely due to increased risk aversion in markets. In future, the pricing of senior debt is also likely to be affected by the ongoing implementation of bail-in rules at the national level, as indicated by the widening of the senior spread following the announcement of the German statutory subordination proposal in June.

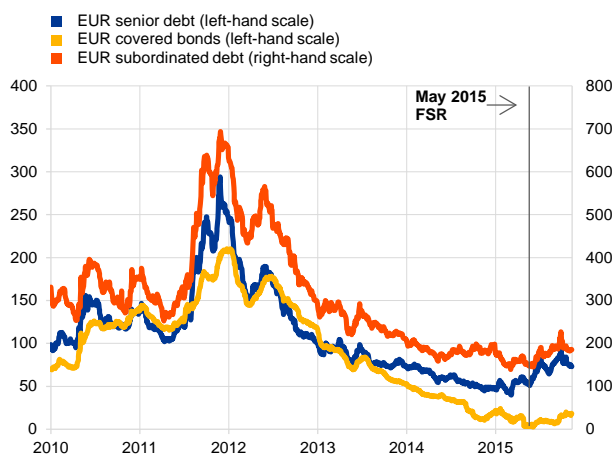
Bank debt issuance patterns also reflected increased risk aversion, with a shift towards covered bond issuance and away from unsecured debt issuance (see **Chart 3.20**). This can be partly attributed to the less favourable pricing conditions for issuers in the senior unsecured segment and the impact of the ECB's third covered bond purchase programme (CBPP3) on primary market activity, while for some banks the substitution of senior debt with long-dated central bank borrowing through the targeted longer-term refinancing operations (TLTROs) could have also played a role.

Chart 3.19

Bank debt spreads have widened since May owing to increased risk aversion in credit markets...

Spreads on banks' senior debt, subordinated debt and covered bonds

(Jan. 2010 – Nov. 2015; basis points)



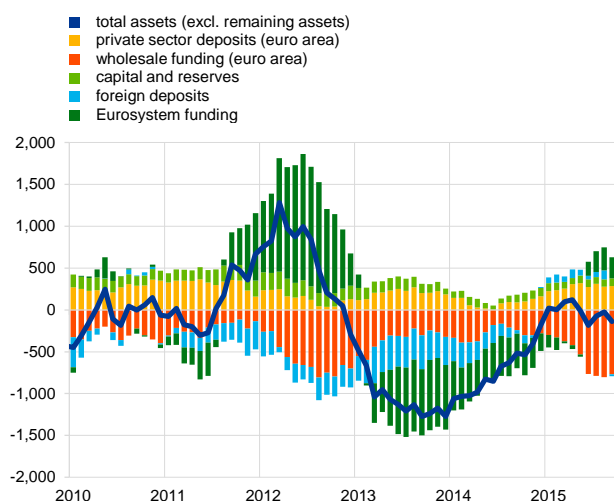
Sources: ECB and Markit.

Chart 3.21

Deposit growth remained stable, while wholesale funding continued to decline

Twelve-month flows in main liabilities of the euro area banking sector

(Jan. 2010 – Sep. 2015; EUR billions)



Source: ECB.

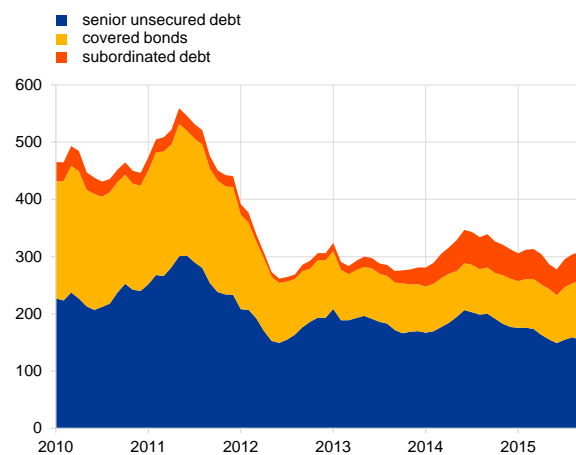
their use of Eurosystem funding facilities, via borrowing through TLTROs which was partly used to replace more expensive debt funding. These changes are partly a reflection of the profitability pressures felt by euro area banks.

Chart 3.20

... also reflected in a shift in the structure of new debt issuance towards secured debt

Gross issuance of medium and long-term debt by euro area banks

(Jan. 2010 – Oct. 2015; 12-month cumulative issuance; EUR billions)



Source: Dealogic.

Note: Excludes retained issuance and government-guaranteed debt.

At the same time, the issuance of subordinated debt in the first ten months of 2015 was below that of the same period last year, with activity adversely affected in periods of heightened volatility in debt markets. That said, subordinated debt issuance remains robust overall and continues to be driven by banks' adaptation to new regulatory requirements, namely the minimum requirement for own funds and eligible liabilities (MREL) and the total loss-absorbing capacity (TLAC) requirements.

The issuance of asset-backed securities by euro area banks picked up somewhat, with non-retained issuance standing at €36 billion in mid-November, broadly in line with the average issuance volume over the same period in the last five years, but representing a 25% increase year on year.

Changes in banks' **funding mix** have been characterised by a further decline in wholesale funding, including continued net redemption of debt securities, while deposit growth remained broadly stable (see **Chart 3.21**). At the same time, banks also increased

Banks continued to make progress towards meeting the new Basel III requirements on stable funding. According to the EBA's latest Basel III monitoring report, at the end of 2014 about 60% of the large, internationally active EU banks (Group 1 banks) and 75% of the other EU banks (Group 2 banks) subject to the monitoring exercise had already met the required minimum net stable funding ratio (NSFR) of 100%, with average NSFR ratios of 102% and 109% respectively.

Similarly, banks are making steady progress towards meeting new regulatory requirements for liquidity buffers. In fact, at the end of 2014 87% of Group 1 banks and 68% of Group 2 banks had already achieved a 100% liquidity coverage ratio, a requirement that will be applicable from the beginning of 2018. At the end of 2014 banks subject to the monitoring exercise had a shortfall of only €17 billion relative to the minimum requirement of a 70% liquidity coverage ratio applicable from 1 January 2016.

The continued implementation of **bail-in** rules at national level as well as preparation for future TLAC requirements remain an important determinant of banks' funding strategies in the near to medium term. In some countries, new draft proposals on the transposition of the Bank Recovery and Resolution Directive have been put forward that aim to enhance the implementation of the bail-in tool in resolution. One approach taken is the statutory subordination of senior unsecured debt to other (operational) senior liabilities, as is the case in Germany, while other proposals target contractual subordination by allowing for an additional layer (Tier 3) in banks' capital structure (e.g. as is the case in Spain). Regarding future TLAC requirements for global systemically important banks (G-SIBs), both statutory and contractual subordination would help banks fulfil new TLAC requirements. At the same time, addressing MREL and TLAC requirements will remain an important challenge for euro area banks in the coming years, with possible negative implications for their funding costs.

Market and operational risks

Banks' **market risk** increased in the second and third quarters of the year on the back of heightened volatility across all segments of financial markets. Banks' **interest rate risk** remains the most significant source of market risk, with the share of debt securities in SBGs' total assets remaining broadly stable in the first half of 2015, at around 15%. Regarding the composition of debt holdings, sovereign bonds comprise the largest part, totalling nearly 10% of SBGs' total assets, albeit with significant dispersion across countries. With respect to other fixed income exposures, holdings of debt issued by credit institutions and other financial institutions accounted for 2.7% and 1.7% of SBGs' total assets respectively, followed by bonds issued by non-financial corporations (see [Chart 3.22](#)).

Since the finalisation of the May 2015 FSR, interest rate volatility has risen significantly, with implications for the valuation of banks' debt instruments. In particular, yield increases could have negative effects on banks' profit and/or capital

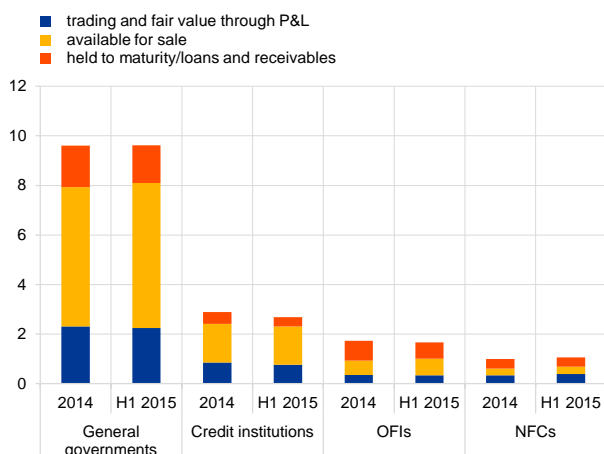
through valuation losses on their bond portfolios, depending on the duration and accounting treatment of these portfolios.

Chart 3.22

Bond market exposures remain stable, with sovereign bonds accounting for the largest part

Debt securities holdings of euro area significant banking groups, by sector and portfolio

(2014 – H1 2015; percentage of total assets)



Source: ECB.

On average, over one-half of euro area banks' fixed income portfolios are in the available-for-sale category (see **Chart 3.22**), where rate increases could have a direct negative impact on banks' equity and, depending on the use of regulatory filters, also on capital ratios. Furthermore, around one-quarter of SBGs' debt securities holdings belongs to categories that are marked to market with valuation changes directly affecting banks' profits and loss.⁴⁶ In fact, the significant yield increases observed in the second quarter of 2015 had a negative impact on many banks' equity positions as valuation adjustments (related to available-for-sale assets) dropped markedly, although some of this was reversed in the third quarter when government bond yields declined somewhat. Looking ahead, however, banks remain vulnerable to further unexpected increases at the long end of the yield curve.

At the same time, aggregate data on the ratings and average maturity of euro area banks' debt securities portfolio show few signs of a broad-based increase in

risk-taking in the euro area banking sector in a search for higher returns. In fact, the share of lower-rated securities remained broadly unchanged in the first two quarters of 2015, while the average maturity of debt securities held by banks declined in the first half of 2015, reversing the increase observed in 2014 (see Chart A and Chart C in Box 7).

Euro area banks' **exposures to equity markets** increased somewhat in the first half of 2015, on average, with the median share of SBGs' equity holdings edging up from 0.9% at the end of 2014 to 1.1% in June 2015. Significant heterogeneity across banks of different sizes persists, with some LCBGs maintaining an exposure of between 5% and 10% of total assets. Therefore, some banks remain exposed to volatility in equity prices, such as that observed in the third quarter of the year.

Risks relating to information technology continue to be among the main **operational risks** for banks and, accordingly, IT security remains one of the focal points for European banking supervisors. The recent increase in banks' and supervisors' awareness of these risks stems from banks' increased vulnerability to high-impact IT-related disruptions, given the wider use of information technology across different business lines and institutions' increasingly complex and interconnected systems. A particular concern relates to the rising risk of high-profile IT incidents or cyber attacks that could negatively affect banks in various ways, including through direct financial

⁴⁶ This includes debt securities held for trading and debt securities designated at fair value through profit or loss.

impact, disruption of services as well as legal and reputational damage. In addition, banks are confronted with increased IT-related risks at a time when they face pressure to contain costs in a low-profitability environment.

The results of the June 2015 EBA risk survey suggest that banks are aware of the need to address IT risks, with increased spending on IT security being the most frequently mentioned response to address these risks, followed by the strengthening of governance, risk culture and business continuity plans. Similarly, supervisors are stepping up their efforts to address cyber security concerns by requiring institutions to reinforce IT controls and audits, carrying out targeted on-site inspections of IT security systems and initiating cyber security tests. In the euro area, IT risk monitoring is among the main priorities of the SSM's work in the area of operational risk, with a focus on underinvestment and loopholes in IT systems and the related risk management framework, cyber security and data integrity.

Box 6

The information in systemic risk rankings

One of the legacies of the 2008-09 global financial crisis has been a proliferation of approaches to quantifying and ranking the contributions of firms in the financial sector to “systemic risk”. Risk rankings can be based on a variety of well-known systemic risk measures, such as “SRISK” or “Delta CoVaR”, or, alternatively, on balance sheet items (such as a firm's leverage ratio).⁴⁷

However, these systemic risk ranking approaches have seen limited use by policy institutions such as central banks and supervisory authorities. Possible reasons for this include limited theoretical foundations and the reliance of some measures on volatile financial market data.

To evaluate the policy usefulness of such systemic risk ranking approaches, a principal components-based methodology is used to combine the systemic risk rankings of financial institutions in order to determine a robust combined ranking.⁴⁸ The combined ranking is derived from six individual rankings based on a firm's SRISK, marginal expected shortfall, leverage, systematic risk, Delta CoVaR, and value at risk, and disentangles their common (signal) and idiosyncratic (noise) components. This approach takes into account the fact that policy-makers are conscious of modelling risks and prefer to implement policies only when complementary approaches point in the same direction. The methodology was applied to the EU financial sector and covered 113 firms over 139 months, from March 2002 to September 2013.

First, combining currently available systemic risk rankings suggests that there is scope for amplifying the signal from this class of indicators, and reducing the noise attributable to modelling risk and estimation uncertainty. Indeed, there is substantial evidence that the cross-sectional consistency between different systemic risk ranking methodologies is far from perfect. Chart A presents cross-sectional scatter diagrams showing SRISK and three other rankings for a specific

⁴⁷ See Brownlees, C. and Engle, R., “SRisk: A conditional capital shortfall index for systemic risk measurement”, unpublished working paper, 2015, and Adrian, T. and Brunnermeier, M., “CoVaR”, *Federal Reserve Bank of New York Staff Reports*, No 348, 2014. SRISK is available at <http://vlab.stern.nyu.edu/>. Statistics based on Delta CoVaR measures are reported in the ESRB risk dashboard; see www.esrb.europa.eu/.

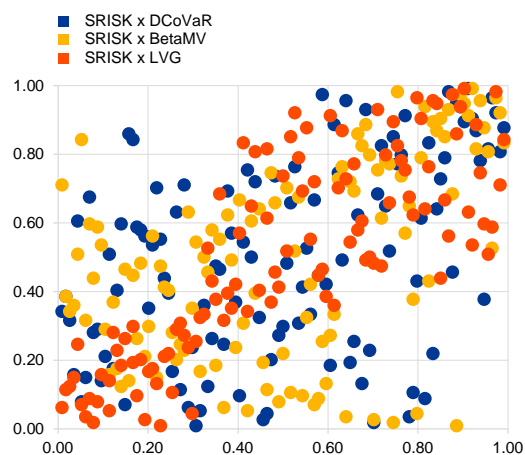
⁴⁸ See Nucera, F., Schwaab, B., Koopman, S. J. and Lucas, A., “The information in systemic risk rankings”, *Working Paper Series*, ECB, forthcoming, 2015. See also Tinbergen Institute Discussion Paper No 15-070.

date. The R-squared statistics from a linear regression of one ranking on another are typically low and do not exceed 0.22 in two cases (SRISK vs. Delta CoVaR, and SRISK vs. systematic risk). The association between SRISK and leverage is higher, as the latter is used in the computation of the former, but the R-squared from a linear regression does not exceed 0.66. The low association is not due to a few outliers, but is symptomatic of the different rankings ordering the firms in the sample differently. This may be problematic for supervisory purposes.

Chart A

The cross-sectional consistency between different rankings is far from perfect

Scatterplots for SRISK x DCoVaR, Beta and leverage

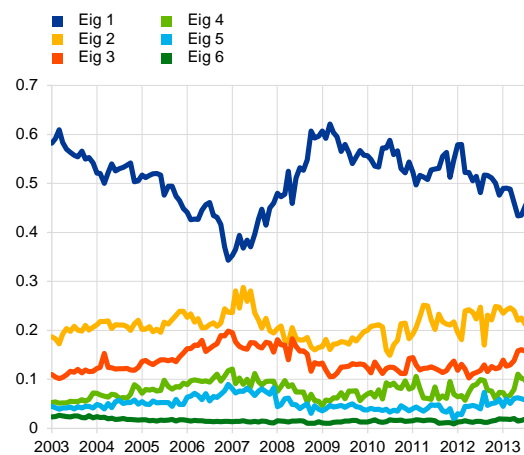


Sources: www.vlab.stern.nyu.edu and ESRB submissions.
Notes: Three scatterplots report SRISK vs. Delta CoVaR, SRISK vs. Beta x equity market capitalisation, and SRISK vs. leverage. Ranks are distributed uniformly between 0 and 1 by construction, with the most systemically important financial firm close to 1. The R-squared statistics are 0.20, 0.22, and 0.66 respectively. The rankings are reported for a specific date: 29 June 2012.

Chart B

Systemic risk rankings agree the least when they are arguably the most important

Eigenvalues from a principal components analysis



Sources: www.vlab.stern.nyu.edu and ESRB submissions.
Notes: Eigenvalues from a repeated cross-sectional factor analysis of six systemic risk rankings. Factor analysis is a statistical method used to describe the variability among observed correlated variables in terms of a potentially lower number of unobserved variables called factors. The first eigenvalue is the share of total variation in the cross-section that can be attributed to the first factor, which explains the most variation in the panel subject to a normalisation constraint. The lowest value is achieved in December 2006.

Second, the robustness of the signal from a combined ranking appears to be limited for policy purposes such as targeted banking supervision. When studying the time-series dimension of the results of the principal components analysis, an increasing discrepancy becomes apparent during 2006-07, namely between the loadings of price-based systemic risk rankings (such as value at risk, Delta CoVaR and marginal expected shortfall) versus systemic risk rankings that also incorporate book values (such as leverage and SRISK). Chart B plots the explained variances associated with the principal components across rankings over time. The explained variances appear to signal a dislocation between market prices and fundamentals prior to the onset of the 2008 financial crisis. For example, the minimal eigenvalue associated with the first principal component is obtained in December 2006. This is interesting from an early warning perspective.⁴⁹ On the other hand, this finding also suggests that different systemic risk measures signal different messages at a time when they are, arguably, the most important. This data feature is problematic from a supervisory perspective.

⁴⁹ This finding is also in line with the financial stability paradox as formulated in Borio, C., "Rediscovering the macroeconomic roots of financial stability policy: journey, challenges and a way forward", *Working Paper Series*, No 354, BIS, 2011, pp. 1-34. It is also in line with the volatility paradox as formulated in Brunnermeier, M. and Sannikov, Y., "A macroeconomic model with a financial sector", *American Economic Review*, Vol. 104, No 2, 2013, pp. 379-421.

Third, a robust measure of systemic risk contribution correlates negatively with financial institutions' cost of debt finance in a way that is, in some cases, in line with a public sector guarantee for the most systemically important institutions. Systemic importance, when robustly measured as a weighted average across different ranking methodologies, varies inversely with a bank's credit default swap spread, provided that the respective European sovereign is financially healthy. As a result, the extent of systemic importance is associated with a benefit from a funding perspective in the market for unsecured funds.⁵⁰

To conclude, the results summarised in this box suggest that both macroprudential and microprudential supervisors could benefit from increased attention to systemic risk rankings, as recently proposed in the academic literature. That said, such measures are subject to caveats⁵¹, which may limit their general usefulness in terms of concrete applicability in specific circumstances. Indeed, the results support the notion that inference is most reliable if it is based on a combination of alternative approaches.

3.1.2 Large euro area insurers: continued adjustment to the new regulatory framework in a low-yield environment

Large euro area insurers continue to adjust to the challenges posed by weak economic growth prospects and the associated prevailing low-yield environment, as well as adjusting to the forthcoming Solvency II regime. Their overall solid profitability to date has made it possible to boost capital levels further. On the assets side, the low interest rate environment is incentivising insurers to take more risks so as to maintain returns. In particular, there is evidence of portfolio shifts towards infrastructure financing, equities and lower-rated bonds.

On the liabilities side, life insurers are switching towards unit-linked policies and fee-based products for new business. Whereas large insurers typically have more means to adjust, non-diversified, small or medium-sized life insurers that have extended high policyholder guarantees in the past are under pressure ahead of Solvency II. Flexibility to adjust old policies varies to a large extent across jurisdictions – system-wide action may be required in the countries where disadvantageous business models are widespread.

Non-life business is generally less affected by low yields, but competition in certain markets remains intense. Reinsurance faces challenges resulting from the ample capacity in the market, which affects pricing. In particular, the market for insurance-linked securities continues to thrive, not least owing to demand from a growing investor base willing to bear the associated risks.

⁵⁰ This is in line with the proposition in Kelly, B. T., Lustig, H. and van Nieuwerburgh, S., "Too-systemic-to-fail: what option markets imply about sector-wide government guarantees", *Working Paper Series*, No 17149, NBER, 2011. For more details on this point, see Nucera et al., *ibid*.

⁵¹ See, for example, Löffler, G. and Raupach, P., "Pitfalls in the use of systemic risk measures", *University of Ulm Working Papers*, 2015.

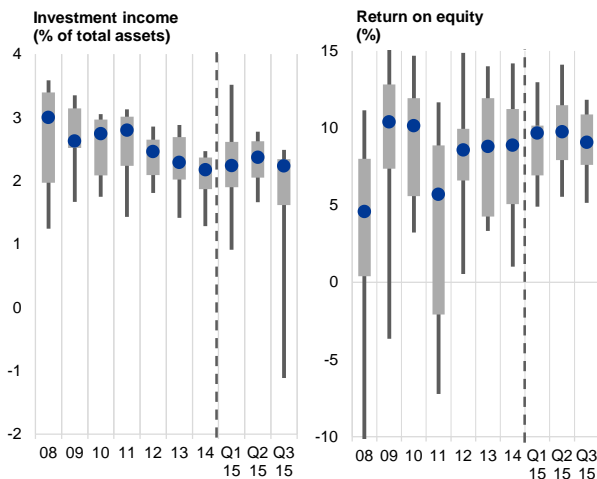
Financial condition of large insurers⁵²

Large euro area insurers continued to report solid profitability, with median returns on equity hovering at around 9% in the third quarter of 2015 (see [Chart 3.23](#)). Whereas growth in both life and non-life premiums remained positive for most large insurers in the second quarter of 2015, the third quarter saw a marked deterioration on the life insurance side (see [Chart 3.24](#)). Given that many insurers have switched to selling unit-linked and other non-guaranteed products lately, this outcome may demonstrate the difficulty in attracting this type of savings in a low-yield environment, particularly when stock market volatility is high. Year-on-year results however still point towards increasing premiums for 2015. Overall, the growth in both life and non-life premiums for globally active insurers benefited from positive business developments in emerging markets, which so far have displayed a healthy demand for insurance products. However, going forward, a further slowdown in economic growth prospects in emerging markets could dampen revenues for globally active, well-diversified insurers.

Chart 3.23
Investment income contributes to aggregate profitability, despite weakening for the lowest decile

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

(2008 – Q3 2015; percentages; 10th and 90th percentiles, interquartile distribution and median)

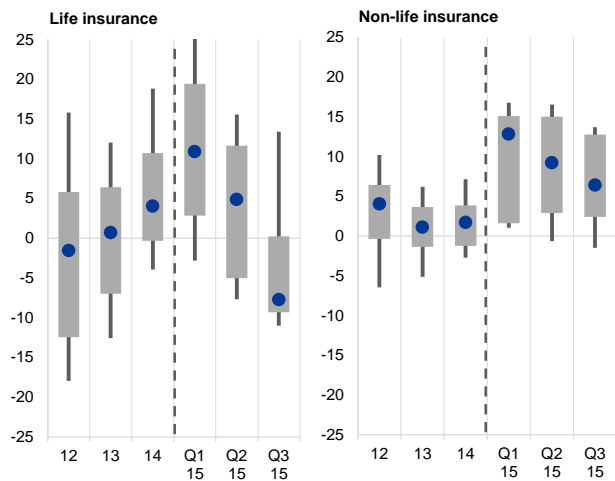


Sources: Bloomberg, individual institutions' financial reports and ECB calculations.
Note: Investment income excludes unrealised gains and losses.

Chart 3.24
Underwriting business volatile for life insurance

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

(2012 – Q3 2015; percentages; 10th and 90th percentiles, interquartile distribution and median)



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

Both investment and underwriting results have supported the robust profitability for most insurers in the sample. That said, the investment returns of large euro area insurers, excluding unrealised gains, markedly decreased in the third quarter of 2015 for the lowest decile of the reporting insurers, albeit after a relatively good result in

⁵² The analysis is based on a varying sample of 21 listed insurers and reinsurers with total combined assets of about €4.9 trillion in 2014, or around 78% of the assets in the euro area insurance sector. Quarterly data were only available for a sub-sample of these insurers.

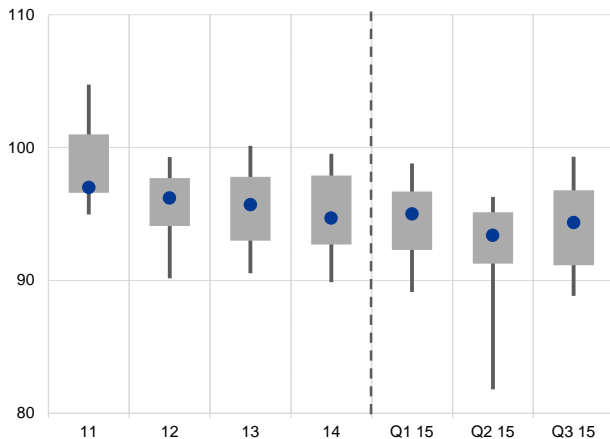
the previous quarter (see [Chart 3.23](#)). The strong valuations of bonds that result from the low-yield environment seem to have induced some insurers to realise some of the gains in their fixed income portfolios through sales in the market. Portfolio shifts towards equities and other asset classes and the subsequent increased dependence on price developments in these markets may have also contributed to the developments. On the non-life side, combined ratios (i.e. incurred losses and expenses as a proportion of premiums earned) remained below 100% for most insurers, owing to the absence of large-scale loss events in the second and third quarters of 2015 (see [Chart 3.25](#)).

Chart 3.25

The cost side of non-life business reflects the benign loss developments

Combined ratio for a sample of large euro area insurers

(2011 – Q3 2015; percentages; 10th and 90th percentiles, interquartile distribution and median)



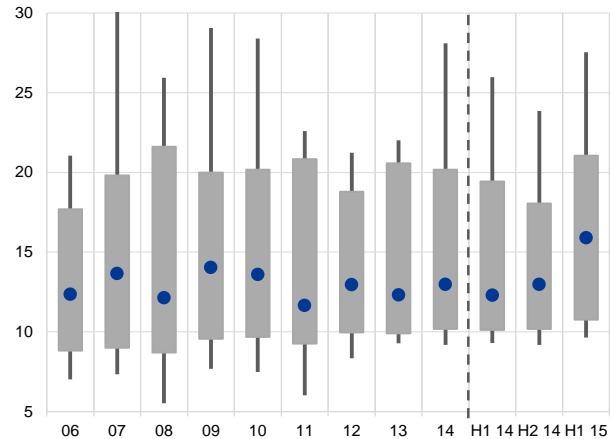
Sources: Bloomberg, individual institutions' financial reports and ECB calculations.
Notes: The combined ratio expresses the sum of incurred insurance losses and expenses as a share of net premiums earned. A ratio of below 100% indicates an underwriting profit.

Chart 3.26

Capital issuance and retained earnings boost capital-to-asset ratios

Capital distribution for a sample of large euro area insurers

(2006 – H1 2015; percentage of total assets, 10th and 90th percentiles, interquartile distribution and median)



Sources: Bloomberg, individual institutions' financial reports and ECB calculations.
Notes: Capital is the sum of borrowing, preferred equity, minority interests, policyholders' equity and total common equity.

The first half of 2015 saw a marked increase in capital-to-asset ratios, when valued according to the current national regulatory regimes (see [Chart 3.26](#)).⁵³ The increase reflects the ongoing preparations by large euro area insurers for the forthcoming Solvency II regime, with the associated move towards market valuations everywhere in the EU. Many large insurers have retained earnings and issued capital instruments. These actions have, on average, more than offset the impact of the unrealised investment losses on capital following the interest rate increases in the second quarter of 2015.⁵⁴

⁵³ Large euro area insurers generally follow the International Financial Reporting Standards (IFRS), which ensure a uniform treatment of financial assets (depending on a respective accounting classification to held to maturity, available for sale, held for trading and designated at fair value through profit or loss), but (currently) not liabilities.

⁵⁴ As interest rates rise, the value of fixed income assets decreases and insurers have to book unrealised losses on their balance sheet. This, in turn, decreases capital.

The current low-yield environment puts pressure on economic capital, which is a market-consistent measure that the industry uses to give some indication of future Solvency II ratios.⁵⁵ When interpreting the economic capital ratios, however, care should be taken, as uncertainty still prevails as regards the supervisory approvals of internal models and the potential transitional measures that will be in place as of 2016.

Insurance sector outlook: market indicators and analyst views

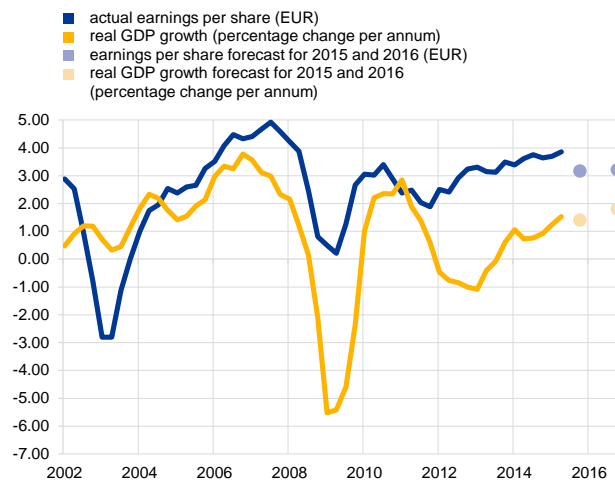
Earnings forecasts suggest that analysts expect the profits of large euro area insurers to moderately decline in 2016 (see **Chart 3.27**). Prospects are suppressed by low investment income expectations in particular. Low yields limit the margin for profit in the life insurance industry given high policyholder guarantees in certain cases. For non-life insurance, limited investment income may not fully compensate for potential underwriting losses, in particular in those fields of activity where competition remains fierce and pricing subdued. Ample capital and the ensuing pressure on pricing are expected to dampen profitability in the reinsurance sector as well.

Chart 3.27

Analysts expect moderately lower profitability for euro area insurers

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

(Q1 2002 – 2016)



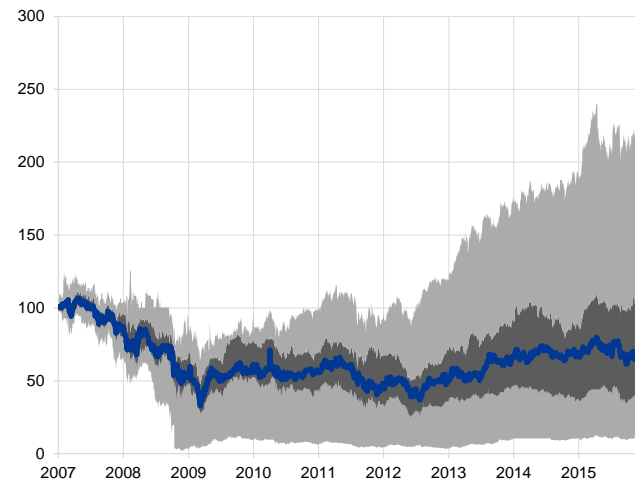
Sources: ECB, Thomson Reuters and ECB calculations.

Chart 3.28

Stock prices reflect muted expectations

Stock performance of a sample of large euro area insurers

(2007-2015; index: 2 Jan. 2007 = 100)



Sources: Thomson Reuters, Bloomberg and ECB calculations.

Note: The shaded areas indicate the minimum/maximum and interquartile ranges across equities of selected large euro area insurers.

⁵⁵ The economic capital ratio is calculated using market-consistent valuations for assets and liabilities, and therefore it bears a close relation to the method used in the Solvency II framework. It should however be noted that large euro area insurers will most likely use internal capital models to compute Solvency II ratios. These models require regulatory approval before application and may therefore differ from the models currently used by companies to calculate their economic capital ratios.

In the short term, analysts expect an overall smooth transition to Solvency II among large euro area insurers. Cost-cutting and retained earnings are expected to offset the impact of low yields on market-consistent Solvency II ratios. Insurers appear to have the capacity to adjust their business mix, including through gradual changes in investment portfolios and a move towards unit-linked or fee-based products. These trends are expected to continue. By contrast, analysts believe some smaller life insurers may not be able to meet the requirements, owing to their vulnerability to low yields and their limited capacity to adjust. The impact of any potential shortfalls is, however, expected to remain limited, given the long-term nature of life insurance liabilities and the size of the insurers that are most in danger.

In the long term, analysts expect increased efficiency to be key for better performance, should the low-yield environment persist. Demographics and economic trends are expected to lead to increased long-term savings in Europe, implying stronger inflows into life insurance. On the reinsurance side, analysts expect the large European players to profit from the changes in the sector as they are better able to adjust their business mixes and investment strategies than small firms and currently have strong market positions in reinsurance.

The muted profitability expectations have been reflected in the stock market performance of large euro area insurers since the publication of the May 2015 FSR (see [Chart 3.28](#) and [Chart 3.35](#)). The subdued price developments may also partly reflect the continued uncertainty about the capital adequacy of euro area insurers under the forthcoming Solvency II framework. Indeed, many analysts note that regulatory approvals for internal models and clarity on the use of transitional measures are as yet largely lacking.

Investment portfolios are adjusting to the low-yield environment

As large euro area insurers are important institutional investors in the financial markets, their investment behaviour may be a significant factor for financial stability, especially if aligned actions take place simultaneously.

[Chart 3.29](#) shows that large euro area insurers continue to invest predominantly in government and corporate bonds, which makes them vulnerable to low interest rates. The longer the low-yield environment continues, the higher the share of investment portfolios that needs to be reinvested. Without any adjustments in portfolio allocation, there would be a decreasing investment return on assets. Moreover, if interest rates rise, returns may remain locked in low-yielding products. This risk would be exacerbated by increasing maturities that may be sought as part of a generalised search for yield, and may even trigger a liquidity risk if policyholders begin surrendering policies on a large scale in order to switch to more lucrative savings products.⁵⁶

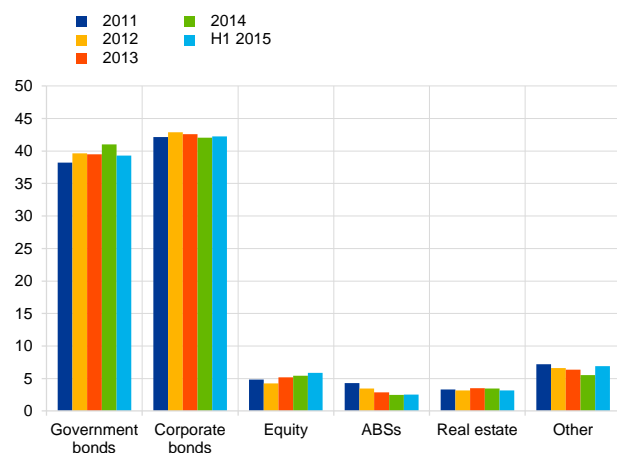
⁵⁶ See Feodoria, M. and Förstemann, T., "Lethal lapses – how a positive interest rate shock might stress German life insurers", *Discussion Paper Series*, No 12/2015, Deutsche Bundesbank. However, empirical evidence of such a phenomenon is scarce.

Chart 3.29

Fixed income securities dominate investment portfolios

Investment portfolio split of selected euro area insurers

(2011 - H1 2015; percentages of total investments; weighted averages)



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

Note: Based on available data for 15 large euro area insurers and reinsurers.

Data and reports by individual insurers imply that, faced with the need to roll over investments in the low-yield environment, the re-risking of portfolios has continued in 2015. Many insurers report realised gains from sales of equities and highly rated government bonds, implying that reinvestment amounts currently exceed the amounts coming to maturity. Moreover, the announced strategies include plans to increase allocations to equity investments and infrastructure, in particular. Indeed, **Chart 3.29** shows a continuous increase in equity investments, albeit from a very low level, and a jump in the “other investments” category.

Data also show that the shift within the government bond portfolio away from AAA-rated debt and sovereign debt of euro area countries less affected by the crisis has continued, although some of the shift is likely to have been a result of rating downgrades (see **Chart 3.30** and **Chart 3.31**). Evidence from a new dataset, however, shows that some of the movement is related

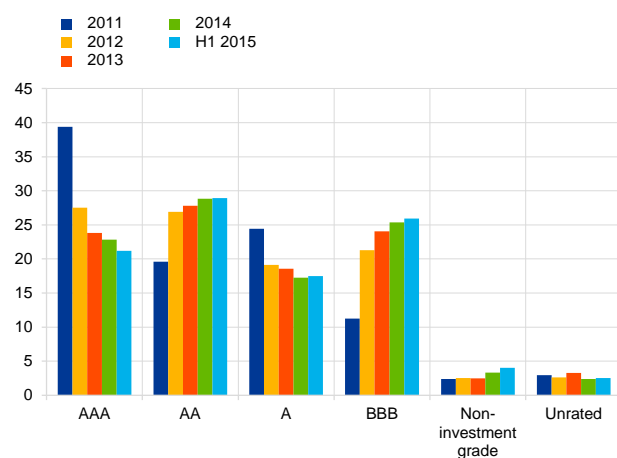
to real portfolio reallocations (see Box 7). To some extent, this may be welcome diversification away from the dominating, highly rated, fixed income securities portfolio. As the demand for these assets increases, however, it may be difficult to obtain adequate compensation for the increased illiquidity and credit risk inherent in the portfolio shifts.

Chart 3.30

Exposures to lower rating categories are increasing...

Bond investments of selected large euro area insurers split by rating category

(2011 – H1 2015; percentage of total investment portfolio; weighted averages)



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

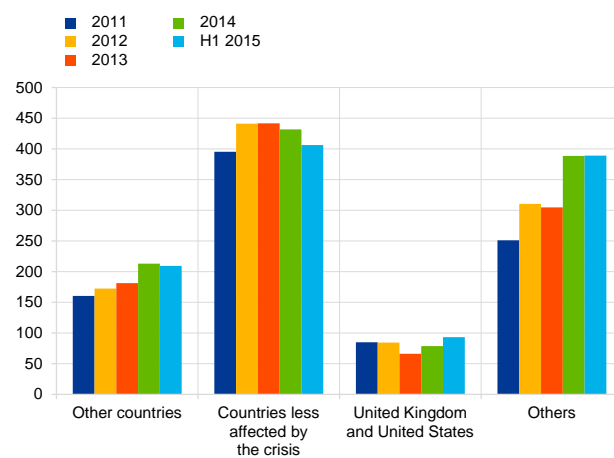
Note: Based on available data for 15 large euro area insurers and reinsurers.

Chart 3.31

... while sovereign exposures move away from euro area countries less affected by the crisis

Geographical split of the government bond holdings of selected large euro area insurers

(2011 – H1 2015; EUR billions)



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

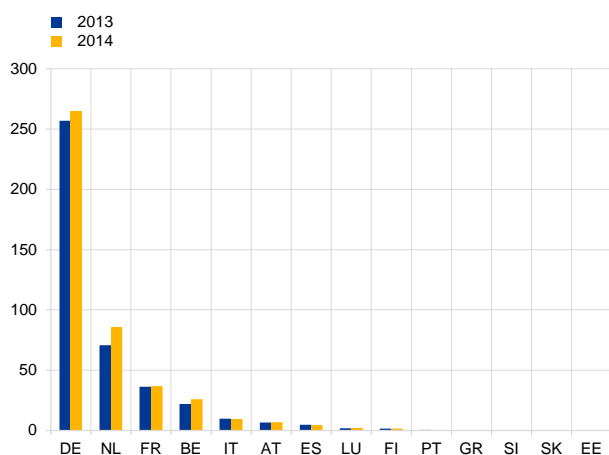
Notes: Other countries are Greece, Ireland, Italy, Portugal and Spain. Countries less affected by the crisis are Belgium, France, Germany, Luxembourg and the Netherlands. Based on available data for 15 large euro area insurers and reinsurers.

Chart 3.32

Lending by insurers is significant and increasing in a few euro area countries

Lending by euro area insurance corporations

(2013-2014; EUR billions)



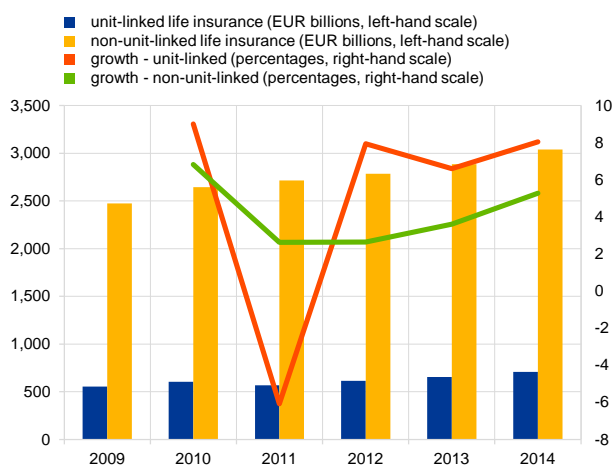
Sources: ECB data from balance sheets of insurance corporations and pension funds. Notes: Data for insurance corporations and pension funds are collected taking a short-term approach and are not fully harmonised. Data are not available for Cyprus and Ireland.

Chart 3.33

Unit-linked life insurance growing, but still at modest levels

Net equity of households in unit-linked and non-unit-linked life insurance

(2009-2014; percentages, EUR billions)



Sources: ECB data from balance sheets of insurance corporations and pension funds.

Although lending activities by euro area insurers are not extensive on aggregate, they are significant in some countries. Loans account for more than 5% of insurers' total financial assets in the Netherlands, Belgium and Germany. In 2014 the highest growth rates of lending by insurance companies were seen in the Netherlands and in Belgium (see [Chart 3.32](#)).

A sudden increase in lending may be motivated by a search for yield. Given that lending is not a core insurance business, it is essential to make sure that insurers which take it up have adequate risk management in place. If done in a prudent way, lending by insurers can improve welfare by acting as a substitute for bank credit, possibly in a counter-cyclical manner. However, the activity is not yet significant when compared with the total bank credit extended.

Liabilities side: guaranteed life insurance model under pressure

Low yields make it difficult to maintain a margin above the yields that have been guaranteed to life insurance policyholders. This may require system-wide action in some jurisdictions where disadvantageous business models are widespread. In countries where guarantees do not exist or are adjustable, competition from other savings products may hamper the possibility for insurers to lower returns to policyholders. The mismatch between the investment return and the guaranteed return to policyholders may, however, become a problem particularly for non-diversified life insurers in those jurisdictions where such guarantees are rigid and have been set at high levels in the past. Undiversified life insurers may also be subject to larger duration mismatches between assets and liabilities, owing to the very long nature of the latter. As a consequence, some of them may face difficulties in fulfilling the Solvency II requirements at the start of 2016. Special Feature B illustrates the interest rate risk for policies made in the past using synthetic portfolios that mimic the regulatory frameworks for guarantees in

selected euro area jurisdictions.

Life insurers have adjustment tools in place on the liabilities side for the design of new business. Unit-linked insurance and fee-based operations are less capital-intensive than guaranteed products and reduce the exposure of insurers to the low-

yield environment. Some individual insurers currently report high growth in sales of unit-linked products. At the euro area aggregate level, this development does not yet seem marked, however. At the end of 2014 unit-linked insurance still constituted less than 20% of the life insurance policies in the euro area and the pace of growth remains moderate (see [Chart 3.33](#)).

These developments may reflect the competitive disadvantage of such policies as investment products in the current low-yield environment. Indeed, abolishing the insurance feature inherent in guaranteed returns renders life insurance susceptible to competition from other savings and asset management products. On the other hand, such a change increases the degree of substitutability in the market, thereby making life insurers less systemic from a financial stability point of view.⁵⁷

Non-life insurance and the reinsurance market: competition from within and outside the sector

Pressures in non-life insurance arise mainly from retail business, in particular motor insurance. Intense competition and claims developments are likely to continue to weigh on profitability.⁵⁸ The insurance and reinsurance industry have, however, once again benefited from a below-average loss period as far as natural catastrophes are concerned: insured losses amounted to USD 12 billion in the first half of 2015.⁵⁹ The Atlantic hurricane season is also expected to remain well below average in 2015.⁶⁰ These factors are likely to support stable developments in the non-life sector in general.

The European reinsurance market is concentrated, which heightens the need for monitoring for financial stability purposes.⁶¹ A systemic event could arise through counterparty risk or disruption of vital services. The reinsurance market also has the potential to affect the financial markets, in particular through alternative investment products – such as catastrophe bonds – in the presence of a search for yield.

Catastrophe bond issuance remained strong in the first half of 2015, at USD 3.8 billion, although not keeping pace with the maturing amounts. As a result, the outstanding amounts in the market decreased to USD 21.6 billion from the record volume of USD 22.9 billion at the end of 2014 (see [Chart 3.34](#)).

The prolonged period of relatively benign catastrophe payouts and the capital inflows into the catastrophe bond market have led to overcapacity in the reinsurance market

⁵⁷ See also French, A., Vital, M. and Minot, D., “Insurance and financial stability”, *Bank of England Quarterly Bulletin*, Q3 2015, pp. 242-258.

⁵⁸ In motor insurance, for example, lower oil prices typically increase the frequency of claims, following an increase in the use of private cars. In addition, claims inflation in courts can affect the amounts claimed.

⁵⁹ See *Natural catastrophes in the first half year of 2015*, MunichRe, July 2015 (available on MunichRe’s website at <http://www.munichre.com>).

⁶⁰ Forecasts are available, for example, from the University of Colorado (see <http://hurricane.atmos.colostate.edu/Forecasts/>). Other risks are unlikely to manifest themselves on a significant scale over the next few years (e.g. climate change) or in a way which would create losses that could lead to systemic stress in the insurance sector (e.g. cyber risk).

⁶¹ For concentration ratios, see for example, ECB, *Report on financial structures*, October 2015.

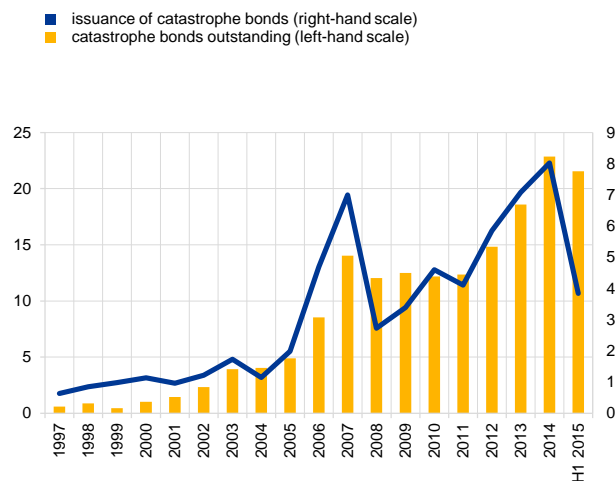
and were the underlying cause of the decreasing reinsurance rates in the past few years (see [Chart 3.35](#)). The recent renewal rounds have seen a slight stabilisation in reinsurance pricing. However, the fierce competition is expected to continue in the future as well. Nevertheless, strong market positions and the ongoing adjustments towards business lines and product types that are less susceptible to competition within and outside the sector are counteracting the impact of price developments on large euro area reinsurers' profitability and capital levels.

Chart 3.34

Issuance of catastrophe bonds at a high level, but not yet compensating for maturing bonds

Catastrophe bond issuance and amounts outstanding

(1997 – H1 2015; EUR billions)



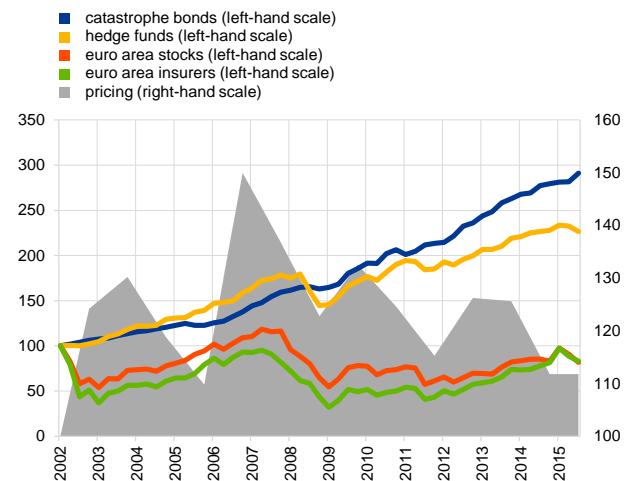
Source: Guy Carpenter.

Chart 3.35

Reinsurance and catastrophe bond prices show some stabilisation

Cumulative return profiles, broken down by market asset class and reinsurance pricing

(Q1 2002 – Q3 2015; index: Q1 2002 = 100)



Sources: Bloomberg, Guy Carpenter and ECB calculations.
Notes: The EURO STOXX index is used as benchmark for euro area stocks. The Guy Carpenter World Property Catastrophe RoL Index tracks changes in property catastrophe reinsurance premium rates on a worldwide basis.

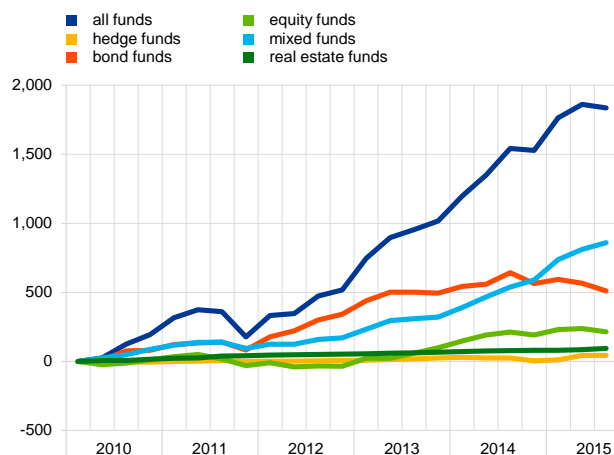
A functioning catastrophe bond market enlarges the range of products on offer in the financial markets. Hedge funds, but also pension funds and life insurance companies, are typical investors in catastrophe bonds, in their effort to increase yields in the low interest rate environment and to diversify away from the risks related to the financial cycle. The increased demand for such products, however, strengthens the correlation of pricing with the other products in the financial markets and thereby increases the pro-cyclicality of the market, as the recent declines have demonstrated. In addition, insurance-linked securities may lead to the build-up of tail risk for investors who are not aware of, let alone appropriately able to manage, this risk. In the euro area, the absolute volumes still remain modest, however.

3.1.3 Euro area investment funds: growing footprint amid increased risk-taking

Chart 3.36
Net inflows into euro area investment funds continued to be strong until mid-2015

Cumulated net flows into euro area investment funds

(Q1 2010 – Q3 2015; EUR billions)



Source: ECB and ECB calculations.

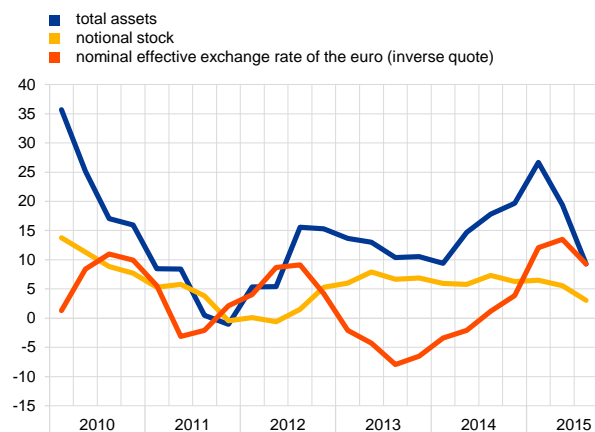
The growing exposure of investment funds to global asset markets, both in nominal and in value terms, raises the potential impact on capital markets of any investment decision by the funds and the investors behind them. These exposures have been building up over the past few years.

Rising asset prices globally and the sustained low opportunity cost of investing versus holding cash have certainly helped funds attract **net inflows**. Euro area investment funds received a total net inflow of €330 billion during the first half of 2015, while €25 billion of net outflows were observed during the third quarter of 2015. Most notably, inflows to bond and equity funds have slowed substantially compared with previous years. Mixed funds saw further inflows, compensating somewhat for the stagnation or decline in the growth of other types of fund (see [Chart 3.36](#)). Hedge funds also grew rapidly during the first half of 2015, attracting net inflows of more than 13% of total assets, while they experienced net outflows during the third quarter of 2015. Although the euro area hedge fund sector appears to be small, hedge funds domiciled in global financial centres, including offshore, are relevant for euro area financial stability, i.e. if they are borrowing from euro area banks or investing in euro area assets.

Chart 3.37
Recent acceleration in growth caused predominantly by valuation effects, including foreign exchange

Annual growth of the euro area investment fund sector

(Q1 2010 – Q3 2015; year-on-year percentages)



Sources: ECB and ECB calculations.

Up to the second quarter of 2015, growth in the euro area investment fund sector accelerated to an annual rate of more than 25%. Exposure of these investment funds to global financial markets has been increasing owing to a growing notional stock (with annual growth of 5%), rising asset prices and the weakening of the euro against other currencies. Growth in the investment fund sector has slowed substantially since the second quarter of 2015. Since mid-2010, growth in total assets has been closely correlated with the euro nominal effective exchange rate (see [Chart 3.37](#)), reflecting the large share of non-euro area assets in the holdings of euro area funds.

Euro area investment funds have continued to increase their **foreign exposures** until recently, including to emerging markets. These funds hold €4.3 trillion of non-euro area assets across a broad range of industrial and emerging market countries, of which €1.9 trillion are debt securities, nearly €2.3 trillion equities, €100 billion

deposits and loans, and €20 billion non-financial assets. The overall share of foreign investments has slightly increased over the past year, from 38% in mid-2014 to 41% in mid-2015. Adding to the currency risk of these foreign holdings, the ratings of debt securities holdings tend to be much lower for foreign debt securities than for euro area debt securities (see **Box 7**).

Box 7

Debt securities holdings of the financial sector in the current low-yield environment

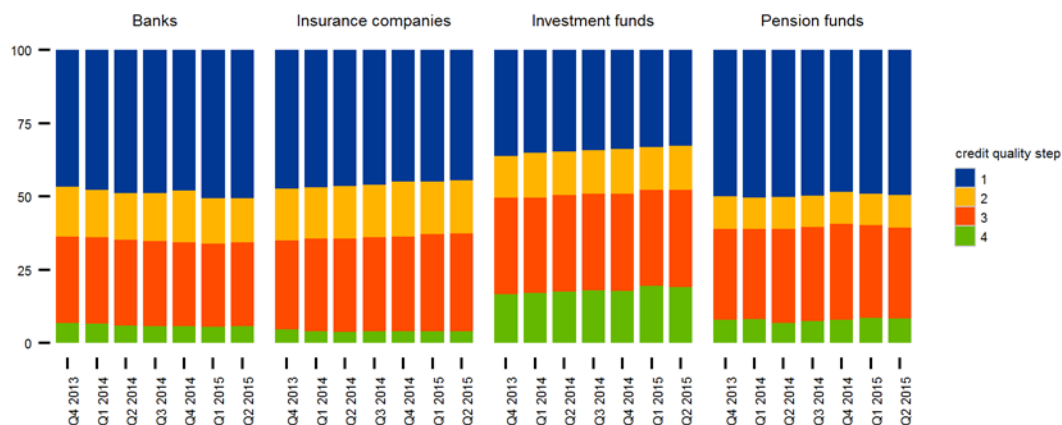
The protracted low-yield environment in the wake of the global financial crisis and the dearth of assets perceived as risk-free have challenged financial institutions' investment strategies. As risk/return strategies adapt to this environment, increased risk-taking is likely. From a financial stability standpoint, such risk-taking is meaningful to the extent that an agglomeration of exposures within key sectors could leave the financial system more vulnerable to an abrupt reversal of risk premia. Debt securities markets, including traditionally conservative segments, are one area where it is possible that investors have substantially increased their exposure to credit and interest rate risk in an effort to achieve higher returns.

Chart A

Investment funds and insurers have shifted their holdings from higher- to lower-rated debt securities on average, but banks have not

Share in nominal debt securities holdings by sector and rating category

(Q4 2013 – Q2 2015; percentages)



Source: ECB 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 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.

One means of identifying the topography of increased risk-taking in the euro area financial sector is by looking at information on asset holdings. The ECB's securities holdings statistics (SHS)⁶² provide

⁶² The SHS data help to fill long-standing statistical gaps. SHS coverage in the period under review is, on average, equal to or higher than 90% of the value reported in benchmark statistics such as euro area national accounts or balance sheet item statistics. See "Who holds what? New information on securities holdings", *Economic Bulletin*, Issue 2, ECB, March 2015, pp. 72-84.

a wealth of information on the euro area in this regard as they contain data on individual securities held by resident investors, and cover all euro area countries and sectors. When used in combination with securities ratings, these data can help to address questions related to the changing composition of portfolios held by the financial sector – in particular, exposures to credit and interest rate risk by euro area banks (credit institutions), insurance companies, pension funds and non-money market investment funds.

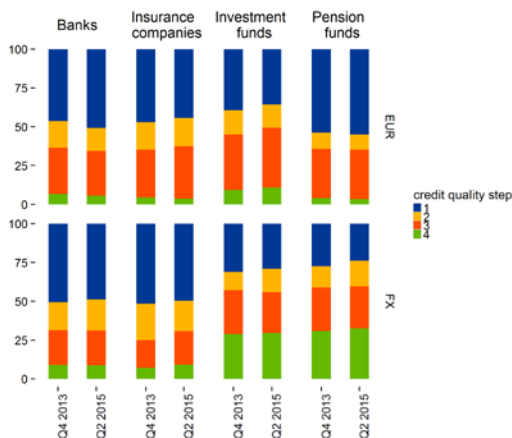
An important observation is the clear shift in asset allocation from higher- to lower-rated debt securities for the investment fund sector. A similar shift could be observed for the insurance sector, albeit less pronounced and with the relative amount of debt holdings “below credit quality” declining (see Chart A).⁶³ The overall shifts in portfolio composition have largely been 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 securities held.⁶⁴ While pension funds have kept their exposures largely constant, banks have shifted their allocation from lower- to higher-rated securities. The four broad rating categories referred to in Chart A correspond to the categories defined in the Eurosystem credit assessment framework.⁶⁵

Chart B

Higher share of lower-rated securities in foreign currency-denominated securities

Share in nominal debt securities holdings by sector, rating category and currency of denomination

(Q4 2013; Q2 2015; percentages)



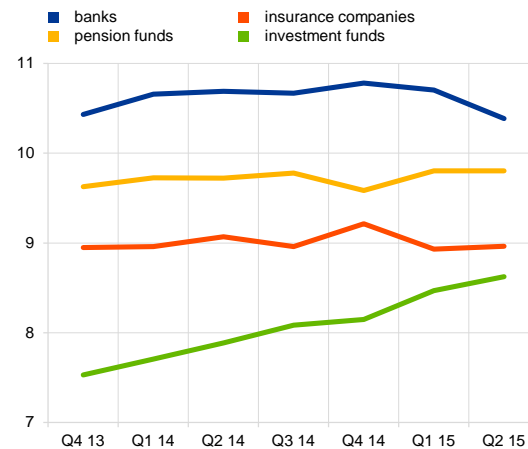
Source: ECB and ECB calculations.
Note: See notes to Chart A.

Chart C

Increase in residual maturities in the investment fund sector

Weighted average residual maturity

(Q4 2013 – Q2 2015; years)



Source: ECB and ECB calculations.
Notes: All “alive”, rated and non-rated euro and foreign currency-denominated debt securities are included. 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.

⁶³ The analysis is based on nominal amounts so as to eliminate potential valuation effects and focus on the actual change in portfolio composition. With the initial SHS data referring to holdings at the end of December 2013, the limited time span does not make it possible to identify definite trends. However, it does show how financial institutions have adjusted their portfolios of debt securities in the period between the fourth quarter of 2013 and the second quarter of 2015.

⁶⁴ Robustness checks considered rating changes for the securities held throughout the period under consideration, as well as the ratings of securities that had left or newly entered the dataset. This information was used to assess the impact of rating changes on the results presented.

⁶⁵ See <https://www.ecb.europa.eu/paym/coll/risk/ecaf/html/index.en.html>

In addition, a structural difference can be seen in institutions' portfolio allocations for securities denominated in euro and securities denominated in foreign currencies (see Chart B). Investors appear to hold a higher share of the lowest-rated securities when these are issued in non-euro-denominated securities. This pattern in allocation is particularly pronounced for the investment and pension fund sectors which, coincidentally, are the two sectors with the highest relative exposure to foreign currency-denominated securities.

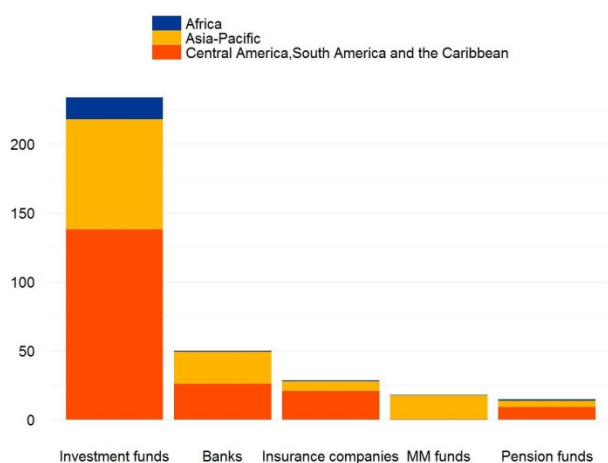
Since December 2013, average residual maturities have increased by almost one year for euro area investment funds' debt securities holdings (see Chart C). Other sectors have displayed much less variation in the remaining maturities, meaning that a definite trend cannot be identified. There has been an increase in remaining maturities for lower-rated securities across all sectors, with the exception of pension funds. On the other hand, governments and corporates have issued longer-term debt, thereby strengthening resilience to a reversal in rates (see Chart 1.17 in Section 1.2).

Overall, it appears that exposures to credit and interest rate risks have increased somewhat outside the core financial system, i.e. among investment funds and, to a lesser extent, insurers and pension funds. At first sight, this bodes well for the stability of the euro area financial system, as marginal risks are borne by investors and institutions that are potentially of less systemic relevance because they reside outside the banking sector. Nevertheless, the diagnosis lends support to concerns over the growing susceptibility of non-bank financial intermediation, in particular by investment funds, to an abrupt reversal in global risk premia.

Chart 3.38
Emerging market exposures vary widely across sectors

Investment fund holdings of emerging market debt securities issued in non-domestic currencies

(Q2 2015; EUR billions)



Source: ECB and ECB calculations.

Notes: Debt securities holdings are classified according to the country of residence of the issuer. Countries are grouped into three regions. Debt securities issued in Japan are excluded from the Asia-Pacific category. Only issuance of "hard currency" debt is considered, including securities issued in USD, EUR, GBP, CHF and JPY. MM funds = money market funds.

Some euro area investment funds have significant exposures to emerging markets. The relative share invested in securities outside the United States, Japan or the EU ranges from 8% for mixed funds, through 13% for bond funds to 20% for equity funds (see [Chart 10](#) in the Overview). Euro area investment funds also play an important role in providing "hard currencies" to the emerging market economies. As at the first quarter of 2015, euro area funds had invested around €230 billion in emerging market debt securities denominated in non-domestic currencies. These assets are largely held by dedicated emerging market funds and funds investing globally. Although the share of this emerging market debt in the funds' total debt securities holdings remains below 7%, exposures to emerging markets are much higher for funds than for any other part of the financial sector (see [Chart 3.38](#)). The investment fund sector hence represents an important channel for inward and outward spillovers related to the emerging markets.

The recent market volatility stemming from developments in China had limited effects on the euro area investment fund sector and financial markets. However, concerns remain that any future round of repricing could affect debt markets at the global level and have

much wider financial stability implications. Increased **risk-taking** has already left the euro area fund sector more exposed to any future reversal in global risk premia, were such a reversal to materialise. Over the past year, the funds have shifted their asset allocation from higher- to lower-rated debt securities, while the average residual maturities have increased by almost one year (see **Box 7**).

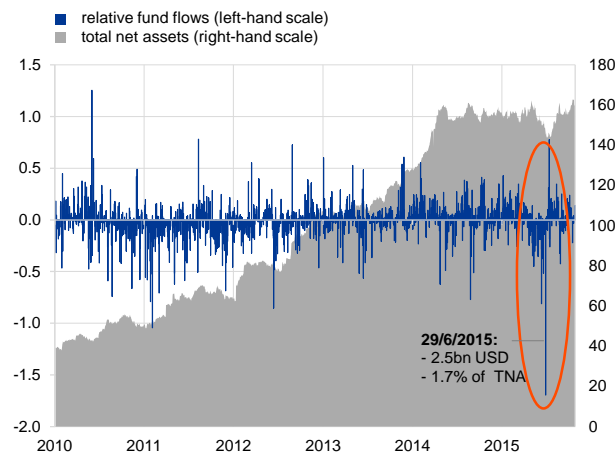
The large and growing exposures of the fund sector have spurred concerns that the potential for this sector to amplify any **market-wide shocks** is increasing. The concerns are that funds may become part of so-called “liquidity spirals”, similar to those witnessed in the global financial crisis of 2008. High redemptions or increased margin requirements would force funds to adjust their portfolios within a short time frame, thereby adding to liquidity pressures in the relevant markets. If liquidity conditions were to deteriorate, initial asset price adjustments would be amplified, triggering further redemptions and margin calls, and thus fuelling such negative spirals. The more the funds engage in liquidity transformation, the more likely they are to face selling pressures in a severe market downturn. Leverage can intensify these spirals by forcing the fund managers to sell a larger share of their invested portfolio for any given amount of outflows.

Chart 3.39

Significant outflows of up to 1.7% per day during the Greek sovereign crisis at the end of June, which accumulated to over 5% of net asset value

European sovereign bond fund flows and total net assets

(Jan. 2010 – Oct. 2015; daily net flows as a percentage of total assets; total net assets in USD billions)



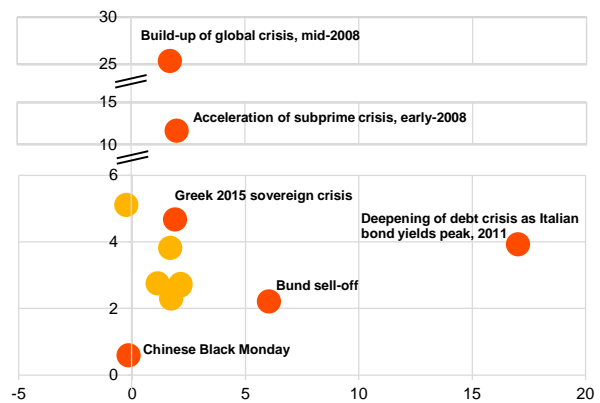
Sources: EPFR and ECB calculations.

Chart 3.40

Only a few events affected net flows and liquidity conditions simultaneously

European sovereign bond fund net outflows and changes in sovereign bond bid-ask spreads

(Jan. 2008 – Sep. 2015; x-axis: bid-ask spread change in basis points; y-axis: four-week cumulative flows as a percentage of total net assets)



Sources: EPFR, iBoxx and ECB calculations.

Notes: Western European bond funds include dedicated regional and country-specific funds that invest in the EU plus Norway and Switzerland. Net outflows are represented as a relative share of total net assets in order to control for the significant increase in the size of bond funds over time. Outflows are cumulated over a four-week, non-overlapping window from the start of the event date. The following event windows were considered: acceleration of sub-prime crisis in early 2008 (17 Jan. – 13 Feb. 2008); build-up of global crisis in mid-2008 (12 June – 9 July 2008); deepening of debt crisis in 2011 (29 Sep. – 26 Oct. 2011); Bund sell-off (16 Apr. – 13 May 2015); Greek 2015 sovereign crisis (4 June – 1 July 2015); Chinese “Black Monday” (20 Aug. – 16 Sep. 2015). The largest weekly changes in bid-ask spreads observed during the event window are shown.

Earlier this year, a temporary sell-off in the German government bond market already caused notable outflows from European government bond funds. Although

this did not lead to immediate stability concerns, the period of outflows coincided with a significant deterioration in the bid-ask spreads of euro area sovereign bonds (see [Chart 3.40](#)). Looking at more recent events, a noteworthy withdrawal of global investors from European sovereign bond funds was evident in the week following the breakdown of the negotiations in Greece (see [Chart 3.39](#)). However, the large-scale withdrawal proved temporary and was limited to sovereign bond funds. Moreover, contagion from Greek to other sovereign debt markets was limited and the bid-ask spreads of euro area government bonds were, on average, only mildly affected by the closure of the Greek banks and the imposition of capital controls (see [Chart 2.9](#) in Section 2).

Referring to earlier episodes of distress, including the global financial crisis of 2008, it seems that very few events have the potential to pose a systemic threat to the euro area bond markets, i.e. affecting fund flows and liquidity conditions simultaneously. The European sovereign debt crisis in 2011 is one notable exception. The most recent episode of market turmoil – triggered by a sudden price decline in the Chinese equity markets – had hardly any effect on euro area sovereign bond funds and markets, whereas net outflows could be observed for some equity funds (see [Chart 1.10](#) in Section 1.1).

Some factors **mitigate** the risk of funds acting as potential amplifiers in any shock scenario, such as if they have adequate risk management processes and liquidity buffers in place. While leverage is generally regulated by the Undertakings for Collective Investment in Transferable Securities (UCITS) Directive and the Alternative Investment Fund Managers Directive (AIFMD), euro area investment funds are allowed to create leverage synthetically, within certain limits.⁶⁶ Redemption notice periods and gates can be specified to further reduce susceptibility at the firm level to sudden outflows, in particular in real estate and hedge funds. The suspension of share redemptions can in principle be used to stop a run on fund assets, though clearly a widespread application of any such measures under distress could have a systemic impact.

Other euro area non-bank entities: much of the euro area shadow banking sector still not visible

The broad shadow banking sector has continued to grow over the past year, driven primarily by non-money market investment funds, which expanded owing to net inflows and rising valuations, as mentioned above.⁶⁷ The recent decline in total assets of investment funds was mainly due to a decline in asset valuations during the second and third quarters of 2015, while net inflows declined during the third quarter (see [Chart 3.41](#)). Euro area money market funds expanded slightly, receiving nearly €17 billion of net inflows between the second quarter of 2014 and

⁶⁶ See Box 7 entitled “Synthetic leverage in the investment fund sector”, *Financial Stability Review*, ECB, May 2015, pp. 92-94.

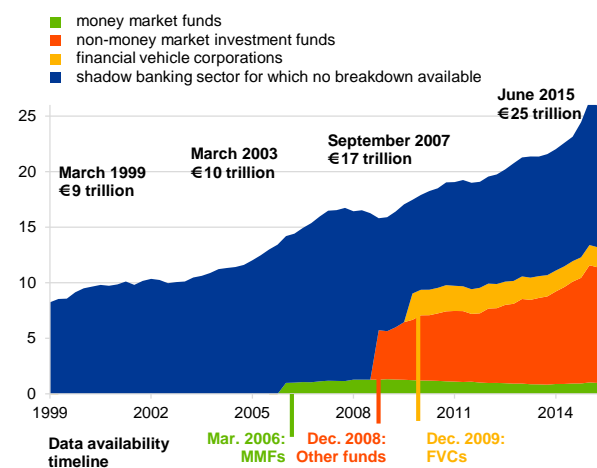
⁶⁷ The broad measure calculated for the euro area covers money market funds, non-money market funds, financial vehicle corporations and the other financial intermediaries. For the latter, the entity types cannot be identified on the basis of national accounts data.

Chart 3.41

The broad measure of the shadow banking sector has expanded mainly because of investment funds and other financial intermediaries

Total assets of the broad shadow banking measure

(Q1 1999 – Q2 2015; EUR trillions)



Source: ECB and ECB calculations.

Note: A breakdown of statistical data for money market funds (MMFs), other funds and financial vehicle corporations (FVCs) is available only from the indicated dates onwards. The broad shadow banking measure includes money market funds and all other non-monetary financial institutions apart from insurance corporations and pension funds.

the second quarter of 2015. Growth was driven predominantly by money market funds domiciled in Ireland and Luxembourg, although in Ireland net inflows turned negative in the second quarter of 2015.⁶⁸ Euro area financial vehicle corporations have continued to decline over the past year owing to continued weak loan origination and securitisation activity by euro area credit institutions.

Concerns remain that risks may be building up in the part of the shadow banking sector for which a statistical breakdown is not readily available, but which is growing in size. A significant proportion (up to two-thirds) of the residual for which the ECB statistics do not provide a breakdown can be attributed to special financial institutions and holding companies, as well as other entities not engaged in shadow banking activities. For the remaining share of the entities for which no breakdown is available, it cannot be excluded that those entities engage in risky liquidity transformation or credit intermediation.⁶⁹

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 issue of the FSR (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.⁷⁰ Owing to limited availability of disaggregated data on assets, liabilities, capital and profitability of financial institutions other than banks and insurers, this section does

⁶⁸ When looking at the euro area money market fund sector, it should be noted that the geographical concentration of this sector is high, with Ireland accounting for 43%, France for 30% and Luxembourg for 24% of the total assets held by euro area money market funds in 2015. Other euro area countries account for less than 3%.

⁶⁹ The Financial Stability Board is currently gathering data at national level to further close the remaining gaps and to help determine whether certain types of entities engage in shadow banking activities. With the statistics available at the euro area level, some shadow banking activities can indeed not be identified by type of entity.

⁷⁰ 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 Henry, J. and Kok, C. (eds.), "A macro stress-testing framework for systemic risk analysis", *Occasional Paper Series*, No 152, ECB, October 2013, as well as "A macro stress-testing framework for bank solvency analysis", *Monthly Bulletin*, ECB, August 2013.

not assess the resilience of the shadow banking sector or possible feedback loops between banks and the shadow banking sector.

Table 3.1
Mapping main systemic risks into adverse macro-financial scenarios

Risk	Scenario	Key assumptions driving impact on GDP
Abrupt reversal of compressed global risk premia amplified by low secondary market liquidity	Global risk aversion scenario	Shocks to risk aversion and investor confidence worldwide fuelling stock price declines, widening of corporate bond spreads, and lower euro area foreign demand
Weak profitability prospects for banks and insurers in a low nominal growth environment, amid incomplete balance sheet adjustments	Weak bank operating environment scenario	Shocks to private investment and consumption
Rising debt sustainability concerns in the public and non-financial private sectors amid low nominal growth	Sovereign and private debt crisis scenario	Renewed rise in sovereign bond yields to elevated levels and stock price declines
Prospective stress in a rapidly growing shadow banking sector, amplified by spillovers and liquidity risk	Shadow banking spillover scenario	Reversal of the improvement in euro area bank funding conditions, leading to higher money market rates and funding costs for the real economy

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 spreads, stock prices and asset values of the shadow banks, as well as responses of other financial market parameters to these shocks. International spillovers of financial shocks are modelled using Bayesian VARs and the GVAR⁷¹, while the impact of global developments outside the EU on euro area foreign demand is assessed using NiGEM. The impact of the shocks on the euro area economies has been derived using stress-test elasticities (STEs).⁷² The baseline scenario used in the assessment is derived from the European Commission's autumn 2015 economic forecast.

Table 3.2
Overall impact on euro area GDP growth under the adverse macro-financial scenarios

	2014	2015	2016	2017	Q4 2017
Baseline (annual percentage growth rates)	1.3	1.6	1.8	1.9	
		percentage point dev. from baseline growth			% dev. from baseline level
Global risk aversion scenario		-0.2	-1.1	-0.6	-1.8%
Weak bank operating environment scenario		-0.6	-1.4	-0.5	-2.4%
Sovereign and private debt crisis scenario		-0.7	-0.9	-0.1	-1.7%
Shadow banking spillover scenario		-0.1	-0.3	-0.3	-0.7%

Sources: European Commission and ECB.

The weak bank operating environment scenario would have the strongest impact on euro area economic activity. It would be followed by the global risk aversion scenario (see [Table 3.2](#)). The materialisation of the first and second risks, identified as medium-level systemic risks, is considered more likely than the materialisation of the

⁷¹ For details on 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.

⁷² STEs are a multi-country, EU-wide simulation tool. STEs are based on impulse response functions (from ESCB central banks' models) of endogenous variables to pre-defined exogenous shocks. The STEs furthermore incorporate intra-EU trade spillovers.

third and fourth risks, which are deemed to be potential systemic risks (see the Overview).

With regard to the key financial market parameters, the global risk aversion scenario involves a flattening of the yield curves in the euro area together with a significant drop in stock prices (see [Table 3.3](#)). By contrast, the sovereign and private sector debt crisis scenario exhibits a steepening of the yield curve, albeit with a large dispersion across the individual euro area countries. In the case of the weak EU bank operating environment scenario, the yield curve would remain unchanged, while in the case of the shadow banking spillover scenario, a slight flattening would be associated with an upward shift of the curve.

Table 3.3

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

	Global risk aversion scenario	Weak bank operating environment scenario	Sovereign and private sector debt crisis scenario	Shadow banking spillover scenario
Average euro area increase in short-term interest rates (basis points)	80	0	0	80
Average euro area increase in long-term government bond yields (basis points)	47	0	76	61
Shock to euro area real estate prices (%)	-2	0	0	0
Shock to euro area equity prices (%)	-14	0	-8	-8

Source: ECB.

Global risk aversion scenario

The first adverse scenario reflects the risk of an abrupt reversal of investor confidence and risk aversion worldwide. This scenario would be triggered by two events assumed to occur simultaneously. First, the slowdown in economic activity in China would induce a decline in the expected growth prospects for major emerging markets, reversing capital flows and leading to a significant reduction in emerging market asset prices. This would also lead to protracted downward pressure on domestic aggregate demand. The second trigger event would originate from the United States, whereby it is assumed by market participants that monetary policy will be tightened sooner than expected, which in turn would lead to a rapid increase in market uncertainty. This episode of heightened volatility and declining global asset prices would persist for several quarters. Taken together, these two shocks would, in turn, lead to a mild recession in the United States and a sharp economic slowdown in key emerging market economies, and would – via trade and confidence spillovers – have negative implications for the economic outlook in the euro area.

In this scenario, US stock prices would decline by 14% in the fourth quarter of 2015, with stock prices assumed to continue falling until the end of 2017, by a cumulative 21%. US long-term interest rates would initially increase by about 80 basis points, standing at about 130 basis points above current market expectations at the end of 2017. As a result, the EU's external demand, derived using the NiGEM model, would decrease by 6.3% by 2017, relative to the baseline.

This scenario translates into an overall deviation of real euro area GDP of 1.8% below the baseline level by the end of 2017. The real economic impact differs

considerably across countries (ranging from a -1.0% to -4.7% deviation from baseline levels by the end of 2017), depending, in particular, on their degree of openness and the strength of financial spillovers from the global markets.

Weak bank operating environment scenario

This scenario captures the risk of persistently weaker than anticipated domestic economic activity in many euro area countries, in an environment of negative headline inflation. To this end, the scenario involves country-specific negative shocks to aggregate demand in the form of an imposed slowdown with respect to the baseline for both private fixed investment and private consumption. The prices of oil and other commodities are assumed to remain well below the baseline scenario. While this would support real economic growth, lower commodity prices would also exert additional downward pressure on inflation, thereby increasing the real debt service burdens of the real economy. The resulting negative inflation would further reinforce the contraction of aggregate demand, as consumption and investment would be deferred in expectation of lower future prices.

Overall, real euro area GDP would stand 2.4% below the baseline level by the end of 2017. The real economic impact would differ considerably across euro area countries (ranging from a -1.4% to a -5.7% deviation from the baseline level by the end of 2017). Financial market parameters are assumed to evolve in line with the baseline projection in this scenario.

Sovereign and private debt crisis scenario

The sovereign and private debt crisis scenario envisages a renewed increase in euro area sovereign bond yields to elevated levels. The sovereign bond yield shocks have been calibrated at a 1% probability level for the aggregate euro area sovereign credit spreads.⁷³ However, these shocks may not be fully representative of future developments, as – over the medium term – the low yields of euro area sovereign bonds would be further supported by the Eurosystem's expanded asset purchase programme. The same simulation is used to infer the size of spillovers from bond markets to euro area stock markets.

Long-term government bond yields are assumed to increase by about 65 basis points above the current market expectations in the euro area in the fourth quarter of 2015. Sovereign bond yields would maintain a constant distance from the baseline over the horizon until the end of 2017. The dispersion of the long-term rate shocks across all euro area countries would be relatively pronounced, falling into the range

⁷³ To that end, a non-parametric simulation approach has been employed to simulate the joint forward distribution of ten-year bond yields and stock prices over a horizon of 60 business days. The underlying sample covers the period between 3 August 2012 and March 2015, with the starting point chosen so as to account for the significant regime change introduced by the ECB's announcement on Outright Monetary Transactions (OMTs) on 2 August 2012. The slope of national yield curves relative to the national ten-year benchmark bond yields (at the cut-off date of 31 December 2014) is used to transpose the simulated shock to maturities other than ten years.

from close to zero to 300 basis points. The resulting decline in euro area stock prices would be close to 6%, with impacts on specific countries ranging up to 15%.

In parallel, financing conditions in the euro area private non-financial sector would tighten owing to rising concerns about high private indebtedness in the euro area. Lenders would reduce the supply of loans which would increase financing costs. Overall, the aggregate stock of outstanding loans to the non-financial private sector would be reduced by about 5.4%.

The effect of these assumptions would be lower than in the previous scenarios, with euro area real GDP 1.7% below the baseline by the end of 2017. This effect is estimated using a DSGE model to translate the reduction in loan volumes into shocks to the main components of aggregate demand. In the next step, the STEs are used to combine the demand shocks with financial shocks to obtain the overall impact on GDP.⁷⁴

Shadow banking spillover scenario

The shadow banking spillover scenario considers the spillovers from the non-bank financial sector to the EU banking sector via the funding channel and lower asset valuations. It is assumed to be triggered by an abrupt drop in returns on investment in shadow banks, which would lead to heightened redemptions. That initial drop in the valuation of the shadow banking sector would correspond to the 1% probability level. Forced sales of assets by that sector would reduce asset prices and the supply of funding to the banking sector. Consequently, the bank funding costs would increase.

Although some of the assumed asset price shocks are similar in scope to those included in the global risk aversion scenario, the triggers and propagation mechanisms for the two scenarios differ.

The deterioration of bank funding conditions would affect the banking sector via three channels. First, the rollover of maturing wholesale funding at higher spreads would directly erode banks' net interest margins. Country-specific shocks to the wholesale funding cost are derived from the aforementioned statistical simulations, amounting to, on aggregate, about 40 basis points. Second, a shock to the three-month EURIBOR of about 80 basis points captures the risk of worsening conditions in money markets. Third, banks affected by funding constraints are assumed to increase the cost of extending credit to the private sector and to limit the supply thereof. To account for this effect, a set of country-specific shocks is applied to the

⁷⁴ Shocks to long-term government bond yields and stock prices are entered directly into STEs.

cost of corporate credit (via the user cost of capital) and to interest margins on loans to households (via the financial wealth of households).⁷⁵

The impact of these assumptions on GDP is moderate. Euro area real GDP would be 0.7% below its baseline level by the end of 2017.

Solvency results for euro area banking groups

The impact of the four scenarios on bank solvency is broken down into the direct impact on 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 the credit risk parameters, profits and risk-weighted assets. The indirect impact is related to the possibility that some of the euro area banks may default as a result of losses incurred through the direct impact, thereby amplifying the losses of other institutions. In the absence of detailed data on interbank exposures, publicly available information and dynamic network modelling are used to simulate instances where a financial institution can cause contagion effects throughout the financial system.⁷⁶ Having computed the effects of the various shocks on the above-mentioned balance sheet components, the overall impact is expressed in terms of changes to banks' CET1 capital ratios.

Under the baseline scenario, the capital position of the euro area banking groups is projected to weaken slightly. The aggregate CET1 capital ratio is projected to decrease from 11.9% in the second quarter of 2015 to 11.6% by the end of 2017 (see Chart 3.42). The positive retained earnings (contribution of 2.6 percentage points to the aggregate CET1 capital ratio) would be more than sufficient to absorb the flow of impairment charges on loans and other financial assets (contribution of -1.5 percentage points). However, the concurrent increase in risk-weighted assets and other effects – related mainly to the gradual phasing-in of the requirements set out in the Capital Requirements Directive IV (CRD IV) – would lead to an overall decline in the CET1 capital ratio.

⁷⁵ The country-specific shocks are calibrated taking into account the plausible further fragmentation of funding markets (and differentiation in credit conditions for the private sector) across EU Member States in order to reflect the differing risks of being severely affected by the adverse macroeconomic developments. The magnitudes of the shocks are derived from market and expert assessments of severe macroeconomic risks, under the assumption that wholesale and retail funding shocks would lead to a tightening of bank credit standards that, in turn, would weaken economic activity. The translation of funding shocks into the impact on GDP was carried out using a DSGE model, and the STE platform was used to calibrate the cost of capital and household financial wealth shocks which replicate the GDP impact derived from the DSGE model.

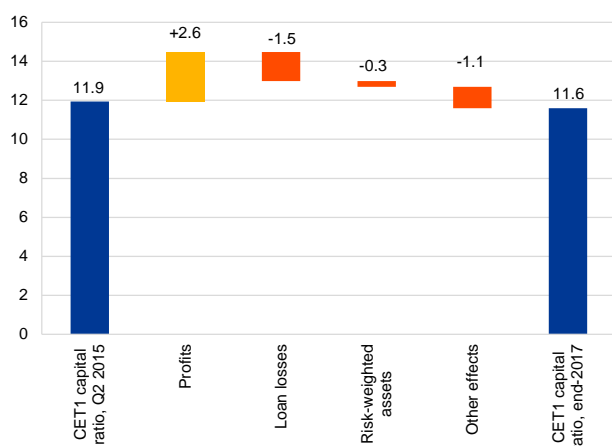
⁷⁶ The exercise is based on a sample of banks participating in the ECB's 2014 comprehensive assessment. Interbank exposure networks are generated randomly on the basis of banks' interbank placements and deposits, taking into account the geographical breakdown of banks' activities. Two limitations on the maximum exposure that is allowed vis-à-vis an individual counterparty are embedded into the network simulators, following the prescriptions in Article 395(1) of Regulation (EU) No 575/2013 and in Article 111(3) of Directive 2006/48/EC. First, an interbank exposure of each bank cannot exceed 25% of its regulatory capital. Second, the sum total of the interbank exposures of a bank, individually exceeding 10% of its capital, cannot be higher than 800% of its capital. For a more detailed description of the methodology, see Halaj, G. and Kok, C., "Assessing interbank contagion using simulated networks", *Working Paper Series*, No 1506, ECB, 2013, and *Computational Management Science*, Vol. 10(2), 2013, pp. 157-186.

Among the four scenarios, the sovereign and private debt crisis scenario would have the strongest adverse impact on euro area banks' solvency positions. It is followed closely by the global risk aversion scenario and the shadow banking spillover scenario. The impact on banks' solvency positions at the end of 2017 under the adverse scenarios is illustrated in Chart 3.43. The limited variability in the impact of the scenarios is, to some extent, driven by the significant contribution from other effects, mainly related – as under the baseline scenario – to the transition to the CRD IV capital regime. In addition, the methodological assumptions of this exercise are largely consistent with the EBA's EU-wide stress-test exercise, which implies that several items in the banks' profit and loss accounts are projected using historical values.⁷⁷

Chart 3.42
Under the baseline scenario, the euro area bank solvency position would slightly weaken

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

(percentage of CET1 capital ratio and percentage point contribution)

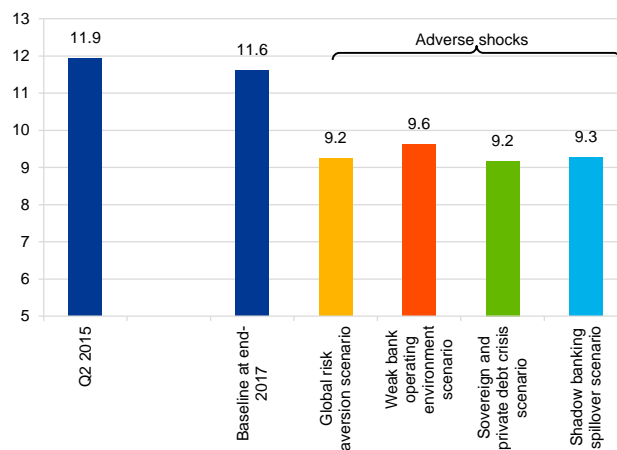


Sources: Individual institutions' financial reports, EBA, ECB and ECB calculations.

Chart 3.43
The sovereign and private debt crisis scenario would have the strongest impact on bank solvency

Average CET1 capital ratios of euro area banking groups under the baseline and adverse scenarios

(2015-2017; percentages, average of euro area banking groups)



Sources: Individual institutions' financial reports, EBA, ECB and ECB calculations.

The drop in the capital ratio in comparison to the result of the baseline scenario is explained mainly by the reduction of pre-provision profits, higher loan loss provisions, and an increase in risk-weighted assets. On aggregate, each of these three factors would contribute about 0.7 to 1.0 percentage point to the decrease in bank capital ratios projected under the adverse scenarios, compared with the baseline. Operating profits contribute between 1.5 and 1.8 percentage points to the change in the aggregate level of the CET1 capital ratio, significantly less than under the baseline scenario. Loan losses are projected to increase to between 2.2 and 2.3 percentage points of the CET1 capital ratio,⁷⁸ and an increase in risk-weighted

⁷⁷ For example, cumulative net trading income is projected as an average net trading income over the most recent five years, less two standard deviations of net trading income. Similarly, operating expenses are held constant over the projection horizon.

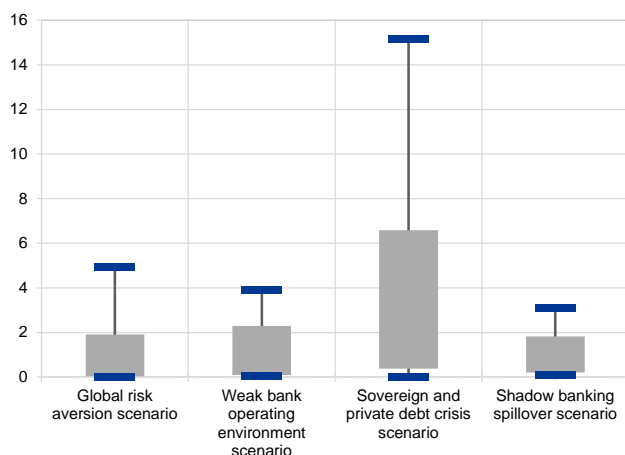
⁷⁸ This result is, to some extent, driven by the assumption in the credit risk benchmark methodology employed in the EBA stress-test exercise that the probabilities of default would not decrease over the stress-test horizon, even if the model result would suggest otherwise.

Chart 3.44

Interbank contagion moderately increases total losses

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: 10th-90th percentile range)



Sources: Individual institutions' financial reports, EBA, ECB and ECB calculations.

assets would reduce the CET1 capital ratio by between 1.0 and 1.2 percentage points.

The impact of interbank contagion on bank solvency is projected to be the strongest under the sovereign and private debt crisis scenario, albeit still moderate (see Chart 3.44). For the simulated networks with the strongest contagion effects, the system-wide CET1 capital ratio would fall by about 0.15 percentage point in some countries under the sovereign and private debt crisis scenario. Contagion effects would be more muted under the other three scenarios, in the worst case not greater than 0.05 percentage point of the aggregate capital ratio. Although the aggregate capital levels recorded under the four scenarios are similar, the group of vulnerable banks that fuel the propagation of interbank contagion differs, leading to these material differences in the contagion effects.

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 11 major euro area insurance groups up to the fourth quarter of 2014. It relies on a market-consistent approach to the quantification of risks, and is applied to insurance corporations, to both assets and liabilities. Due to the lack of sufficiently granular data, this impact assessment aims to spell out the main risks in economic terms, rather than trying to gauge the impact in terms of prudential solvency ratios.

The following market, credit and underwriting risks are assessed: (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;⁷⁹ and (v) an increase in loss rates on loan portfolios. This assessment uses the same four scenarios that were presented earlier in this section. **Table 3.1** summarises the key aspects of the scenarios used in this exercise.

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

⁷⁹ The lapse rate is defined as the proportion of contracts terminated prematurely by policyholders.

changes in the credit quality of loan portfolios. In this context, a number of simplifying assumptions had to be made for this exercise (see [Table 3.4](#)).⁸⁰

Table 3.4

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

Risk drivers	Technical 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 are computed for each interest-rate-sensitive asset and liability exposure. Relevant yield curves are 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 are derived from changes in the value of representative securities implied by the increase in interest rates under each shock and are uniformly applied across the sample of large euro area insurers. Valuation haircuts applied to government bond portfolios are estimated on the basis of representative euro area sovereign bonds across maturities. Haircuts for corporate bonds are derived from a widening of credit spreads.
Lapse risk	Lapse risk is 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 are linked to macroeconomic variables ⁸¹ . The unexpected component of lapses ⁸² leads to surrender payments ⁸³ . 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 is shocked on the basis of investment income earned at the beginning of the simulation horizon. All other assets are assumed to earn the initial investment income throughout the simulation horizon. Maturing fixed income assets are reinvested retaining the initial asset composition. The underwriting business component of operating profit is assumed to remain constant throughout the simulation horizon. It is assumed that there is no distribution of dividends.

Source: ECB.

The global risk aversion scenario is projected to have the strongest adverse impact on insurance companies (see [Chart 3.45](#)). It is followed by the shadow banking spillover scenario, with average total declines amounting, respectively, to 2.9% and 1.5% of total assets of euro area insurers.

Credit risk appears to be the most important driver of the decline in net asset values under all the considered scenarios except the weak growth scenario. Although the degree of vulnerability to the materialisation of macro-financial risks differs across individual insurance groups, the impact of a widening of credit spreads is similar across the three scenarios where a significant credit-related impact is observed, i.e. the global risk aversion, the shadow banking spillover, and the sovereign and private debt crisis scenarios. Indeed, under each of these three scenarios, credit risk implies a decline of about 1.5% in net asset values expressed as a percentage of total assets. This outcome is driven mainly by corporate credit risk.

The impact on insurers of the increase in reference interest rates largely depends on the change in the slope of the yield curve and on the nature of the maturity mismatch between companies' assets and liabilities. Under the global risk aversion scenario, the rise in interest rates, combined with a simultaneous flattening of the yield curve and a shorter average duration of insurance companies' assets with respect to the

⁸⁰ For a comprehensive explanation of the underlying assumptions, please refer to Section 3.2 of the May 2015 FSR.

⁸¹ 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) and from ECB calculations.

⁸² 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.

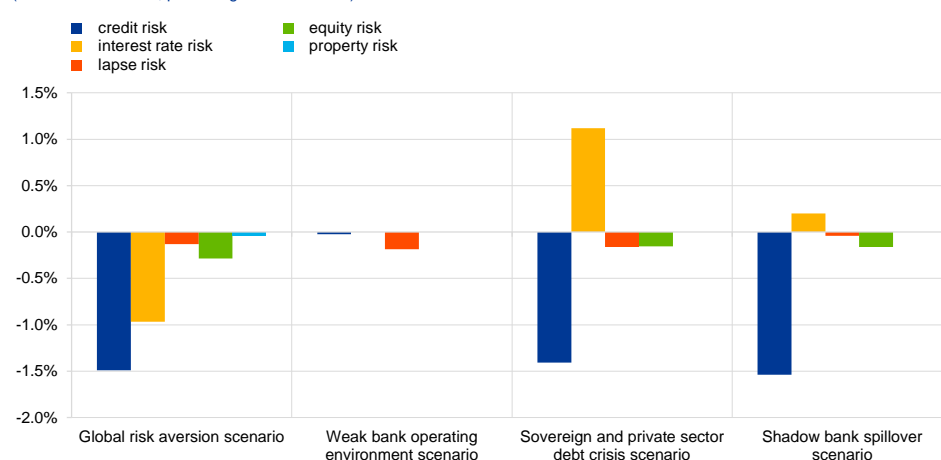
⁸³ It is assumed that 50% of the total amount represented by the extra lapse rates has to be paid (due to the existence of penalties in the contracts, which lower the insurers' risk).

duration of their liabilities, would lead to a decline in their net asset values as a percentage of total assets. Indeed, these factors would cause insurers' assets to decrease faster than their liabilities and, thus, would lead to a decline in their net asset value as a percentage of total assets. Instead, under the sovereign and private debt crisis scenario, the rise in interest rates combined with the steepening of the yield curve produces the opposite outcome, i.e. a positive effect on insurers' net asset value as a percentage of total assets that almost fully compensates for the adverse impact of marking sovereign and corporate debt securities to market.

Chart 3.45

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

(Q3 2015 – Q4 2017; percentage of total assets)



Sources: Individual institutions' financial reports and ECB calculations.

Variations in equity price losses would be moderate. The negative impact of the adverse equity price shocks would reach, at most, 0.3% of total assets under the global risk aversion scenario, and would be weaker under the other scenarios, reflecting the relative strength of equity price shocks.⁸⁴ Finally, lapse risk-related losses would be higher under the weak growth scenario, reflecting the lower real GDP growth exhibited by the euro area economy under this scenario and amounting to about 0.2% of total assets.

In addition to the scenarios considered here, which correspond to the main risks to financial stability in the euro area, euro area insurers would also be vulnerable to a low interest rate environment. This risk has a somewhat longer horizon than the horizon for the assessment made in this issue of the FSR. Special Feature B analyses in detail the impact of a low interest rate environment on euro area insurers. It concludes that, while the impact on individual firms may differ markedly depending on individual circumstances and business models, on aggregate, a protracted period of low interest rates may have an adverse material impact on the solvency of euro area insurers.

⁸⁴ Owing to data availability, gross equity exposures (gross of unit-linked exposures) were used and, consequently, the equity risk may be overestimated.

3.3 Continued progress in regulatory and macroprudential policy implementation

3.3.1 Macroprudential policy measures

This section considers the macroprudential measures that have been implemented or announced in euro area countries since May 2015. The measures introduced by the countries concerned can be broadly grouped into three categories: real estate measures, structural capital buffers and setting the counter-cyclical capital buffer rate.

Real estate measures

Real estate measures have been adopted with the aim of limiting undesirable developments in domestic property markets. Real estate typically represents a large proportion of banks' credit exposures, and of households' assets, thus making imbalances in this sector particularly important in terms of financial stability. In this regard, Lithuania amended the debt service-to-income (DSTI) limit; the German Financial Stability Committee (Ausschuss für Finanzstabilität) issued a recommendation to create a legal foundation for a set of macroprudential tools related to residential real estate; and the Dutch Financial Stability Committee issued a recommendation to continue the tightening of the loan-to-value (LTV) limit beyond 2018.

In May 2015 Lietuvos bankas decided to modify borrower-based macroprudential requirements. The existing DSTI requirement of 40% was deemed insufficient to prevent households from assuming excessive housing debt, as low interest rates and resulting small monthly loan repayments were leaving households vulnerable to a potential increase in predominantly floating lending rates. Against this background, an interest rate test was introduced in order to ensure that the DSTI ratio would not exceed 50% with an assumed 5% lending interest rate. In addition, the maximum loan term was reduced from 40 to 30 years, thereby further limiting the maximum possible loan amount. Finally, in order to allow more flexibility in loan provision and to avoid any potential negative impact on aggregate mortgage lending flows, credit institutions were allowed to apply a higher DSTI requirement of up to 60% for up to 5% of new loans (in terms of value) issued during a calendar year. These changes entered into force on 1 November 2015. They are considered to be of a precautionary nature and should not lead to material cross-border spillovers or leakages of lending to the non-bank sector.

In June 2015 the German Financial Stability Committee issued a recommendation to the German Federal Government on new macroprudential instruments for the real estate sector. It also recommended that the Federal Government initiate the creation of a legal foundation giving the Federal Financial Supervisory Authority (BaFin) the authority to impose restrictions on commercial lenders with regard to mortgage loans to build or acquire domestic residential real estate, such as caps on loan-to-value

ratios, an amortisation requirement, as well as caps on debt servicing ratios, debt service coverage ratios and debt-to-income ratios.

The Dutch Financial Stability Committee issued a recommendation to future Cabinets in May 2015 to continue lowering the LTV limit beyond 2018, reducing it by 1 percentage point per year until it reaches 90% in 2028. The measure currently in place aims to reduce the LTV limit by 1 percentage point per year, until it reaches 100% in 2018. The rationale behind the proposal is that a 100% LTV ratio is still very high by international standards, which might undermine confidence in the Dutch banking system in crisis times, potentially resulting in limited access to market funding.

Structural capital buffers based on the CRR/CRD IV

Since May 2015 a number of additional euro area countries have implemented structural buffers introduced by the Capital Requirements Regulation (CRR) and/or the Capital Requirements Directive (CRD IV). These measures aim to increase the resilience of systemically important banks, in order to reduce the “too big to fail” subsidy and effectively improve the stability of the whole financial system, as well as to mitigate structural, non-cyclical risks in the banking system. In this regard, Slovakia introduced the systemic risk buffer (SRB) and buffers for other systemically important institutions (O-SIIs); Austria issued a recommendation to introduce the SRB and O-SII buffers; Germany implemented the buffer for global systemically important institutions (G-SIIs); and Belgium and Finland implemented the O-SII buffer for a set of banks. Following the EBA’s guidelines on the criteria for identifying O-SIIs, all EU Member States are expected to publish a list of the institutions designated as O-SIIs by 1 January 2016 at the latest.⁸⁵

Table 3.5
Systemic risk buffers and buffers for other systemically important institutions recommended for Slovakian banks (as a percentage of risk-weighted assets)

Bank	1 January 2016	1 January 2017	1 January 2018
Všeobecná úverová banka	1% O-SII	2% O-SII	2% O-SII + 1% SRB
Slovenská sporiteľňa	1% O-SII	2% O-SII	2% O-SII + 1% SRB
Tatra banka	1% O-SII	1.5% O-SII + 0.5% SRB	1.5% O-SII + 1% SRB
Československá obchodná banka	1% O-SII	2% O-SII	2% O-SII
Poštová banka	1% O-SII	2% O-SII	2% O-SII

Source: Národná banka Slovenska.

In May 2015 Národná banka Slovenska introduced a combination of O-SII and systemic risk buffer requirements for the five largest banks. The buffers aim to increase the resilience of systemic institutions. The combination of O-SII buffers and the SRB was introduced because the maximum O-SII buffer rate of 2% was

⁸⁵ Guidelines on the criteria to determine the conditions of application of Article 131(3) of Directive 2013/36/EU (CRD) in relation to the assessment of other systemically important institutions (O-SIIs) (EBA/GL/2014/10).

considered insufficient for some banks.⁸⁶ The buffer requirements will be phased in from 1 January 2016 until 1 January 2018.

In June 2015 the Austrian Financial Market Stability Board (Finanzmarktstabilitätsgremium) recommended introducing SRBs and O-SII buffers to the Austrian Financial Market Authority. This recommendation was then amended in September. The final recommendation was that an SRB requirement (1% or 2%) be introduced for 12 institutions and that the buffer requirements become applicable from 1 January 2016, with a transitional period until January 2019 for those banks that are directly supervised by the ECB. If both buffer requirements are applicable, banks must meet the higher of the SRB and the O-SII buffer.

Table 3.6
Systemic risk buffers and buffers for other systemically important institutions recommended for Austrian banks (as a percentage of risk-weighted assets)

Bank	1 January 2016	1 January 2017	1 January 2018	1 January 2019
Erste Group Bank	0.25%	0.50%	1.00%	2.00%
Raiffeisen Zentralbank	0.25%	0.50%	1.00%	2.00%
Raiffeisen Bank International	0.25%	0.50%	1.00%	2.00%
UniCredit Bank Austria	0.25%	0.50%	1.00%	2.00%
Raiffeisenlandesbank Oberösterreich	0.25%	0.50%	1.00%	1.00%
Raiffeisen-Holding Niederösterreich-Wien	0.25%	0.50%	1.00%	1.00%
BAWAG P.S.K.	0.25%	0.50%	1.00%	1.00%
Niederösterreichische Landesbank-Hypothekenbank	1.00%	1.00%	1.00%	1.00%
Vorarlberger Landes- und Hypothekenbank	1.00%	1.00%	1.00%	1.00%
Hypo Tirol Bank	1.00%	1.00%	1.00%	1.00%
Landesbank Oberösterreich	1.00%	1.00%	1.00%	1.00%
Sberbank	0.25%	0.50%	1.00%	1.00%

Source: Finanzmarktstabilitätsgremium (FMSG).

In May 2015 BaFin decided to classify Deutsche Bank AG as a G-SII in Germany and apply a capital surcharge of 2.0%, subject to a three-year phase-in period beginning on 1 January 2016. The additional common equity Tier 1 requirement will be increased by 0.5 percentage point each year, until the buffer is fully activated in January 2019. The measure aims to reduce the likelihood of failure and is seen as an important measure to reduce the negative externalities for Germany, the global economy and financial market stability were Deutsche Bank AG to default.

In July 2015 the Finnish Financial Supervisory Authority (Finanssivalvonta) decided to classify four financial institutions as O-SIIs and made these institutions subject to the O-SII buffer requirement. The new capital requirements must be fulfilled as of 7 January 2016. The capital adequacy in the newly designated O-SIIs is sufficiently high that they have not needed to adjust their capital structures to meet the requirement.

⁸⁶ See Article 131(15) of CRD IV: "Notwithstanding paragraph 14, where the systemic risk buffer applies to all exposures located in the Member State that sets that buffer to address the macroprudential risk of that Member State, but does not apply to exposures outside the Member State, that systemic risk buffer shall be cumulative with the O-SII or G-SII buffer that is applied in accordance with this Article".

Table 3.7**Buffer for other systemically important institutions in Finland**

Bank	7 January 2016
Nordea Pankki Suomi Oyj	2.0%
OP Ryhmä	2.0%
Danske Bank Oyj	0.5%
Kuntarahoitus Oyj	0.5%

Source: Finanssivalvonta.

In October 2015 the Nationale Bank van België/Banque Nationale de Belgique decided to set O-SII buffers for eight Belgian banks. The decision was motivated by the high economic and social costs that would be incurred by the failure of any of those institutions. The Belgian O-SIIs, identified in accordance with the EBA's guidelines, have been prescribed buffers of 1.5% and 0.75%. The O-SII buffer requirements will become applicable on 1 January 2016 and will be phased in over a three-year period.

Table 3.8**Buffers for other systemically important institutions in Belgium (as a percentage of risk-weighted assets)**

Bank	1 January 2016	1 January 2017	1 January 2018
BNPP Fortis	0.5%	1%	1.5%
KBC Group	0.5%	1%	1.5%
Belfius Bank	0.5%	1%	1.5%
ING Belgium	0.5%	1%	1.5%
Euroclear	0.25%	0.5%	0.75%
Axa Bank Europe	0.25%	0.5%	0.75%
The Bank of New York Mellon	0.25%	0.5%	0.75%
Argenta	0.25%	0.5%	0.75%

Source: Nationale Bank van België/Banque Nationale de Belgique.

Counter-cyclical capital buffer

Some euro area countries (Finland, Latvia, Lithuania and Slovakia) have already implemented counter-cyclical capital buffers, ahead of the CRD requirement to implement counter-cyclical buffers from the beginning of 2016. However, given the subdued credit growth, which results in negative or low credit-to-GDP gaps, the buffer rate has been set at 0% in all of these countries.

In September 2015 the Austrian Financial Market Stability Board also issued a recommendation to set the counter-cyclical buffer rate at 0% from January 2016.

3.3.2 Regulatory framework

This section provides an overview of a number of regulatory initiatives in the banking, insurance and market spheres that are of primary importance for enhancing financial stability in the EU. Importantly, in addition to strengthening the resilience

and loss-absorption capacity of the whole financial system, the finalisation of the ongoing initiatives will significantly reduce the regulatory uncertainty regarding capital and liquidity rules for banks and other financial institutions as well.

Regulatory initiatives for the banking sector

A key element of the prudential standards for credit institutions and investment firms in the EU is the Capital Requirements Regulation/Capital Requirements Directive IV (CRR/CRD IV) package. The CRR and CRD IV play a key role in strengthening the resilience of the EU banking sector. Empirical evidence clearly indicates that a substantial capital increase above previous levels was necessary and desirable. The benefits of robust capital requirements include: reducing bank moral hazard and thereby improving the quality of lending decisions; increasing banks' ability to lend through the cycle; and insulating taxpayers and society from having to bear banks' unexpected losses. The CRR/CRD IV package was an important step forward in correcting the suboptimal capital regulation that existed before the crisis, and thus also in ensuring that the aforementioned benefits are reaped. It is important that the significant long-run welfare gains of strong capital requirements and the role that a healthy and resilient banking system plays in facilitating growth over the whole financial cycle are appropriately acknowledged in future policy developments.

At this early stage following the implementation of the CRR/CRD IV rules, it is difficult to make firm conclusions as to their impact on the financing of the real economy. This is especially true given the other significant influences on banks' capital levels, notably government intervention, supervisory action and market pressures that applied during this time.

Empirical work undertaken by the ECB on the impact of higher bank capital requirements on the euro area economy identifies some adverse effects on loan supply in the short run, though it appears to be relatively limited in terms of magnitude from an economic perspective. This finding holds both at the country and euro area level for different portfolio segments. The analysis finds that the impact of the CRR/CRD IV was stronger for less capitalised banks and for banks with lower average risk weights. Banks with higher non-performing loan ratios (i.e. weak credit portfolios) have also been more strongly affected by the CRR/CRD IV. This said, both the theoretical and empirical work suggest that net positive effects will prevail in the long term – with the adverse loan supply effects concentrated in a short-term transitional phase, as banks adjust to the new requirements.

The Basel Committee on Banking Supervision (BCBS) is currently undertaking a strategic review of the Basel capital framework in response to concerns about excessive variation in capital requirements across banks and jurisdictions. In this regard, a dedicated task force has been set up to develop an approach that would limit the use of banks' internal models to a set of portfolios designated by the BCBS as being suitable for modelling. This approach would apply additional restrictions to the modelling of those portfolios, including by eliminating the modelling of particular parameters. It would also require that regulatory capital for all remaining portfolios be

calculated using a method other than an internal model. The objective of the review is to improve the balance between simplicity, comparability and risk sensitivity, as well as to better meet the Committee's objectives of adequacy, robustness and consistency in implementation.

In parallel, work is ongoing to reform the standardised approach for credit risk as well. This reform will seek to reduce the mechanistic reliance on external ratings in the standardised approach, while also seeking to ensure standardised risk weights are risk sensitive and accurate. The package of reforms will allow the calibration of risk weights across asset classes to reflect the experience of the financial crisis. It is expected that the BCBS will also use the updated standardised approach as a basis to provide a simple floor for banks' capital requirements using internal models. Together, these measures should ensure that the risk-weighted capital framework is robust and credible for all banks.

With regard to the implementation of the international framework for **liquidity regulation, the liquidity coverage ratio** entered into force in October 2015, with a starting level of 60%, and will be phased in gradually to reach 100% in 2018.⁸⁷ The European Banking Authority (EBA) is currently finalising the remaining issues related to the guidelines on the disclosure of the liquidity coverage ratio. On the basis of data available at the end of 2014 under the EBA monitoring exercise, the majority of banks already have a liquidity coverage ratio above 100% and only a few banks still needed to improve their ratio to meet the 60% requirement.⁸⁸ As regards the net stable funding ratio (NSFR), the BCBS finalised the work on the calibration of the NSFR in October 2014. The BCBS is conducting some additional quantitative analysis in view of the ongoing implementation of regulatory requirements for the margining of derivatives. In the EU, the EBA is conducting a comprehensive impact and calibration assessment of the NSFR, which it will submit to the European Commission by the end of 2015. The impact assessment will allow the Commission to develop a legislative proposal on how to ensure that credit institutions use stable sources of funding.⁸⁹ In this context, the EBA received a call for advice from the Commission in August 2015, asking it to conduct further analysis on the NSFR and in particular with regard to the need for proportionate implementation taking into account the impact of the NSFR on different business models.⁹⁰ Based on the EBA monitoring exercise, reporting banks have continuously increased the level of the NSFR since 2011, reducing the shortfall in stable funding to reach the 100% ratio. The majority of reporting banks have already achieved an NSFR of 100%.

Work on the **leverage ratio** is progressing on various fronts. The BCBS is currently working on the final aspects of the leverage ratio and will review the calibration by next year. A minimum Tier 1 leverage ratio of 3% is currently being tested until 1

⁸⁷ Under the Basel agreement, the liquidity coverage ratio would need to reach 100% as of 1 January 2019. However, the European Commission may delay full implementation by one year, subject to a report by the EBA in June 2016 (see Article 461 of the CRR).

⁸⁸ *CRD IV–CRR/Basel III monitoring exercise report*, EBA, September 2015.

⁸⁹ See Article 510 of the CRR.

⁹⁰ See <https://www.eba.europa.eu/-/eba-to-conduct-further-analysis-on-net-stable-funding-requirements-and-leverage-ratio>

January 2017, by which point any final adjustments must be made to the framework with a view to migrating to a Pillar 1 treatment on 1 January 2018. At the European level, the EBA has started work on its report on the impact and calibration of the leverage ratio. The report will provide an impact assessment for the leverage ratio, taking into account potential behavioural implications of a leverage ratio requirement, its interaction with other prudential requirements and cyclicalities. The report will also consider different business models and include an assessment on the question as to whether the leverage ratio should differ for institutions following different business models. Based on the results of this report, the European Commission will submit a report on the impact and effectiveness of the leverage ratio to the European Parliament and the Council by the end of 2016. If introduced as a binding requirement in Pillar 1 and calibrated correctly, the leverage ratio will be a useful complementary measure reinforcing risk-based capital requirements. While concern has been raised that the risk insensitivity of the leverage ratio may induce increased risk-taking, the special feature in this issue of the FSR entitled “The leverage ratio, risk-taking and bank stability” presents theoretical and empirical evidence to show that any additional risk-taking by EU banks is likely to be limited and the effects should be more than outweighed by the increase in loss-absorbing capacity, thus resulting in more stable banks.

With regard to **securitisation**, the work to make the securitisation framework more risk sensitive has reached a major milestone, following the European Commission’s publication of two proposals at the end of September: (i) one for an umbrella regulation creating the regulatory framework under which simple, transparent and standardised (STS) securitisations can be issued; and (ii) one for a CRR update that implements both the Basel 2014 securitisation and the STS frameworks. The Commission’s proposals are based on an EBA recommendation on the prudential treatment of STS securitisations in banking regulation, as well as on the BCBS/IOSCO work on the identification of simple, transparent and comparable (STC) securitisations which represent a key building block of the capital markets union. The Commission’s proposal aims at striking the right balance between the need to revive the European securitisation markets and the need to preserve a prudent regulatory framework. By distinguishing between simple and transparent securitisations and other structures, and by applying a differentiated capital treatment based on the fulfilment of a number of criteria that include structural and governance requirements, the proposed framework has the potential to also enhance the robustness of the European securitisation markets by stimulating the issuance of simple and transparent instruments.

Internationally, the work on simple and transparent securitisations has also progressed significantly. In November the BCBS published a consultation paper, with the consultation running until February 2016, on how best to incorporate STC securitisations into the bank capital framework.

Furthermore, the BCBS is working on a review of the regulatory framework for **sovereign exposures**. The sources and channels of sovereign risk can pose significant challenges to fiscal and monetary policy-makers and financial regulators alike. These risks have once again been brought to the fore by the recent financial

crisis. The ECB supports the potential revision of the regulatory framework by the BCBS in a careful, holistic and gradual manner, while being mindful that the work should be coordinated at the global level so that policies are applied in a homogeneous way across jurisdictions. The work should also assess the broader issues related to the role of sovereign debt markets and the impact that potential changes in the regulatory framework may have on this role and on certain market segments. Potential policies currently under discussion at the BCBS include – in addition to the option of leaving the regulatory framework unchanged – the options of stricter capital requirements for sovereign exposures, diversification requirements and enhanced Pillar 2 and enhanced Pillar 3 disclosure requirements. Given the widespread reach and impact of any policy option, these policy options should be carefully assessed.

Table 3.9
Selected new legislation and proposals for legislative provisions for the banking sector in the EU

Initiative	Description	Current status
Bank Recovery and Resolution Directive (BRRD)	The BRRD sets out a framework for the resolution of credit institutions and investment firms, with harmonised tools and powers relating to prevention, early intervention and resolution for all EU Member States.	The BRRD should have been transposed into national legislation by 31 December 2014. However, several Member States have still not completed the transposition. Notably, the bail-in provisions will also be applicable as of 1 January 2016.
Deposit Guarantee Scheme Directive (DGS Directive)	The DGS Directive deals mainly with the harmonisation and simplification of rules and criteria applicable to deposit guarantees, a faster pay-out, and improved financing of schemes for all EU Member States.	The DGS Directive should have been transposed into national legislation by 3 July 2015. However, several Member States have still not completed the transposition.
Single Resolution Mechanism Regulation (SRM Regulation)	The SRM Regulation establishes a single system, with a Single Resolution Board (SRB) and a Single Resolution Fund (SRF), for an efficient and harmonised resolution of banks within the SSM. The SRM is governed by two main legal texts: the SRM Regulation, which covers the main aspects of the mechanism, and an Intergovernmental Agreement (IGA) relating to some specific aspects of the SRF.	The SRM Regulation came into force on 1 January 2015. The SRB has been set up and is operational. However, most resolution functions (including the SRF, subject to entry into force of the IGA) will apply as from 1 January 2016. The IGA was signed by all Member States (except the United Kingdom and Sweden) on 21 May 2014. However, some Member States still need to have it ratified by the national parliament. As the operations of the SRB rely to some extent on the national implementation of the BRRD, any delay in the BRRD's transposition could affect the SRB's functioning.
Regulation on structural measures	The proposed regulation would introduce restrictions on certain activities and sets out rules on structural separation, with the aim of improving the resilience of EU credit institutions.	The European Commission's proposal was published on 29 January 2014. Discussions are ongoing in the European Parliament and the EU Council. The ECB's legal opinion on the proposal was published on 19 November 2014.

The **Bank Recovery and Resolution Directive** (BRRD) establishes common and efficient tools and powers for managing failures of credit institutions and investment firms in an orderly manner throughout the EU. In particular, the BRRD introduces the bail-in tool⁹¹, which will be of paramount importance for shifting the cost of bank failures from the taxpayer to, first and foremost, the shareholders and creditors of the failing bank.

One key reform on the regulatory agenda is addressing the too-big-to-fail problem of global systemically important banks (G-SIBs). On 9 November, the Financial Stability Board (FSB) issued the final total loss-absorbing capacity (TLAC) standard for G-SIBs. The new TLAC standard will help increase the resolvability of G-SIBs, so that authorities can implement an orderly resolution when a G-SIB is failing, which minimises the impact on financial stability, maintains the continuity of critical functions, and avoids exposing public funds to loss. The TLAC standard defines a minimum requirement for the instruments and liabilities that should be readily

⁹¹ Member States need to apply the bail-in tool as of 1 January 2016 at the latest.

available for bail-in within resolution at G-SIBs, but does not limit authorities' powers under the applicable resolution law to expose other liabilities to loss through bail-in or the application of other resolution tools.

The TLAC standard involves a two-stage phase-in of the requirement. As of 1 January 2019, G-SIBs must have TLAC of an amount corresponding to at least 16% of risk-weighted assets and 6% of the Basel III leverage ratio denominator, whichever is the highest. As from 1 January 2022, they must have TLAC of an amount corresponding to at least 18% of risk-weighted assets and 6.75% of the Basel III leverage ratio denominator, whichever is the highest.⁹² Given that the TLAC standard is designed as a minimum requirement to ensure a global level playing field for large and internationally active banks, the relevant authorities have the option to increase the TLAC requirement on a case-by-case basis, whenever deemed necessary to achieve orderly resolution.

In the EU, a requirement for own funds and eligible liabilities (MREL) has been set out in the BRRD.⁹³ While the TLAC requirement will only apply to G-SIBs, MREL is applicable to all banks. Although some features of MREL and the TLAC requirement differ, the introduction of the TLAC requirement would, in the ECB's view, not be inconsistent with the provisions of the BRRD. The BRRD allows the introduction of a harmonised minimum requirement that takes account of, inter alia, international standards. It will thus be possible to address differences between the TLAC requirement and MREL via the BRRD review clause in 2016. This will also help to ensure consistency and reduce the regulatory uncertainty regarding bail-in requirements and minimum requirements for loss-absorbing capacity in banks.

Significant progress has been made in the setting-up of a banking union in Europe. The first pillar of the banking union, the **Single Supervisory Mechanism** (SSM) became operational on 4 November 2014, while the second pillar of the banking union, the **Single Resolution Mechanism** (SRM), became operational on 1 January 2015. In this context, the Single Resolution Board (SRB) has been established and has started to work on the elaboration of resolution plans and related tasks. It should be noted, however, that most of the provisions in the SRM Regulation only apply as from 1 January 2016. During the course of 2015 the ECB and the SRB have cooperated on a number of issues, and one ECB Executive Board member, the Vice-Chair of the Supervisory Board, has also been designated by the ECB to be its permanent observer at the meetings of the SRB.

⁹² G-SIBs headquartered in emerging market economies will get a longer conformity period. These G-SIBs will be required to meet the 16% RWA and 6% Basel III leverage ratio denominator no later than 1 January 2025, and the 18% RWA and 6.75% Basel III leverage ratio denominator no later than 1 January 2028. This conformity period will be accelerated if, in the next five years, corporate debt markets in these economies reach 55% of the emerging market economy's GDP.

⁹³ Under the BRRD, Member States are required to ensure that institutions meet an MREL for bail-ins. The main differences between the TLAC proposal and MREL were described in the November 2014 FSR.

Regulatory initiatives for financial markets and infrastructures

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

The **ECB Regulation on oversight requirements for systemically important payment systems** entered into force on 12 August 2014. Four payment systems are subject to this Regulation: TARGET2 (operated by the Eurosystem), EURO1 and STEP2-T (both operated by EBA Clearing), and CORE (FR) (operated by STET). These systemically important payment systems had to comply with the requirements of the Regulation by August 2015. All of the systems are currently being assessed against the Regulation.

Table 3.10

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

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 systemically important payment systems (SIPs) face, together with sound governance arrangements, objective and open access, as well as the efficiency and effectiveness of SIPs.	The Regulation entered into force on 12 August 2014.
European Market Infrastructure Regulation (EMIR)	The aim of the Regulation is to bring more safety and transparency to the over-the-counter derivatives market and to set out rules for, inter alia, central counterparties and trade repositories.	The Regulation entered into force on 16 August 2012.
Regulation on improving the safety and efficiency of securities settlement in the EU and on central securities depositories (CSD Regulation)	The Regulation introduces an obligation of dematerialisation for most securities, harmonised settlement periods for most transactions in such securities, settlement discipline measures and common rules for central securities depositories.	The Regulation entered into force on 17 September 2014. Implementation and drafting of technical standards is in progress.
Markets in Financial Instruments Directive and Regulation (MiFID II/MiFIR)	The legislation applies to investment firms, market operators and services providing post-trade transparency information in the EU. It is set out in two pieces of legislation: a directly applicable regulation dealing, inter alia, with transparency and access to trading venues, and a directive governing the authorisation and the organisation of trading venues and investor protection.	Directive 2014/65/EU on markets in financial instruments (MiFID II) and Regulation (EU) No 600/2014 on markets in financial instruments (MiFIR) were both published in the Official Journal of the EU on 12 June 2014.
Proposal for a Money Market Fund Regulation (MMF Regulation)	The proposal addresses the systemic risks posed by this type of investment entity by introducing new rules aimed at strengthening their liquidity profile and stability. It also sets out provisions that seek, inter alia, to enhance their management and transparency, as well as to standardise supervisory reporting obligations.	The European Commission's proposal was published in September 2013. The ECON Committee of the European Parliament adopted its position on 26 February, while discussions are still ongoing in the Council. The ECB adopted its position on 21 May 2014.
Proposal for a Regulation on reporting and transparency of securities financing transactions	The proposal contains measures aimed at increasing the transparency of securities lending and repurchase agreements through the obligation to report all transactions to a central database. This seeks to facilitate regular supervision and to improve transparency towards investors and on re-hypothecation arrangements.	The European Commission's draft proposal was published in January 2014. The ECB expressed its support, in principle, for the proposal in its legal opinion of 24 June 2014. The EU Council adopted its general approach on 14 November 2014, and the ECON Committee of the European Parliament adopted its report on 24 March 2015. A political agreement was reached in June 2015.

In the aftermath of the financial crisis, the leaders of the G20 issued a declaration at the 2009 Pittsburgh meeting that called for improvements to over-the-counter (OTC) derivatives markets. One of the EU's main legislative initiatives to implement the G20 mandate is the **European Market Infrastructure Regulation (EMIR)**, the implementation of which has continued to make progress. In September 2015 the ECB published its response to the Commission's consultation on the review of EMIR. The ECB proposes amending the Regulation in order to fully recognise the role taken up by the ECB in the field of banking supervision, to address issues related to the quality and availability of derivatives data, and to further enhance the requirements for mitigating pro-cyclicality. Moreover, the ECB supports the inclusion of macroprudential intervention tools in EMIR, in order to prevent the build-up of systemic risk resulting, in particular, from excessive leverage, and to further limit the pro-cyclicality of margins and haircuts.

The **Regulation on improving securities settlement in the EU and on central securities depositories** (the CSD Regulation) entered into force on 17 September 2014. The aim of the Regulation is to increase the safety and efficiency of securities settlement and settlement infrastructures (i.e. central securities depositories) in the EU. It harmonised settlement periods for most transactions in such securities as from 1 January 2015 (T+2) and introduced, inter alia, settlement discipline measures and common rules for CSDs. On 28 September the European Securities and Markets Authority (ESMA) submitted the technical standards relating to CSD requirements and internalised settlement to the Commission. The technical standards relating to settlement discipline measures have not yet been finalised as discussions on the buy-in process are ongoing.

The EBA is in the process of finalising its technical standards. Following submission, the Commission has three months for approval. Once endorsed by the Commission, both the European Parliament and the Council have an objection period.

In the field of **shadow banking**, the FSB has continued with its work on the deliverables laid out in the roadmap on “Transforming shadow banking into resilient market-based financing”, published on 14 November 2014.⁹⁴

Over the last six months, the FSB has been working on the identification of risks associated with market liquidity and asset management activities in the current market conditions, as well as potential structural sources of vulnerability associated with asset management activities. On the basis of this work, the FSB and IOSCO will develop policy recommendations, where necessary, in the first half of 2016. The ECB actively supports this work, given the growing importance of this part of the financial system and the need to extend the regulatory toolkit to mitigate risks to stability in other parts of the financial system.

Regulatory initiatives for the insurance sector

The Solvency II Directive will come into force in January 2016, marking a major change in the regulation of insurance firms in the European Economic Area. With the publication of the Implementing Technical Standards (ITSs) and Guidelines on Solvency II, the European Insurance and Occupational Pensions Authority (EIOPA) has ensured the timely implementation of Solvency II. To develop the Solvency II framework further, EIOPA advised⁹⁵ the European Commission to create a new asset class for high-quality infrastructure investments. Furthermore, the European

⁹⁴ See the FSB’s press release of 14 November 2014 (available at: <http://www.financialstabilityboard.org/2014/11/progress-report-on-transforming-shadow-banking-into-resilient-market-based-financing/>).

⁹⁵ See the Final Report on Consultation Paper No 15/004 on the Call for Advice from the European Commission on the identification and calibration of infrastructure investment risk categories, 29 September 2015 (available at: <https://eiopa.europa.eu/Publications/Consultations/EIOPA-BoS-15-223%20Final%20Report%20Advice%20infrastructure.pdf>).

Commission announced⁹⁶ that it will change the Solvency II Delegated Regulation regarding the treatment of securitisations once the Securitisation Regulation has been adopted.

At the international level, the International Association of Insurance Supervisors (IAIS) has developed a higher loss absorbency (HLA) requirement for global systemically important insurers (G-SIIs)⁹⁷, which will be applied as from 2019. The IAIS will make further refinements to the HLA if the outcome of the public consultations on the G-SII assessment methodology and the definitions of non-traditional and non-insurance activities (NTNIs) shows them to be necessary. The final goal is to develop risk-based, group-wide, global insurance capital standards.

Table 3.11

Selected legislative proposals for the insurance sector in the EU

Initiative	Description	Current status
Solvency II Directive/Omnibus II Directive	The Solvency II Directive is the framework directive that aims to harmonise the different regulatory regimes for insurance corporations in the European Economic Area. Solvency II includes capital requirements, supervision principles and disclosure requirements. The Omnibus II Directive aligns the Solvency II Directive with the legislative methods introduced by the Lisbon Treaty, incorporates new supervisory measures given to EIOPA and makes technical modifications.	The Solvency II Directive was adopted by the EU Council and the European Parliament in November 2009. It is now scheduled to come into effect on 1 January 2016. The Delegated Act on Solvency II was published in the Official Journal of the EU on 17 January 2015. A first set of Implementing Technical Standards (ITSs) and Guidelines on approval processes was published in February 2015. The second set of ITSs on Pillar 1 (quantitative basis), Pillar 2 (qualitative requirements), Pillar 3 (enhanced reporting and disclosure) and supervisory transparency as well as Guidelines relevant for Pillar 2 and Pillar 3 was published in July 2015.

Other initiatives

The European Commission published its action plan on a **capital markets union** (CMU) on 30 September following the publication of a consultation to which the Eurosystem contributed on 21 May 2015. CMU has the potential to complement banking union and strengthen Economic and Monetary Union by improving cross-border risk-sharing and making the financial system more resilient. CMU will also support European growth by diversifying sources of funding and increasing companies' access to financing. In general, however, support for SMEs and banks' ability to contribute to the financing of the economy should not be accomplished at the expense of watering down the robust regulatory framework resulting from post-crisis reforms.

The ECB welcomes the early actions which accompany the action plan, notably the proposed European framework for securitisation, which also includes differentiated prudential treatment for simple, transparent and standardised (STS) securitisation, including reduced bank capital charges.

⁹⁶ See the Proposal for a Regulation of the European Parliament and of the Council laying down common rules on securitisation and creating a European framework for simple, transparent and standardised securitisation and amending Directives 2009/65/EC, 2009/138/EC, 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012, 30 September 2015 (available at: http://ec.europa.eu/finance/securities/docs/securitisation/com-2015-472_en.pdf).

⁹⁷ See the IAIS press release of 5 October 2015 (available at: <http://iaisweb.org/index.cfm?event=getPage&nodeId=25295>).

However, a long-term vision accompanied by an ambitious agenda for further action is necessary in order to achieve the final goal of CMU. This was the view taken by the Eurosystem in its contribution to the Commission's Green Paper on CMU⁹⁸, where it signalled the importance of achieving 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 these markets.

Moreover, the ECB supports the Commission's assessment that there is a need to review the macroprudential framework to cater for potential financial stability effects and needs resulting from CMU. Better data collection, increased coordination among macroprudential authorities and an enhanced toolkit to deal with the build-up of risks in market-based activities and entities outside the regulated banking sector should form part of the CMU agenda. This requires a wider regulatory framework that also captures systemically important non-banks.

In sum, achieving CMU will require a combination of early "quick wins" to maintain momentum as well as sustained efforts over a number of years in a wide range of areas which are key for the functioning of capital markets. The ECB will remain engaged in the next steps of the process.

⁹⁸ See *Building a Capital Markets Union – Eurosystem contribution to the European Commission's Green Paper, 2015* (available at: http://www.ecb.europa.eu/pub/pdf/other/150521_eurosystem_contribution_to_green_paper_-_building_a_cmuen.pdf).