



3 EURO AREA FINANCIAL INSTITUTIONS

Financial institutions in the euro area continue to be confronted with significant challenges, mainly related to the weak economic environment, which has dampened profitability and increased credit risks.

*The average **financial performance** of large and complex banking groups (LCBGs) in the euro area has remained muted and the earnings outlook remains subdued. Euro area insurers recorded more stable profitability, owing both to a good full-year underwriting result and strengthening investment income, and analysts expect stable earnings also for 2013.*

*At the same time, euro area LCBGs' **solvency** positions have continued to improve – resulting from both rising core Tier 1 capital and reductions in risk-weighted assets – and large euro area insurers' capital buffers still include a reasonable amount of shock-absorbing capacity, even if healthy capital positions partly also reflect accounting effects. Steady improvements in the solvency positions of euro area financial institutions, along with rising regulatory capital ratios, should provide a more solid buffer against possible losses and a more sustainable basis for profitability. However, the conditions and solvency positions of euro area financial institutions remain uneven, with significant vulnerabilities remaining in particular in some countries' banking sectors, where further progress in balance sheet repair is required.*

*The **risk outlook** for banks and insurers is mainly being influenced by the weakening macroeconomic backdrop, which is particularly affecting customers in stressed countries. Faced with the prospect of further deterioration in asset quality, some banks may engage in forbearance and delay loss recognition. While such forbearance may help debtors facing temporary difficulties, it could delay the clean-up of banks' balance sheets and might even constrain lending to more productive borrowers. In contrast with a deteriorating credit risk outlook, bank funding stresses continued to abate in early 2013 and, despite more volatility in funding markets later on, banks continued to strengthen their funding profile by moving further towards deposit-based funding. Despite these positive developments, funding challenges remain for a number of banks, not least due to the somewhat reduced but still significant fragmentation of bank funding markets. The most important risks for insurers in the short term emanate from potential volatility in government and corporate bond markets, which could have an impact on balance sheet valuations. At the same time, some medium-term issues require monitoring, including the low-yield environment.*

***Scenario-based analysis** suggests that a materialisation of key risks (including renewed sovereign tensions, reduced profitability, funding stress and a reassessment of global risk premia) could have significant implications for the banking and insurance sectors, as well as for the wider euro area economy. The estimated impact, however, is likely to be mitigated by the ongoing bank recapitalisation processes, by the potential for further progress on policy reform and by the effects of exceptional ECB policy measures on wholesale funding constraints.*

*Last but not least, the **regulatory framework** continued to be overhauled both at the EU level and globally during the first half of 2013. Of particular importance in the euro area are the establishment of the single supervisory mechanism (SSM) and the adoption of the Capital Requirements Regulation and Directive (CRR/CRD IV).*

3.1 THE EURO AREA BANKING SECTOR: ALONG THE PATH TO A NEW POST-CRISIS WORLD

FINANCIAL SOUNDNESS OF LARGE AND COMPLEX BANKING GROUPS¹

Banks' profitability remains under pressure...

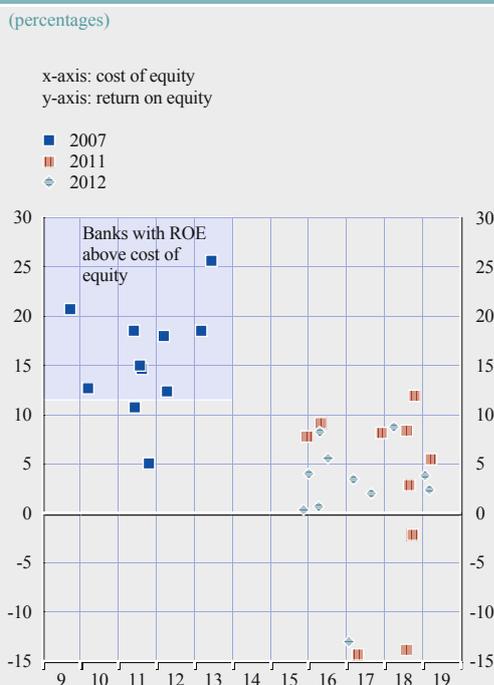
Euro area banks' **profitability** remains muted. Whereas almost all euro area LCBGs generated returns higher than their cost of equity before the onset of the financial crisis, the last two years have been characterised by both a higher cost of equity and lower, or negative, returns on equity (see Chart 3.1). While this may be partly transitory, the economic and regulatory headwinds facing the banks point to a structural need for further balance sheet adjustment.

... due to higher loan losses and significant one-off charges

Profitability of euro area LCBGs trended steadily downwards during 2012, and results for the first quarter of 2013 were, on average, slightly weaker than in the same period last year (see Chart 3.2). This mainly reflected significant one-off charges, such as provisions for litigation costs and fines or goodwill write-downs, but also subdued income from all major income sources and generally higher loan losses.

The worsening financial performance of euro area banks reflected primarily a deteriorating macroeconomic environment and its effects on credit quality and, in turn, higher loan loss provisions which more than offset the moderate year-on-year improvements in operating income

Chart 3.1 Return on equity and cost of equity of euro area large and complex banking groups



Sources: SNL Financial and Bloomberg.

Chart 3.2 Return on equity of euro area and global large and complex banking groups

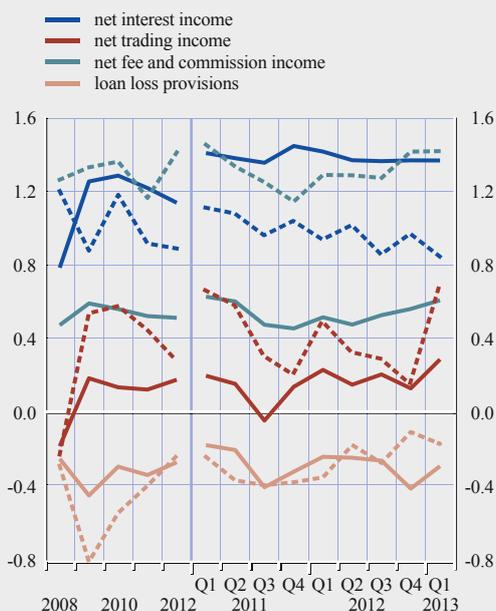


Sources: Individual institutions' financial reports.

¹ The sample used for most of the analysis presented in this section includes 18 euro area banks and 14 global banks with headquarters in the United States, the United Kingdom and Switzerland. The criteria for identifying them are described in ECB, "Identifying large and complex banking groups for financial system stability assessment", *Financial Stability Review*, December 2006.

Chart 3.3 Breakdown of sources of income of euro area and global large and complex banking groups

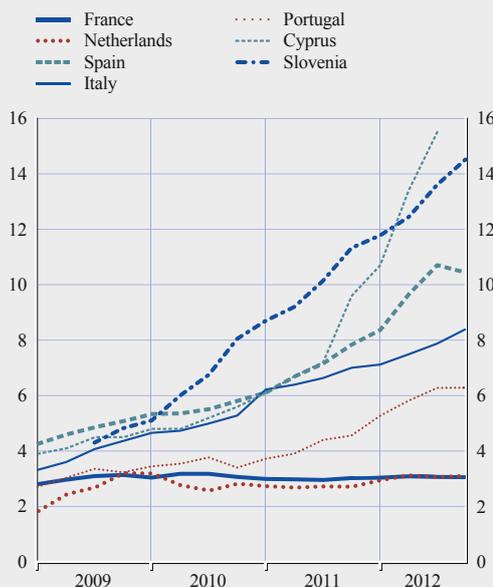
(2008 – Q1 2013; percentage of total assets; solid lines: euro area LCBGs; dotted lines: global LCBGs)



Sources: Individual institutions' financial reports.

Chart 3.4 Non-performing loan ratios in selected euro area countries

(Q1 2009 – Q4 2012; percentage of total loans)



Sources: National central banks and IMF Financial Soundness Indicators.

Notes: The chart shows gross non-performing loans as a share of total loans. Given different national definitions of non-performing loans, cross-country comparison is limited.

at the end of last year and in early 2013 (see Chart S.3.7). First, net interest income remained broadly unchanged in the final quarter of 2012 and in the first three months of 2013 compared with the same periods a year earlier, despite declining somewhat for 2012 as a whole (see Chart 3.3). This resulted from the combination of higher lending margins and the further widening of negative deposit margins at many banks as a by-product of aggressive efforts to raise more stable funding (see Chart S.3.6). While net interest income of euro area banks uniformly benefited from official sector funding, market-based funding remained relatively expensive, despite a decrease observed recently, and marked by country fragmentation.

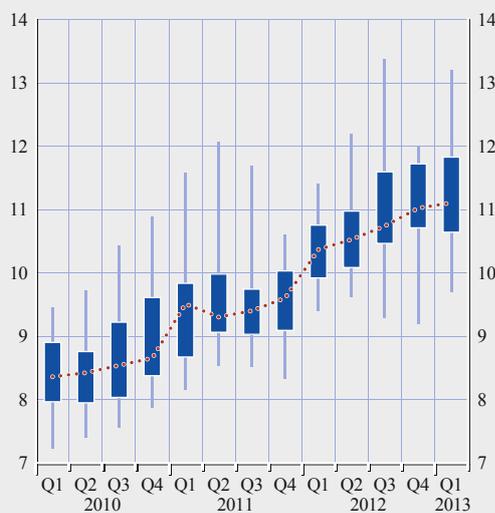
Second, net fee and commission income showed year-on-year increases, albeit modest, both in the last quarter of 2012 and in the first quarter of 2013 thanks to income generated from underwriting activities – notably, strong corporate bond issuance as large companies took advantage of low yields to disintermediate their financing. Third, trading income showed some improvement in the first quarter of 2013 thanks to improved financial market conditions.

Asset quality remains a chief concern, in particular in countries with a weaker growth outlook and/or with fragile property markets. To date, however, such concerns regarding euro area LCBGs' asset quality have not been validated at the aggregate level, as it has remained broadly stable on average when measured in terms of non-performing loan ratios. Likewise, coverage of non-performing loans of LCBGs has remained broadly stable amid loan deleveraging and higher levels of provisioning. Looking at the broader euro area banking sector, however, asset quality

Deterioration in asset quality remains a key concern

Chart 3.5 Core Tier I capital ratios of euro area large and complex banking groups

(Q1 2010 – Q1 2013; percentages; maximum, minimum, interquartile distribution and median)



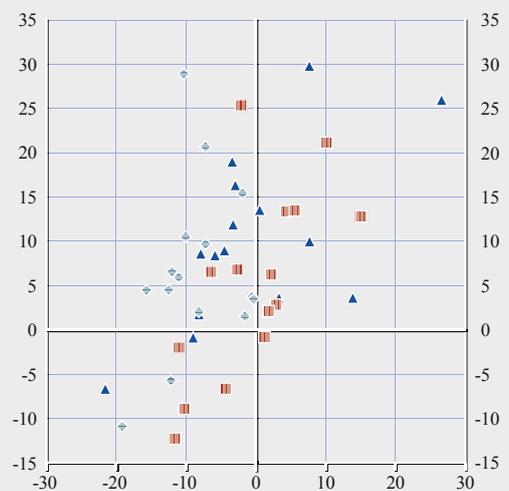
Source: SNL Financial.

Chart 3.6 Changes in core Tier I capital and risk-weighted assets of euro area large and complex banking groups

(percentage change per annum)

x-axis: risk-weighted assets
y-axis: core Tier I capital

▲ 2010
■ 2011
◇ 2012



Source: SNL Financial.

continued to deteriorate in a number of euro area countries (see Chart 3.4). Moreover, there remains a considerable institution and region-specific heterogeneity in coverage ratios across euro area banks. While such discrepancies can be partly explained by differences in national definitions of non-performing loans as well as by fundamental factors, such as differences in collateral, they also highlight the need for some banks to raise their provisioning levels.

Solvency positions improved further...

In contrast to some volatility in profitability, **solvency positions** of euro area LCBGs have continued to steadily improve. The median core Tier 1 ratio reached 11.1% in the first quarter of 2013, up from 9.6% at the end of 2011 (see Chart 3.5). This steady improvement has resulted from both rising core Tier 1 capital and, in the last quarter of 2012, reductions in risk-weighted assets (see Charts 3.6 and S.3.10). Notwithstanding this progress, some euro area LCBGs still need to further increase their common equity capital in the coming quarters, with investors expecting them to meet new capital requirements even before the full implementation of Basel III/CRD IV rules.

... but concerns remain about the consistency of risk-weighted asset calculations

Unfortunately, any confidence benefits from the aggregate reductions in risk-weighted assets (RWAs) have been diluted by uncertainty among bank analysts and investors. While the dispersion of risk weights across banks partly stems from differences in true underlying risk (e.g. the composition of loan books), the approach for their derivation (standardised versus internal-rating-based or IRB) has been at the centre of the debate, which has benefited from the quantifications of two recent studies by the European Banking Authority (EBA) and the Basel Committee on Banking Supervision (see Box 4).

Box 4

EVALUATING DIFFERENCES IN BANKS' CREDIT RISK WEIGHTS

A growing chorus of analysts, investors and regulators have expressed concern about the murkiness of banks' internal models, including the complexity and opacity of risk-weighting formulas.¹ This has led to some loss of confidence in disclosures of banks' risk-weighted assets (RWAs). This box discusses how changes in risk weights affect key reporting such as solvency ratios and illustrates variations in risk weights across euro area LCBGs by utilising publicly available Pillar 3 disclosures.

The observed high variation in the level of risk weights applied by banks, in principle, should reflect genuine differences in underlying risk. Specifically, it should reflect differences in risk profiles across institutions (e.g. due to different business models, asset mixes or macroeconomic conditions). In practice, differences may arise also for less fundamental reasons – such as differences across countries in regulatory practices with regard to the implementation of Basel II rules or different modelling choices made by banks. Such practices could lead to unjustified differences between the capital positions of banks with loan portfolios of similar levels of risk. Indeed, variations and changes in risk weights – the multiplier applied to an underlying position to calculate RWAs – can have a significant impact on banks' capital ratios. For instance, a 25% change in risk weights for a bank with a 10% capital ratio changes the ratio by two percentage points. Such changes are particularly relevant for risk weights used for calculating RWAs for credit risk since they account for almost 85% of total risk-based capital requirements for euro area LCBGs.

An accurate comparison of overall risk weights across countries and banks needs to be drawn following a detailed granular approach with due care taken to account for specificities of business models and portfolio mixes. In addition, there can be sound reasons why banking book risk weights for a bank vary over time or why they vary across banks even for portfolios with similar risk profiles. For example, fluctuations in collateral values and differences within rating buckets (one bank might have exposures at the better end of a rating bucket) can explain differences in risk weights. Nevertheless, banks are meant to be calculating risk weightings using a probability of default over time which should smooth out the impact of credit trends in a single year.

While acknowledging the merits of such a granular approach, insights can also be gleaned from comparing more specific risk weightings across banks and especially changes over time.² In particular, detailed information can be found in euro area LCBGs' Pillar 3 reports on the risk weights for credit risk that they use as an input under their advanced IRB approach. These data suggest that risk weights for both corporate and retail exposures differ substantially across LCBGs even within similar rating categories (see Chart A). This is especially the case for risk weights applied to lower-rated exposures. While, as already mentioned, there might be valid reasons why levels of risk weights vary across the LCBGs even within the same rating buckets – such as higher concentration of exposures at the lower or higher end of each rating category or differences in collateral – differences appear to be too wide to be fully explained by these factors.

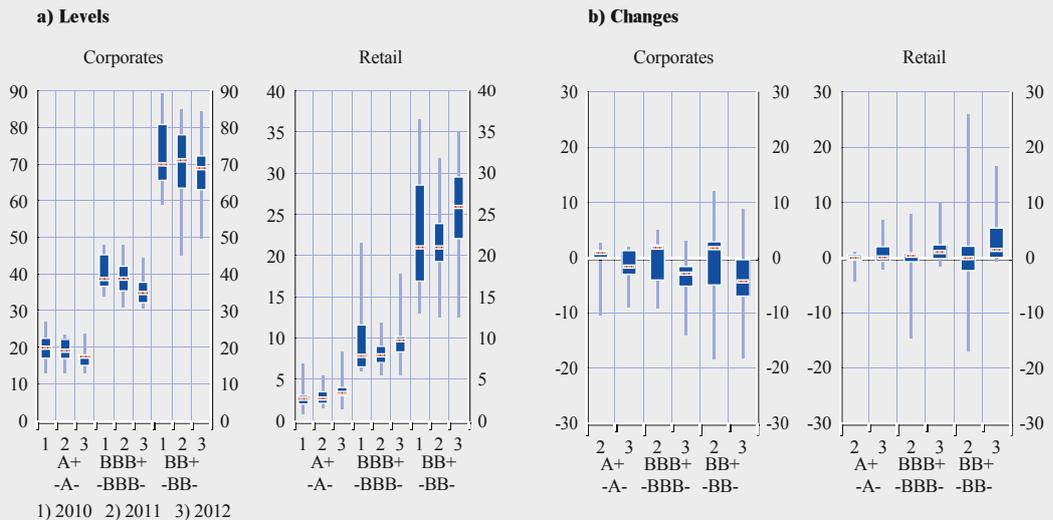
1 See, for example, Barclays Capital, "Bye Bye Basel? Making Basel more relevant", May 2012, and A. Haldane and V. Madouros, "The Dog and the Frisbee", speech at the Federal Reserve Bank of Kansas City's 366th Economic Policy Symposium, August 2012.

2 Barclays Capital, "The Dog That Dug: (Yet) more digging into RWAs", September 2012.

Euro area large and complex banking groups' risk weights for corporate and retail credit exposures

(2010 – 2012; percentages; maximum, minimum, interquartile distribution and median)

(annual percentage point changes; maximum, minimum, interquartile distribution and median)



Sources: Individual institutions' Pillar 3 reports and ECB calculations.

Such reasons might also help to explain why a bank changes its risk weights from one year to the next, although some similarity in changes in risk weights across banks could be expected for this group of large cross-border banks and very large changes should not be common since banks should use a probability of default over time in their calculations. The differences in changes in risk weights from 2010 to 2012 across LCBGs for various exposures are therefore a cause for concern (see chart) and explain why several analysts have voiced strong concerns regarding RWA calculations.

Such variation in risk weights across LCBGs and over time clearly highlights a need for regulatory initiatives to further analyse and assess the consistency of RWA calculations. Two such initiatives are already under way. First, the Basel Committee on Banking Supervision (BCBS) – following a similar exercise for trading book exposures³ – is carrying out an in-depth review of banks' calculation of banking book RWAs. The review uses a top-down approach by sending questionnaires to banks to gather information on their methodologies, as well as a bottom-up approach where banks were asked to calculate RWA numbers generated by identical test portfolios. Banks provided their input to the review in late 2012 and the results from the exercise are expected to be published later this year. Second, the EBA is currently conducting a similar review and some interim results based on a top-down analysis have already been published.⁴ The preliminary findings suggest that *half* the variation in banks' risk-weighted assets cannot be explained by factors such as portfolio and regulatory differences and that such variation appears mainly in corporate and retail portfolios.

3 Basel Committee on Banking Supervision, "Regulatory consistency assessment programme (RCAP) – Analysis of risk-weighted assets for market risk", January 2013.

4 European Banking Authority, "Interim results of the EBA review of the consistency of risk-weighted assets – top-down assessment of the banking book", February 2013.

All in all, these findings suggest that currently used risk-weight calculations might not in all cases be an accurate gauge of the true riskiness of the portfolios of financial institutions. Recent initiatives by the BCBS and the EBA to analyse the issue should help to enhance transparency and contribute to regulatory convergence. Furthermore, the new Basel III regulation on the leverage ratio, which is not risk-based, will also help to improve comparability across banks and to promote transparency. But another equally potent means of reducing the doubt about banks' RWA calculations would include more harmonised – and in some cases more detailed – Pillar 3 disclosures. As a complementary measure, systematic publication of capital requirements given by standardised models as well as internal models would be one means of validating internal models. Such measures would help to not only improve confidence in regulatory disclosures, but also more generally reduce ambiguity about the true health of banks.

Leverage ratios of euro area LCBGs continued to decline in the second half of 2012, falling from assets 23 times equity to assets 22 times equity (see Box 5). In contrast to broader developments since the onset of the global financial crisis in 2008, recent deleveraging efforts in the second half of 2012 focused to a larger extent on asset reductions rather than equity increases. Despite its cumulative decline, the leverage ratio measured as total assets over equity in euro area institutions appears elevated compared with global peers. Some of this may, however, merely relate to accounting differences – a narrower definition of tangible equity over tangible assets on a comparable IFRS

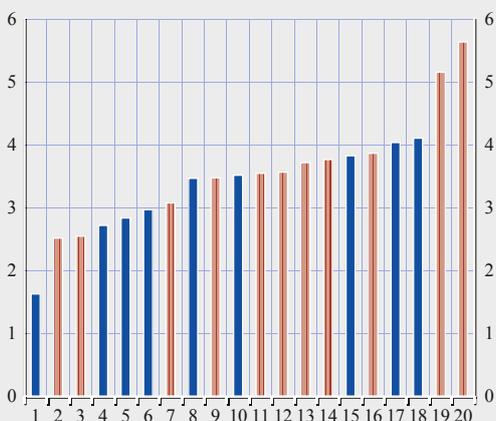
*Leverage ratios
have declined*

Chart 3.7 Leverage ratios of euro area and global large and complex banking groups

(Q4 2012; percentages; IFRS-equivalent estimates of adjusted tangible equity over adjusted tangible assets)

x-axis: banks

- euro area LCBGs
- global LCBGs



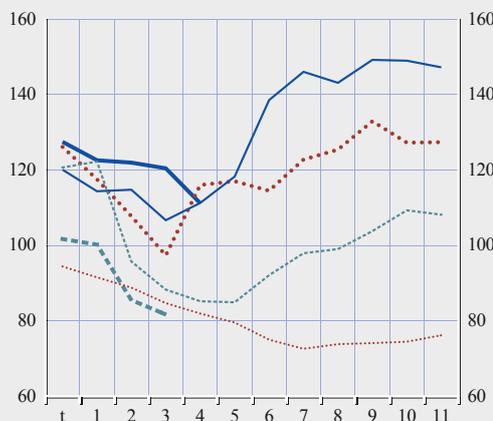
Source: Federal Deposit Insurance Corporation (FDIC).

Chart 3.8 Evolution of banks' loan-to-deposit ratios following banking crises

(percentages; non-bank loans over customer deposits)

x-axis: years following banking crisis

- euro area LCBGs (t=2008)
- Finland (t=1991)
- - - United States (t=2007)
- Norway (t=1991)
- Japan (t=1997)
- - - Sweden (t=1991)



Sources: OECD, Federal Reserve System, financial reports and ECB calculations.

Notes: Banking crises dates are based on L. Laeven and F. Valencia, "Resolution of Banking Crises: The Good, the Bad, and the Ugly", *IMF Working Paper Series*, WP/10/146, 2010. Data for the euro area and other EU countries refer to large banking groups.

basis suggests that while ratios remain low for euro area LCBGs, they are not systemically below those of their global peers (see Chart 3.7).² The loan-to-deposit ratio – another commonly used metric for deleveraging – fell sharply among LCBGs from 120% at end-2011 to 111% by the end of 2012 (see Chart 3.8). As a result of this recent decline, the overall reduction since the onset of the crisis appears more in line with historical and international developments. However, the level of the ratio still remains relatively high – though this may partly stem from the different financial structure of the euro area relative to other large economic areas, notably the prevalence of bank-based (versus market-based) financing for non-financial firms and the retention of mortgage debt on bank (versus government-sponsored enterprise) balance sheets.

2 See also FDIC Vice Chairman Thomas M. Hoenig, “Financial Stability: Incentives Matter”, speech at The Asian Banker Summit, 24 April 2013.

Box 5

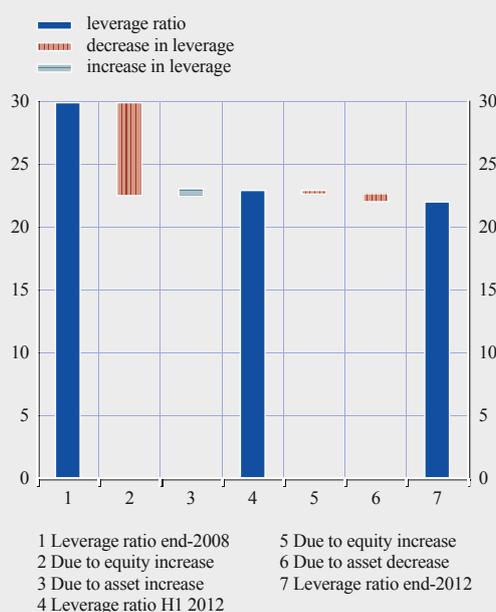
DELEVERAGING BY EURO AREA BANKS

Euro area banks have been reducing their leverage since the outbreak of the financial crisis. This ongoing process is an important component of adapting banks’ balance sheets and business models to a post-crisis environment and, if undertaken in a smooth manner, should result in positive externalities. Clearly, both its *scale* and *pace* require close monitoring, not least given its potential impact on the supply of credit to the real economy. In this vein, several estimates have been published by international organisations and market analysts alike, suggesting large aggregate deleveraging needs and limited adjustment by euro area banks to date. This box describes deleveraging efforts made by euro area banks over the crisis period and highlights the considerable uncertainty surrounding deleveraging projections.

The aggregate leverage ratio for euro area large and complex banking groups (LCBGs) has fallen from assets 30 times equity in 2008 to assets 22 times equity by end-2012. Over this period, deleveraging has largely been driven by equity increases (over 35%), as assets at end-2012 were only slightly below 2008 levels (-1%). That equity increases would drive deleveraging is not surprising given that modest capital increases exert a more substantial impact on leverage than large asset reductions: had equity been unchanged over the crisis period, assets would have had to fall by €4 trillion to achieve the same reduction in the leverage ratio. The modest reduction in the aggregate assets of the LCBGs masks

Chart Leverage ratio of euro area LCBGs

(Q4 2008 – Q4 2012; asset-to-equity ratio)



Sources: Financial reports and ECB calculations.
Note: Leverage ratios refer to assets over shareholder equity.

diverging behaviour across institutions, with substantial reductions by certain banks (up to 29%) being offset by the expansion of others (up to 25%). Recent deleveraging efforts since June 2012 have been driven to a greater extent by asset reductions (-3%), with only a modest increase in capital recorded (1%) (see chart).

Banks' asset reductions to date have largely targeted non-domestic capital-intensive assets. In order to meet capital targets, LCBGs have made significant efforts to reduce their risk-weighted assets (see Box 4). Regarding non-domestic assets, BIS data on all euro area banks indicate they reduced their claims towards all regions except Latin America over the crisis period. From the end of 2008 to the third quarter of 2012 euro area banks' international claims fell by 26% (USD 3.5 trillion). Over half of the reduction was towards other euro area countries, reflecting financial fragmentation and also the high share of claims (42%) towards other Member States. Reductions towards the United States and Asia were also disproportionately high. Claims on the United States fell by 38%¹, perhaps reflecting difficulties securing US dollar funding and efforts to de-risk balance sheets by reducing US dollar-denominated investment banking and trading assets. Withdrawals from Asia (-42%), in particular Japan (-57%), have also been significant perhaps owing to the short-term nature of banks' exposures there.

Developments across the broader euro area banking sector are in line with those of LCBGs, namely while deleveraging over the crisis has largely been driven by equity increases, recent developments show an increased focus on asset reductions. Banks located in the euro area issued €133 billion in quoted shares from December 2008 to March 2013, while assets remain close to 2008 levels.² However, from June 2012 to March 2013 assets of banks located in the euro area fell by €1.3 trillion (-3.8%) with only a modest issuance of shares (€4 billion) recorded. Balance sheet reductions reflect improved confidence as banks reduced deposits held with the Eurosystem and repaid over a quarter of their LTRO debts. Reductions in remaining assets (a category largely composed of derivatives) also accounted for a significant proportion of the decrease. The decline also reflected some reduction in credit to the non-financial private sector, although this has been proportionally low (1.1%). Moreover, one should not consider reductions in the loans on banks' balance sheets as indicative of a reduction of lending to the real economy. For example, since June 2012 on-balance-sheet loans to the euro area non-financial private sector fell by €205 billion, while loans to firms adjusted for sales and securitisations only declined by €66 billion.

A number of large and medium-sized euro area banks have announced plans for asset-side reductions amounting to around €800 billion by the end of next year. The lion's share of this figure – around €600 billion of the total – refers to restructuring agreed between banks and

Euro area bank deleveraging: upper bound and mitigating factors for the period 2013-14

(EUR trillions)

	Lower range	Upper range
Wholesale freeze	0.17	0.20
Deposit outflow	0.01	0.03
Capital constraint	0.46	0.46
Restructuring plans	0.23	0.38
Loan/deposit ratio constraint	0.19	0.32
Net take-up of 3-year LTROs (mitigation)	0.11	0.08
Gross deleveraging	0.95	1.30
Mitigating factors:		
Capital raising/injections	0.40	0.30
Assets taken over by other EU banks	0.23	0.24
Natural run-off/lower demand	0.22	0.32
Effective deleveraging	0.10	0.45
Pecking-order loan impact	0.02	0.07

Sources: ECB, EBA, Dealogic, banks' reports and ECB calculations.

1 Although claims towards the United States only accounted for 17% of international claims at end-2008.

2 According to ECB MFI balance sheet item statistics.

authorities either in the context of state-aid rules or EU/IMF programmes. While the aggregation of such plans is illustrative, it clearly has limitations, as not all banks will publish their planned asset reductions, while others may adjust plans should conditions change. A more encompassing assessment of potential deleveraging requires accounting for a myriad of conditioning factors. Taking into account a subset of these³ leads to an upper bound of €0.9-1.3 trillion by end-2014 (see table) – more “cyclical” funding constraints account for deleveraging needs of €180-230 billion, capital constraints account for another €460 billion, and structural funding constraints amount to some €190-320 billion. For some banks, the imposed funding and capital-related constraints result in deleveraging needs below the banks’ announced asset reduction plans. In those cases, in what follows, the difference between announced plans and imposed constraints is referred to as restructuring plans (which amount to €230-380 billion).

This upper bound, while illustrative, is almost certain to never be met in practice given a number of mitigating factors: banks’ ability to raise new capital, the expansion of other banks, asset-side reduction that might arise due to lower loan demand and positive externalities (e.g. measures aimed at strengthening capital may also reduce reliance on wholesale funding). Taking these factors into account, effective loan deleveraging would be only a fraction of the upper bound – and could even fall to as little as €20-70 billion (or around 0.1-0.6% of the outstanding loan book). These latter calculations reflect four additional assumptions. First, it is assumed that between 50% and 75% of the estimated capital shortfall will be filled by raising (or injecting) new equity.⁴ Second, it is assumed that those banks not facing a need to deleverage will acquire some of the assets to be shed by the deleveraging banks. Third, it is assumed that instead of outright sales of assets (to avoid selling at fire-sale prices) many banks will simply let their assets run off as they mature. Fourth, it seems reasonable to assume that banks will take a pecking-order approach, as seen in the past, to their deleveraging by first shedding non-core and non-domestic assets and only as a last resort cutting back on lending to retail customers.

The calculations in this box illustrate that deleveraging calculations are highly variable and surrounded by considerable uncertainty, and are largely determined by the various (mostly ad hoc) assumptions made. Importantly, any conclusions to be drawn from such deleveraging estimates (especially as regards potential real economic implications) should reflect actions that banks are likely to take to counter the deleveraging pressures. It is to be expected that such mitigating actions will substantially reduce the amount of deleveraging that will effectively take place compared with widely cited gross estimates. Consequently, the real economic implications of bank deleveraging actions over the next couple of years are surrounded by significant uncertainty and may, under some assumptions, turn out to be much more muted than is commonly perceived. Furthermore, significant heterogeneity in deleveraging trajectories can be expected.

3 These include potential cyclical funding constraints (e.g. wholesale funding access and deposit outflows), structural funding constraints (e.g. a loan-to-deposit ratio target) and a capital constraint (e.g. a 9% core Tier 1 capital ratio threshold by end-2014). Specific assumptions on the cyclical funding constraints to arrive at an illustrative figure are calibrated on the basis of the historical distribution of rollover rates observed since 2007 and by allocating banks in different countries according to the sovereign credit rating. Different percentiles of the observed distribution have been applied for the lower and upper ranges, respectively. The capital constraints have been derived with the ECB’s macro-stress-testing framework using the European Commission’s autumn 2012 forecast. Announced restructuring plans were assumed to be either fully completed (upper range) or only partially completed (lower range) as at end-2014. Different degrees of gradualism in complying with imposed loan-to-deposit ratio targets (determined by the sovereign credit rating) were applied for the lower to upper ranges.

4 In view of the predominant role of capital-raising actions in reducing bank leverage ratios since the beginning of the financial crisis, this assumption is likely to be rather conservative. It should furthermore be noted that nominal increases in the level of capital should also help to fill some of the funding gaps. The effects from such positive externalities have not been incorporated and hence the effective deleveraging estimates are likely to be biased upwards.

BANKING SECTOR OUTLOOK AND RISKS

OUTLOOK FOR THE BANKING SECTOR ON THE BASIS OF MARKET INDICATORS

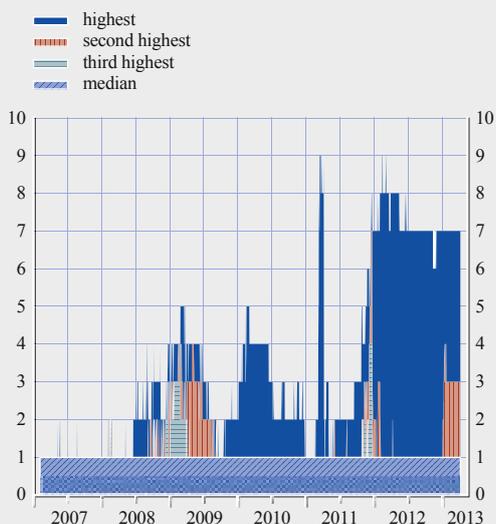
Volatility in market-based indicators during the first quarter of 2013 suggests considerable uncertainty related to the outlook for euro area banks. At the beginning of the year, these indicators suggested a strong improvement in the risk outlook for euro area LCBGs resulting from improved perceptions of sovereign risk and bank funding conditions. This improvement came to a halt in February and March in the context of rising political uncertainty in some euro area countries and the announcement of a package of official assistance for Cyprus. Looking through this volatility, it would seem that concerns are lingering about banks' asset quality and earnings and the weaker outlook for both earnings and growth. Indeed, the implied volatility of euro area bank stock indices remains significantly higher than that of general market indices (see Chart S.2.11), indicating that uncertainty regarding the outlook for the banking sector is relatively high compared with, for instance, that for non-financial sectors. Stock borrowing fees, which serve as a good summary measure of the dynamics of the stock lending market and investor sentiment, continue to indicate that investor concerns are institution-specific and there is no evidence of extensive short-selling of institutions' stocks (see Chart 3.9). As can be seen from Chart 3.8, stock borrowing fees have remained low for most euro area LCBGs, with higher borrowing fees only in some isolated cases.

At the same time, a key systemic stress measure drawing on market-based pricing suggests systemic risk within euro area banks is at its lowest level in two years (see Chart 3.10). A recent slight increase in this indicator, which uses bank credit default swap (CDS) spreads to capture the interdependence of risk across euro area banks, follows a marked decline since mid-2012.

Volatility in market indicators and lingering concerns

Chart 3.9 Cost of borrowing stocks of selected euro area large and complex banking groups

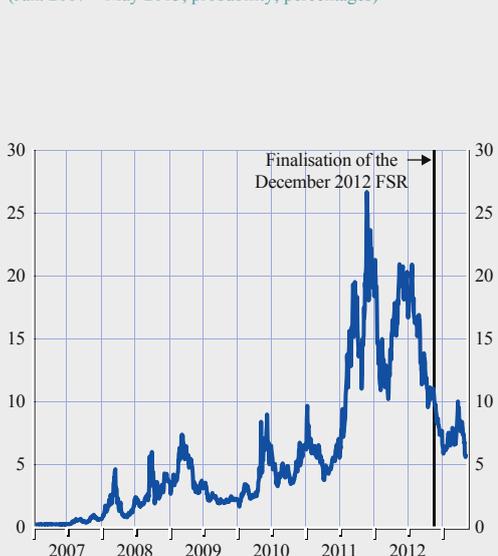
(Jan. 2007 – May 2013; cost-of-borrowing score based on seven-day stock borrowing fees)



Sources: Data Explorers and ECB calculations.
Notes: Data include 11 euro area LCBGs. The cost-of-borrowing score is a number from 1 to 10 that indicates the cost of borrowing particular securities, based on seven-day fees, with 1 the cheapest and 10 the most expensive.

Chart 3.10 Probability of a simultaneous default by two or more large and complex banking groups, as measured by the systemic risk measure

(Jan. 2007 – May 2013; probability; percentages)



Sources: Bloomberg and ECB calculations.
Notes: The systemic risk measure covers a sample of 15 banks and uses a one-year horizon. See Box 8 in ECB, *Financial Stability Review*, June 2012, for further details.

Further deterioration
in the credit risk
outlook...

At the individual bank level, median CDS spreads have followed a similar pattern. In particular, bank CDS spreads widened in March in the wake of developments in Cyprus, but retreated thereafter (see Chart S.3.31). The dispersion of CDS spreads, while narrowing in recent months, remained wide, partly highlighting financial fragmentation and also indicating differences in the asset quality outlook.

CREDIT RISKS EMANATING FROM BANKS' LOAN BOOKS

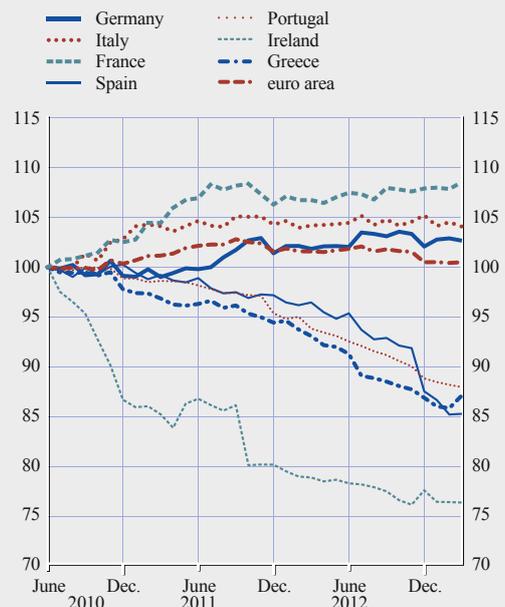
The level of **credit risk** confronting the euro area banking sector has increased since the finalisation of the last Financial Stability Review (FSR) as weak economic conditions increasingly took a toll on banks' asset quality. In addition, a large degree of cross-country heterogeneity across the euro area still prevails, reflecting to a large extent differing fortunes of non-financial corporates and households across the various euro area countries, as described in Section 1.2 of this Review.

MFI lending to the non-financial private

sector in the euro area has remained subdued since the December 2012 FSR. On average, total lending to households stayed broadly stable over the review period, while lending to non-financial corporations (NFCs) continued to decline. Again, developments differed considerably across the

Chart 3.11 Euro area MFI lending to the non-financial private sector

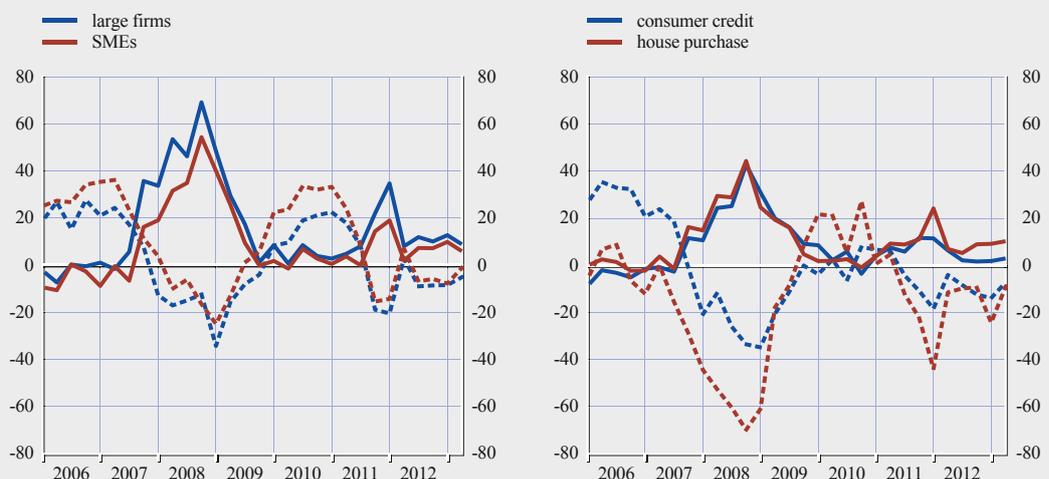
(June 2010 – Mar. 2013; index: June 2010 = 100)



Source: ECB.
Note: Published country-level loan data are not adjusted for loan sales and securitisation.

Chart 3.12 Credit standards and demand conditions in the non-financial corporate and household sectors

(Q1 2006 – Q2 2013; weighted net percentages; solid lines: credit standards; dotted lines: demand)



Source: ECB.

euro area, with the continued strong declines in lending volumes recorded in countries under stress being partly offset by moderate lending growth in most other countries (see Chart 3.11). The results of the ECB's January and April 2013 bank lending surveys suggest that deteriorating expectations regarding general economic activity were the main driver of the tightening of bank credit standards (see Chart 3.12), with the April survey results showing some moderation in the net tightening of credit standards. By contrast, on average, supply-side factors – such as funding or capital constraints – appear to have played a diminished role, although they still affect credit conditions in some countries. This development has also been accompanied by a drop in net demand for loans as a result of continued weak investment activity and low consumer confidence.

These subdued developments in credit growth remain part of a broader phenomenon among advanced economies since the onset of the crisis. Indeed, credit conditions across OECD economies have remained remarkably weak compared with historical norms. Despite some further improvement over the course of 2012, credit growth remained well below its early warning threshold for costly asset price booms in the fourth quarter of 2012 (see Chart 3.13).

Credit conditions have, however, continued to diverge widely across euro area countries. The price terms of loans to non-financial private sector borrowers vary greatly, indicating not only marked differences in default risk across the main categories of the loan book but also to some extent a risk premium at the country level (see Chart 3.14). Perhaps most notably, small and medium-sized enterprises (SMEs) in countries under stress have faced particularly tight credit conditions, as illustrated by the persistently wide gap between rates on small-sized loans, a proxy for SME lending rates, in core countries and countries under stress.

... particularly affecting borrowers in stressed countries

Chart 3.13 Global credit gap and optimal early warning threshold

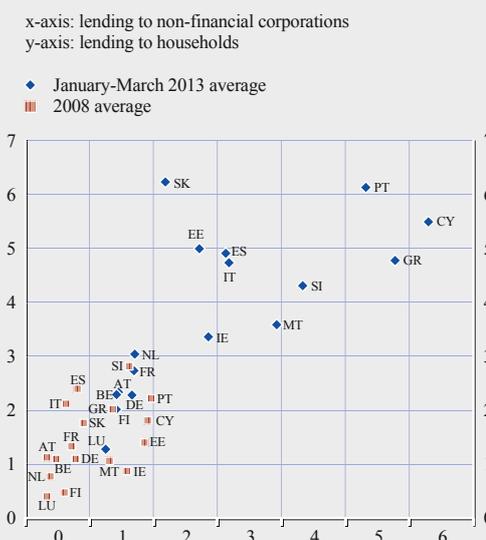
(Q1 1980 – Q4 2012; percentages)



Sources: ECB and ECB calculations.
Notes: For details, see L. Alessi and C. Detken, “Quasi real time early warning indicators for costly asset price boom/bust cycles: A role for global liquidity”, *European Journal of Political Economy*, Vol. 27(3), pp. 520-533, September 2011.

Chart 3.14 Lending spreads of euro area MFIs on euro-denominated new business loans

(percentage points)



Source: ECB.
Notes: Lending spreads are calculated as the average of the spreads for the relevant breakdowns of new business loans, using volumes as weights. The individual spreads are the difference between the MFI interest rate for new business loans and the swap rate with a maturity corresponding to the loan category's initial period of rate fixation.

Asset quality outlook remains negative

Property-related exposures are high in some countries

Risks to financial stability remain elevated given weak economic conditions...

A weakening macroeconomic environment was the main factor underlying increasing credit risks in the loan book. Weak conditions in goods and labour markets at the euro area level translated into higher income and earnings risks for households and NFCs. This, combined with still high levels of private sector indebtedness and ongoing corrections in residential and commercial property markets in some countries, was detrimental to borrowers' debt servicing capacities.

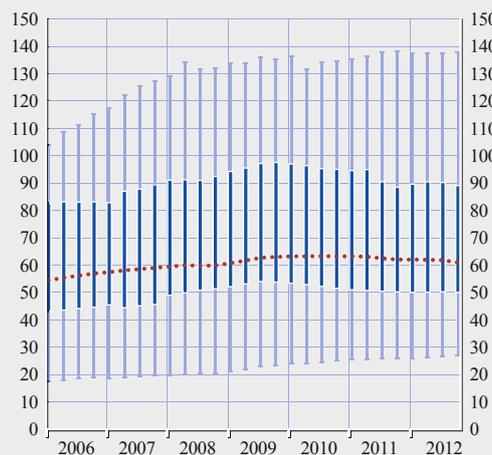
Adverse property price developments continue to represent a risk to banks' balance sheets, in particular where exposures to property-related activities are high. Indeed, residential and commercial property-related lending of MFIs (i.e. lending to households for house purchase, as well as lending to construction companies and other property-related activities) amounts on average to some 61% of GDP in the euro area, but the country-level dispersion is high, ranging from 27% of GDP to nearly 140% of GDP (see Chart 3.15). In most euro area countries, the bulk of property-related MFI lending is directed towards households for house purchase, but in some countries exposures to NFCs constitute close to or more than half of total property-related MFI lending.

Having said this, it is important to note that property loans are collateralised, so that the risks related to the level of banks' property-related exposure largely depend on the volatility of asset valuation and the loan-to-value ratios applied. In this regard, the risks for euro area financial stability stemming from property markets are also closely interrelated with the state of different property markets and the domestic economic outlook. On the one hand, in countries where property prices have increased in recent years and where signs of overvaluation are being observed, the main concern stems from the potential for sharp corrections. This may imply the need for eventual mark-downs of the value of property loan portfolios that could have an impact on banks' balance sheets. This risk is particularly high in countries with high bank exposures towards property. On the other hand, in countries where property values stand well below previous peaks, the main financial stability concerns relate to refinancing risks, in particular for loan-financed investors. Both of these vulnerabilities could be triggered if economic activity were to deteriorate significantly, which would additionally reduce borrowers' debt servicing capacities.

A rise in non-performing loans (NPLs) has been particularly visible in countries under stress (see Chart 3.4). Available data on the sectoral breakdown of bad loans suggest that the rise in NPLs was mostly driven by NFCs and less so by a deterioration in credit quality in the household segment. Rising NPLs and provisioning needs are expected to weigh on bank profitability as banks seek to strengthen their profitability base and make cost savings.

Chart 3.15 MFI property-related lending exposures in the euro area

(Q1 2006 – Q4 2012; percentage of GDP; maximum, minimum interquartile distribution and average)



Sources: ECB and ECB calculations.

Notes: Property-related exposures comprise MFI lending to households for house purchase and to non-financial corporations for real estate activities and construction. Data for Estonia, Luxembourg and Slovenia are not included.

... that may lead some banks to delay loss recognition

In this environment of weak economic growth, banks may be inclined to exploit low funding costs to take a wait-and-see attitude, and therefore engage in **forbearance**.³ Relatively low write-off rates in both the corporate and household sectors would support such a hypothesis (see Chart 3.16), particularly when adjusting for a one-off spike in NFC loan write-offs at end-2012 mainly attributable to the transfer of NPLs to the Spanish “bad bank” Sareb. Such forbearance may be helpful to the extent that it helps debtors facing purely temporary difficulties. This, however, might be only part of the story – indeed, to the extent that forborne loans will eventually remain non-performing, such a process merely delays the clean-up of banks’ balance sheets. More worryingly, it might even constrain lending to more productive borrowers. Ultimately, if the problem loans remain unresolved, such practices may adversely affect economic growth, in particular if they go hand in hand with increasing lending rates, thereby exacerbating an adverse feedback loop between macroeconomic dynamics and banks’ asset quality (see Chart 3.17).⁴ To counter such forces, banks should aim for prudent asset valuation and stricter loan loss recognition to provide more transparency on asset quality, while authorities should continue to foster the cleaning-up of bank balance sheets by removing legal and judicial obstacles to NPL resolution and to enhance transparency by identifying and disclosing forbearance.

COUNTERPARTY CREDIT RISK

The median cost of protection against the default of a euro area LCBG, as reflected by CDS spreads, was somewhat lower in mid-May 2013 than in late November 2012, despite a Cyprus-

Perceived counterparty credit risk of euro area LCBGs has somewhat declined

Chart 3.16 Write-off rates on euro area MFI loans to the non-financial private sector

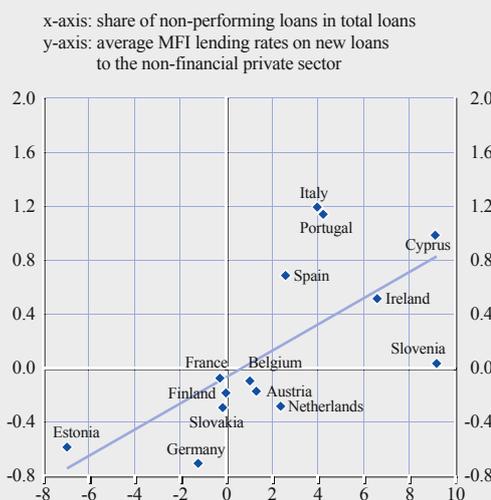
(Jan. 2005 – Mar. 2013; percentages)



Source: ECB.
Note: Write-off rates are calculated as the ratio of write-offs (12-month moving sum) to loans outstanding in the respective loan category.

Chart 3.17 Changes in non-performing loans and lending rates on new loans for selected euro area countries

(percentage point change between June 2010 and December 2012)



Sources: ECB and IMF.

3 EBA, “Report on Risks and Vulnerabilities of the European Banking Sector”, July 2012.

4 It should be noted though that the increase in lending rates may also reflect other important factors, such as the strong increase in banks’ funding costs and related pressures on their net interest margin, as well as the pressures on income arising from mortgage loans which are indexed to the EURIBOR and have fixed spreads.

related jump in March 2013 (see Chart S.3.31). The spread between unsecured euro area interbank and repo rates has been relatively stable in 2013 (see Chart S.2.3). At the same time, a positive difference between the median CDS spreads of euro area and non-euro area LCBGs (see Chart S.3.32) has been on a widening trend, suggesting that market participants viewed euro area LCBGs as increasingly less creditworthy than their non-euro area counterparts.

Non-price credit terms for wholesale non-bank clients appear to have tightened, whereas price terms eased

Against the background of higher financial asset prices and other improvements in financial market functioning stemming from subsided euro area sovereign debt crisis-related tensions, price terms (such as financing spreads) offered by large banks for the important types of counterparties covered in the new qualitative quarterly ECB survey on credit terms and conditions in euro-denominated securities financing and OTC derivatives markets (SESFOD)⁵ remained unchanged, on balance, over the three-month period ending in February 2013. Nevertheless, modest net shares of respondents reported easier price terms for large banks and dealers, insurance companies and investment funds, pension plans and other institutional investment pools (see Chart C.1 in Special Feature C). By contrast, some overall net tightening was reported for non-price terms; although the net percentages of banks that reported tightening were small, they were also smaller than in the previous December 2012 survey.

The ongoing releveraging of the hedge fund sector needs to be monitored closely

The ongoing releveraging of hedge funds needs to be monitored closely, as the survey data of both the ECB and the Federal Reserve suggest an increased use of leverage by these important and usually very active leveraged non-bank counterparties (see Chart 3.18).⁶ While timely public data on hedge fund leverage are scarce, various information sources suggest that the leverage of hedge funds is still somewhere between the pre-crisis peak in 2007 and the post-crisis trough in 2009, but it has nevertheless been gradually getting closer to the pre-crisis levels (see Chart 3.19), not least because of higher risk tolerance by prime-broker banks and low benchmark interest rates, which together with a spread make up an effective borrowing rate. The year-to-date investment performance of the hedge fund sector has been positive in 2013 (see also Section 2.2), taking the estimated proportion of hedge funds breaching triggers of cumulative total decline in net asset value (NAV)⁷ – an indicator of stress in the hedge fund sector – further down below its longer-term median (see Chart 3.20).

Chart 3.18 Changes in the use of leverage by hedge funds

(Q3 2011 – Q1 2013; net percentage of respondents reporting increased use of leverage over the past three months)



Sources: ECB and Federal Reserve Board.

Notes: The net percentage is defined as the difference between the percentage of respondents reporting “increased considerably” or “increased somewhat” and those reporting “decreased somewhat” or “decreased considerably”.

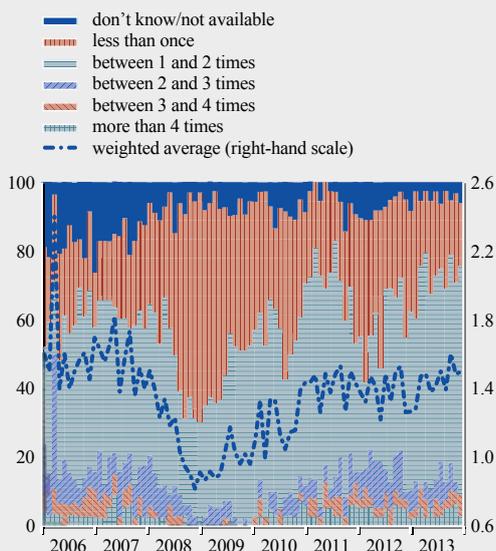
5 See Special Feature C in this Review and ECB, “New ECB survey on credit terms and conditions in euro-denominated securities financing and OTC derivatives markets (SESFOD)”, press release on 30 April 2013.

6 Federal Reserve Board, “Senior Credit Officer Opinion Survey on Dealer Financing Terms”, March 2013.

7 NAV triggers can be based on a cumulative decline in either total NAV or NAV per share. They allow creditor banks to terminate transactions with a particular hedge fund client and seize the collateral held. As opposed to NAV per share, a cumulative decline in total NAV incorporates the joint impact of both negative returns and investor redemptions.

Chart 3.19 Hedge fund leverage

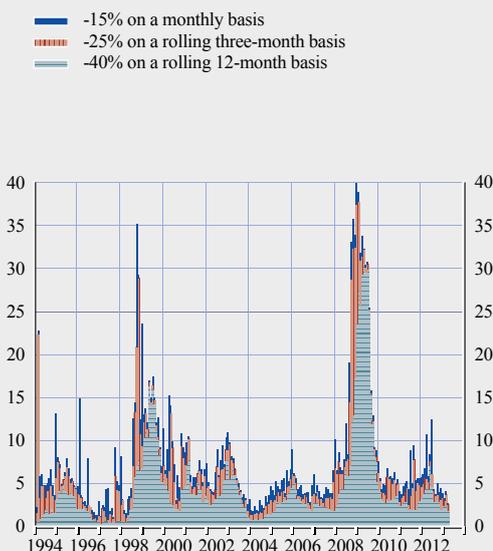
(June 2006 – May 2013; percentage of responses and weighted average leverage)



Sources: Bank of America Merrill Lynch, “Global Fund Manager Survey”.
Notes: Leverage is defined as a ratio of gross assets to capital. In 2012 and 2013 the number of responses varied between 32 and 48.

Chart 3.20 Estimated proportion of hedge funds breaching triggers of cumulative total NAV decline

(Jan. 1994 – Apr. 2013; percentage of total reported NAV)



Sources: Lipper TASS database and ECB calculations.
Notes: Excluding funds of hedge funds. Net asset value (NAV) is the total value of a fund’s investments less liabilities (also referred to as capital under management). For each point in time, estimated proportions are based only on hedge funds which reported respective NAV data and for which NAV change could thus be computed. If several typical total NAV decline triggers were breached, then the fund in question was only included in the group with the longest rolling period. If, instead of one fund or sub-fund, several sub-fund structures were listed in the database, each of them was analysed independently. The most recent data are subject to incomplete reporting.

The resources and attention devoted to the management of counterparty credit exposures to central counterparties (CCPs) have continued to increase. The main driver of this has been the forthcoming mandatory central clearing of standardised over-the-counter (OTC) derivatives contracts, which may lead to large concentrated exposures to a number of key CCPs and will require market participants to post initial margin, thereby increasing demand for eligible collateral assets. In order to be able to estimate and prepare for potentially volatile collateral needs, firms have been stepping up their initial margin modelling capabilities. Such initial margin computations will also be relevant for OTC derivatives transactions that will remain non-centrally cleared. The near-final regulatory proposal envisages that the phasing-in of margining requirements for such derivatives should start in 2015.⁸

FUNDING LIQUIDITY RISK

In early 2013 market-based **bank funding conditions** continued on the improving trend seen since mid-2012, both in terms of breadth of access and cost. This has brought back a traditional competitive advantage in funding markets, whereby the average cost of issuing bank bonds has remained below that of bonds issued by investment-grade corporates since mid-2012 (see Chart 3.21).

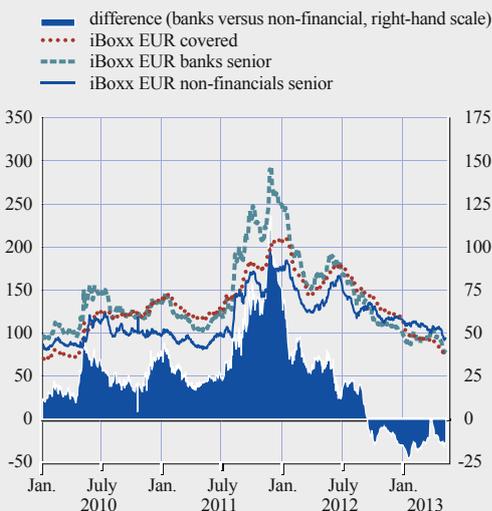
Increased focus on CCP exposures and initial margin computations

Funding stresses showed signs of further easing in early 2013...

⁸ Basel Committee on Banking Supervision and Board of the International Organization of Securities Commissions, “Margin requirements for non-centrally cleared derivatives”, Second Consultative Document, February 2013.

Chart 3.21 Spreads on bank and non-financial senior debt and covered bonds

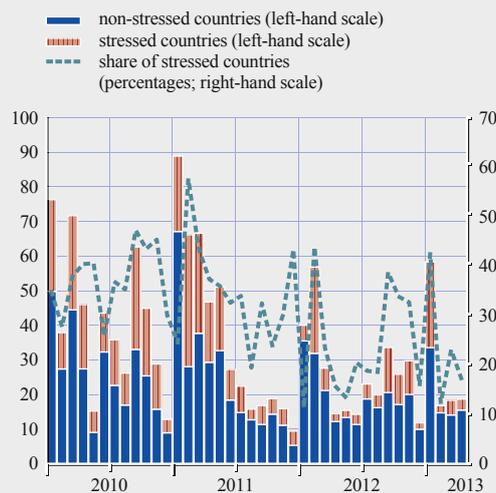
(Jan. 2010 – May 2013; basis points)



Source: Markit.

Chart 3.22 Monthly issuance of medium and long-term debt securities by euro area banks

(Jan. 2010 – Apr. 2013)



Source: Dealogic.
Notes: Excludes retained deals. “Stressed countries” refer to Cyprus, Greece, Ireland, Italy, Portugal and Spain.

Improved funding conditions have suggested some easing in country fragmentation, which has been broad based across major funding sources. First, bond-based financing has shown improvement, in particular in January 2013 when the issuance of medium and long-term debt securities picked up significantly. Encouragingly, the share of medium and long-term debt issued by banks located in countries under stress increased significantly, suggesting improving access to funding markets (see Chart 3.22). Second, there has been a sizeable rebound in customer deposits in banks in countries under stress according to the latest MFI balance sheet data (see Chart 3.23). Third, there has been a pick-up in repo market activity of Spanish and Italian banks since late 2012 (see Section 2). These positive developments have also allowed banks in stressed countries to reduce their reliance on Eurosystem funding.

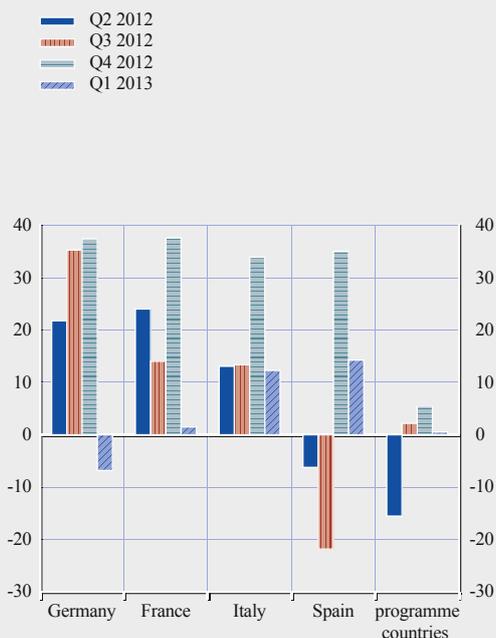
Fourth, there was an important improvement in funding market sentiment in an area which has been a sort of bellwether for foreign sentiment, in the form of **US prime money market fund (MMF) exposure** towards euro area banks. Following the marked decline in US MMF investments in euro area banks in early 2011, there has been some reversal of this decline since mid-2012 (see Chart 3.24). In terms of exposure type, unsecured investments (such as certificates of deposit, commercial paper and time deposits) experienced the largest decrease (see Chart 3.24). Secured exposures, including traditional repos (i.e. repurchase agreements collateralised by government/agency debt or cash), represented the second largest source of MMF financing. For euro area and other European banks, this category proved to be more stable thanks mainly to the high quality of the collateral that protects MMFs against a decline in the creditworthiness of the counterparty.

Notwithstanding these positive developments, access to longer-term funding at sustainable costs remains a challenge for a number of euro area banks. First, debt issuance by euro area banks has slowed down significantly since February, partly reflecting increased volatility in credit markets in the run-up to the Italian election and, in particular, following the announcement of the official sector assistance for Cyprus. While issuance showed some signs of recovery in April and in the first half

... but increased volatility has led to lower debt issuance since February...

Chart 3.23 Deposit flows in selected euro area countries

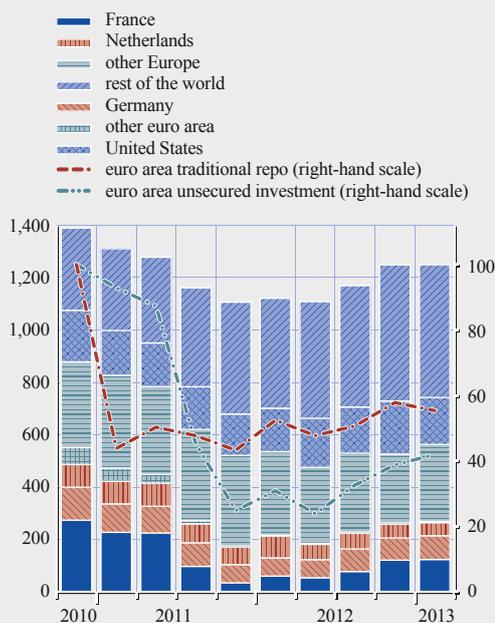
(Q2 2012 – Q1 2013; EUR billions)



Source: ECB.
Note: Figures refer to flows of deposits from households and non-financial corporations.

Chart 3.24 US prime MMFs' bank exposure by geographical area and exposures to the euro area by main instrument type

(Q4 2010 – Q1 2013; bars: USD billions; lines: index, Q4 2010 = 100)



Sources: US Securities and Exchange Commission and ECB.
Notes: "Other euro area" includes Austria, Belgium, Ireland, Italy, Luxembourg and Spain. "Other Europe" includes Norway, Sweden, Switzerland and the United Kingdom.

of May, at least when compared with its levels a year earlier, these recent episodes of heightened volatility served as a reminder that recent funding market improvements may be susceptible to setbacks, for instance due to the reassessment of credit risk premia.

Second, whilst declining, **fragmentation in bank funding costs** remains significant, with banks from stressed countries still having to pay a significant premium on bank debt compared with their peers in core countries (see Chart 3.25). The segmentation of funding markets can also be observed in terms of the ability to obtain senior unsecured debt funding according to bank size. This is illustrated by markedly different issuance patterns of LCBGs and other banks, reflecting the difficulties of mid-sized and smaller banks in accessing senior unsecured debt markets (see Chart 3.26).

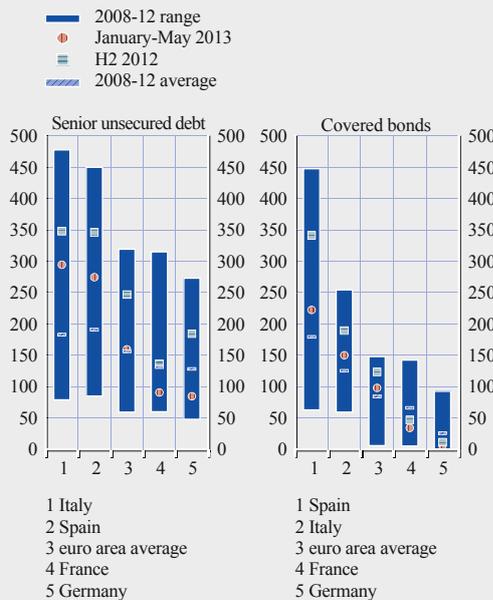
Third, the net issuance of debt securities continued to be negative in most countries (see Chart 3.27). While in some countries this partly reflects long-standing structural changes in the bank debt markets, in particular the secular trend towards a declining supply of public sector covered bonds by German banks, it also highlights the challenges created by reduced debt market access for a number of banks.

Assessing the relevance of these funding challenges is complicated by ongoing structural developments amongst euro area banks. Importantly, ongoing bank balance sheet deleveraging and, in particular, subdued or weak lending activity are reducing funding needs. Furthermore, the large negative net issuance of debt securities is partly due to banks' increased efforts to strengthen their

... and fragmentation in funding markets remains

Chart 3.25 Spreads on senior unsecured debt and covered bonds in selected euro area countries

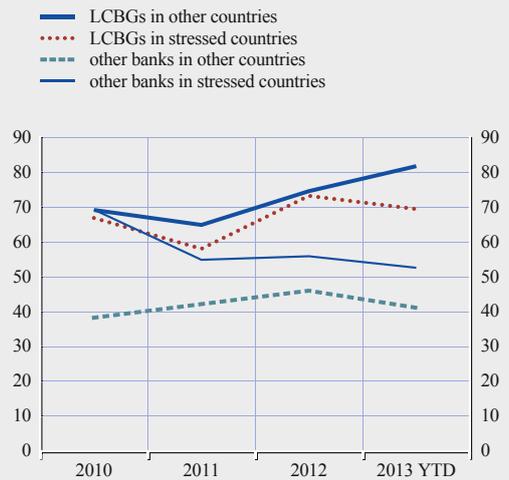
(Jan. 2008 – May 2013; basis points; spread over swaps)



Sources: Dealogic and ECB calculations.
Notes: Based on EUR-denominated fixed rate deals with an issue size of at least €250 million. For covered bonds, only mortgage-backed bonds are included. Excludes retained deals and government-guaranteed debt.

Chart 3.26 Share of unsecured debt issuance by euro area LCBGs and other euro area banks

(Jan. 2010 – May 2013; percentage of total debt issuance)



Sources: Dealogic and ECB calculations.
Note: Excludes retained deals.

deposit base. Coupled with weak or negative loan growth, this has also resulted in a further decline in banks' loan-to-deposit ratios (see Chart 3.8).

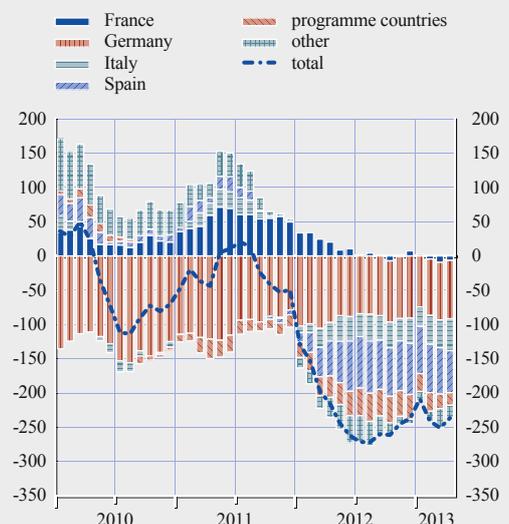
MARKET-RELATED RISKS

Banks' interest rate risk has increased slightly since the publication of the December 2012 FSR. The latest financial reports of euro area LCBGs suggest a slight increase in median interest rate value at risk (VaR) in the fourth quarter of 2012. This increase comes despite banks' efforts to reduce their trading book and market risk-weighted assets (see Box 5 on euro area bank deleveraging). Although volatility remains at very low levels, the continued declines represent a disconnect with rising policy uncertainty (see Chart 2.14). The temporary increase in volatility from end-February to March (following the Italian election results and developments in Cyprus) highlights the sensitivity of markets to uncertainty regarding reform progress at the European and national levels.

Interest rate risk increased slightly

Chart 3.27 Net issuance of medium and long-term debt securities by euro area banks

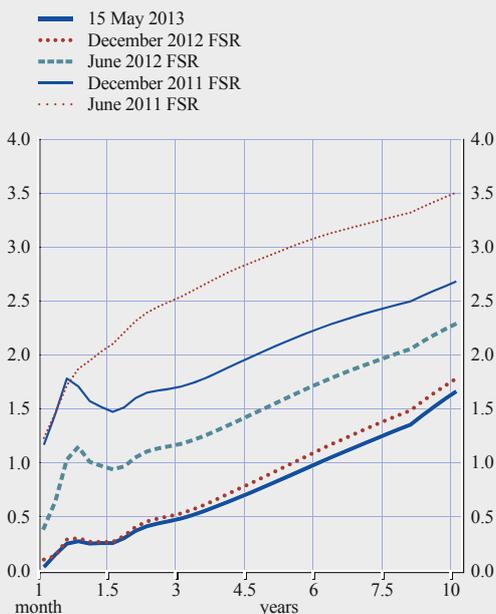
(Jan. 2010 – Apr. 2013; 12-month rolling sum; EUR billions)



Source: Dealogic.
Note: Excludes retained deals.

Chart 3.28 Developments in the euro area yield curve

(percentages)



Source: ECB.

Following an initial steepening in early 2013, the yield curve had flattened slightly by mid-May when compared with its structure at the time of finalisation of the December 2012 FSR (see Chart 3.28). Specifically, rates at the long end declined somewhat, while rates on bonds with shorter maturities experienced only a slight decline or remained broadly unchanged.

Data on MFIs' holdings of government debt show a continuation of the expansion of domestic government debt holdings for banks located in the large euro area countries (see Chart 3.29). However, the degree to which these increased holdings reflect an increase in banks' holdings of domestic sovereign debt varies. For MFIs located in countries often characterised as safe havens where interest rates remain rather depressed, exposure to domestic government debt is limited. By contrast, exposure to domestic sovereign debt is 9% of total assets in Italy and 7% of total assets in Spain – relatively high by euro area standards but not necessarily by historical or international standards.

Banks' have increased government bond holdings...

Perhaps reflecting the growing search for yield, banks have been increasing their holdings of equities and euro area non-financial corporate debt, although they remain limited as a share of the total balance sheet, according to MFI country-level data. MFI data indicate that banks located in euro area countries increased their holdings of euro area NFC debt by 7% on an annual basis in the fourth quarter of 2012, although the exposure of euro area banks to this debt is limited at only 0.5% of total assets. Growth rates of NFC debt holdings varied greatly across euro area countries with substantial increases observed in Dutch (133%), Spanish (115%) and Italian (47%) banks' holdings, albeit from very low levels, contrasting with declines in MFIs' exposure in other euro area countries (see Chart 3.30). Although MFI data imply that the direct impact of a sharp adjustment in risk premia would be limited at the aggregate level, the indirect or second-round effects could be large (e.g. increased corporate defaults, higher uncertainty).

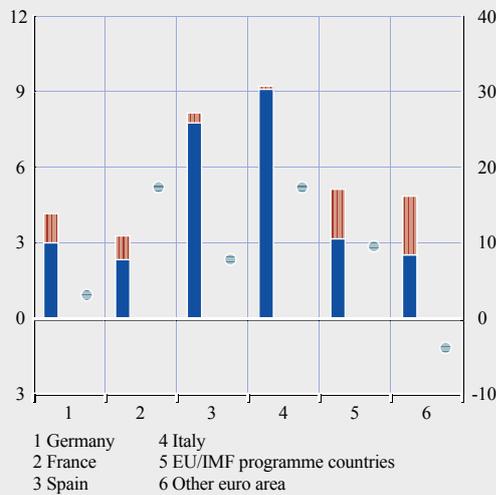
... as well as holdings of equities and corporate debt

Volatility in equity markets has fallen considerably since the start of 2013, according to the Dow Jones EURO STOXX volatility index. The median equity VaR of euro area LCBGs decreased slightly as a share of shareholder equity in the fourth quarter of 2012. MFI statistics on share holdings indicate that euro area banks have continued to increase their exposure to this asset class, but it remained limited at only 2.3% of total euro area MFI assets in March 2013 (see Chart 3.31). Although volatility remains low, market sentiment remains fragile, as evident from the increase in volatility following the Italian election results and developments in Cyprus. Indeed, the slope of the volatility term structure indicates that markets expect higher volatility in the months ahead (see Chart 3.32).

Chart 3.29 MFI holdings of domestic and other euro area sovereign debt by country

(Mar. 2012 – Mar. 2013; percentage of total assets; annual growth rate)

- holdings of domestic government debt as a share of total assets
- holdings of other Member States' government debt as a share of total assets
- annual growth in holdings of euro area government debt (right-hand scale)

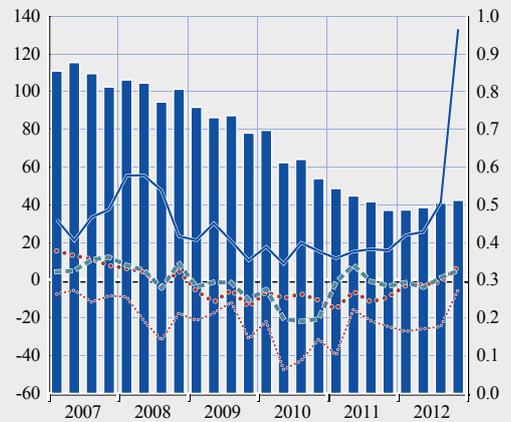


Source: ECB.

Chart 3.30 Annual growth rate of MFI holdings of NFC debt and share of euro area MFI holdings of NFC debt in total assets

(Q1 2004 – Q4 2012; percentage change per annum; share of total balance sheet)

- share of holdings in total euro area balance sheet (right-hand scale)
- euro area annual growth rate
- median annual growth rate for LCBG countries
- maximum growth rate for LCBG countries
- minimum growth rate for LCBG countries



Source: ECB.

Chart 3.31 MFI holdings of shares and other equity

(Jan. 2009 – Mar. 2013; percentage change per annum; share of total balance sheet)

- share of holdings in total euro area balance sheet (right-hand scale)
- euro area annual growth rate
- median annual growth rate for LCBG countries
- maximum growth rate for LCBG countries
- minimum growth rate for LCBG countries

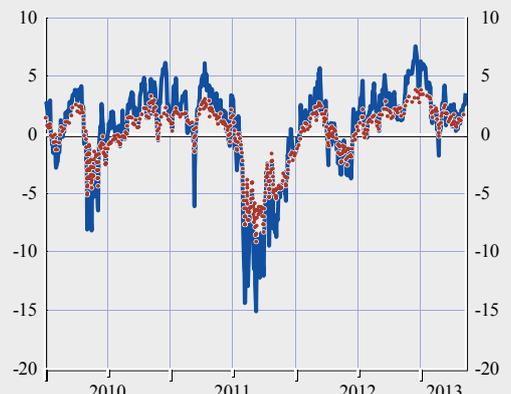


Source: ECB.

Chart 3.32 The slope of the Dow Jones EURO STOXX 50 volatility index futures curve

(Jan. 2010 – May 2013)

- spread – 1 month to 12 months
- spread – 3 months to 12 months



Source: Bloomberg.

Box 6

MEASURING SYSTEMIC RISK CONTRIBUTIONS OF EUROPEAN BANKS

A clear lesson of the global financial crisis has been the propensity for company-specific risk to spill over to other firms. In fact, it is not just a company's size and idiosyncratic risk but also its interconnectedness with other firms which determine its systemic relevance. This realisation has underpinned not only a growing set of tools to capture such systemic risk, but also numerous regulatory initiatives to limit and mitigate it.

Of the multiple methodologies which have gained prominence to date in capturing systemic risk contributions of individual institutions, few have touched upon the time-varying nature of this process. This box illustrates a novel methodology that builds on the concept of value at risk (VaR) and can explicitly account for the time-varying interconnectedness within the banking sector. For each bank, the underlying statistical approach identifies the relevant tail-risk drivers as the minimum set of macro-financial fundamentals, firm-specific characteristics and risk spillovers from other banks driving its VaR. Detecting with whom and how strongly any institution is connected allows the estimation and construction of a tail-risk network of the financial system. A bank's contribution to systemic risk is then defined as the effect of an increase in its individual tail risk on the VaR of the entire system, conditional on the bank's position within the financial network as well as overall macro-financial conditions. The analysis¹ is based on publicly available market and balance sheet data and is applied to a sample of 51 large European banks.

The proposed concept is related to the widely used systemic risk measure of CoVaR.² However, the methodology outlined in this box does not constrain time variation in systemic risk to variation in idiosyncratic risk. More importantly, neither CoVaR nor alternative approaches to quantifying systemic risk contributions, such as marginal expected shortfall or distressed insurance premia, explicitly consider network interconnections, which are key determinants of banks' systemic risk contributions.³ Such approaches cannot detect spillover effects driven by the topology of the risk network and thus might underestimate the systemic importance of smaller but very interconnected banks.

The empirical implementation of the statistical model is based on a two-stage quantile regression. In the first step, bank-specific VaRs are estimated as functions of firm characteristics, macro-financial state variables as well as tail-risk spillovers of other banks. Hereby, the major challenge is to shrink the high-dimensional set of possible cross-linkages among all banks to a feasible number of relevant risk connections. Novel Least Absolute Shrinkage and Selection Operator (LASSO) techniques⁴ address this issue and allow the identification of the relevant tail-risk drivers for each bank in a fully automatic way. The resulting tail dependence network can be represented in terms of a network graph as illustrated in Chart A, which shows some indications of fragmentation of the European interbank market, as the banks in the programme countries are estimated to be disconnected from the other European banks. Moreover, during the European sovereign debt crisis, the tight interconnections between banks and sovereigns have played an important role. To account for this, sovereign bond yields are modelled (under an alternative

1 The analysis is based on F. Betz, N. Hautsch, T. Peltonen and M. Schienle, "Measuring systemic risk contributions of European banks", *ECB Working Paper Series*, forthcoming – building on N. Hautsch, J. Schaumburg and M. Schienle, "Financial Network Systemic Risk Contributions", SFB 649 Discussion Paper 2012-053, available at <http://sfb649.wiwi.hu-berlin.de/papers/pdf/SFB649DP2012-053.pdf>, 2012.

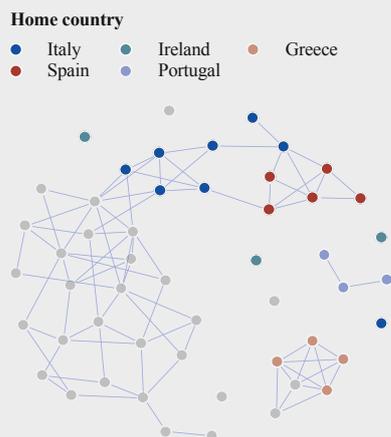
2 T. Adrian and M. Brunnermeier, "CoVaR", *Federal Reserve Bank of New York Staff Reports*, No 348, September 2011.

3 ECB, "Analytical models and tools for the identification and assessment of systemic risk", *Financial Stability Review*, June 2010.

4 A. Belloni and V. Chernozhukov, "l1-penalized quantile regression in high-dimensional sparse models", *Annals of Statistics*, Vol. 39, No 1, pp. 82-130, 2011.

Chart A Estimated tail dependency network for 51 large European banks

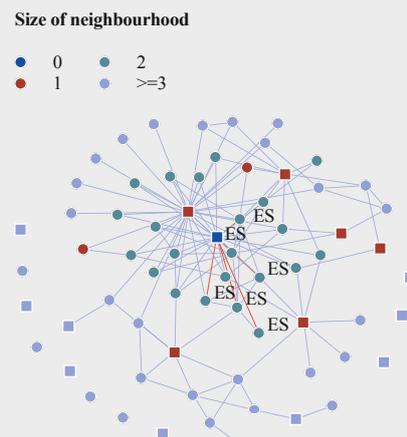
(2010 – 2012)



Sources: F. Betz, N. Hautsch, T. Peltonen and M. Schienle, “Measuring systemic risk contributions of European banks”, *ECB Working Paper Series*, forthcoming.
 Note: Banks in euro area countries under stress are marked with varying colours, while banks in other countries are marked in grey.

Chart B Visualisation of sovereign-bank interconnection using an estimated tail dependency network for 51 large European banks

(2010 – 2012; Spanish sovereign and banks are highlighted)



Sources: F. Betz, N. Hautsch, T. Peltonen and M. Schienle, “Measuring systemic risk contributions of European banks”, *ECB Working Paper Series*, forthcoming.
 Notes: Rectangles denote European sovereigns and circles large European banks. Petrol blue denotes banks directly connected to the Spanish sovereign (blue), reddish brown denotes banks and sovereigns connected to the Spanish sovereign through a bank, while light blue denotes banks and sovereigns where the connection to the Spanish sovereign is through two or more banks.

specification) as tail-risk drivers instead of state variables, and thus are also incorporated into the estimated tail dependency network (see Chart B).

In the second step of the empirical modelling strategy, to measure a bank’s systemic impact, the VaR of the financial system is regressed on the bank’s estimated VaR, while controlling for the pre-identified bank-specific risk drivers as well as macro-financial state variables.

A bank’s systemic risk contribution is determined as the marginal effect of its individual VaR on the VaR of the system and is called the systemic risk beta. It corresponds to the system’s marginal risk exposure due to changes in the tail of a firm’s loss distribution. The systemic risk beta is a function of firm-specific characteristics, such as leverage, maturity mismatch and size. To compare the systemic relevance of banks across the financial system, however, it is necessary to compute the total increase in systemic risk. Thus, banks are ranked according to their “realised” systemic risk beta, corresponding to the product of a bank’s systemic risk beta and its VaR, given by the fitted value of the first-stage regression. Accordingly, a bank’s balance sheet structure can affect its marginal systemic relevance, even though its individual risk level might be identical at different points in time.

The empirical analysis reveals a high degree of tail-risk interconnectedness among large European banks. In particular, it is found that the network risk interconnection effects are important drivers of individual risk, while an institution’s idiosyncratic risk is clearly a poor proxy of its systemic importance. The systemic risk assessment is complemented by the systemic risk networks, which yield qualitative information on potential risk channels and the roles of individual banks within the financial system. Moreover, the analysis also gives an interesting insight into banks’ contributions

to systemic risk during the European sovereign debt crisis. As illustrated in Charts A and B, the methodology is able to reproduce the fragmentation of the European interbank market and the tight interconnection between sovereigns and banks during the European sovereign debt crisis.

3.2 THE EURO AREA INSURANCE SECTOR: OVERALL RESILIENCE AMID INVESTMENT INCOME RISKS

FINANCIAL CONDITION OF LARGE INSURERS⁹

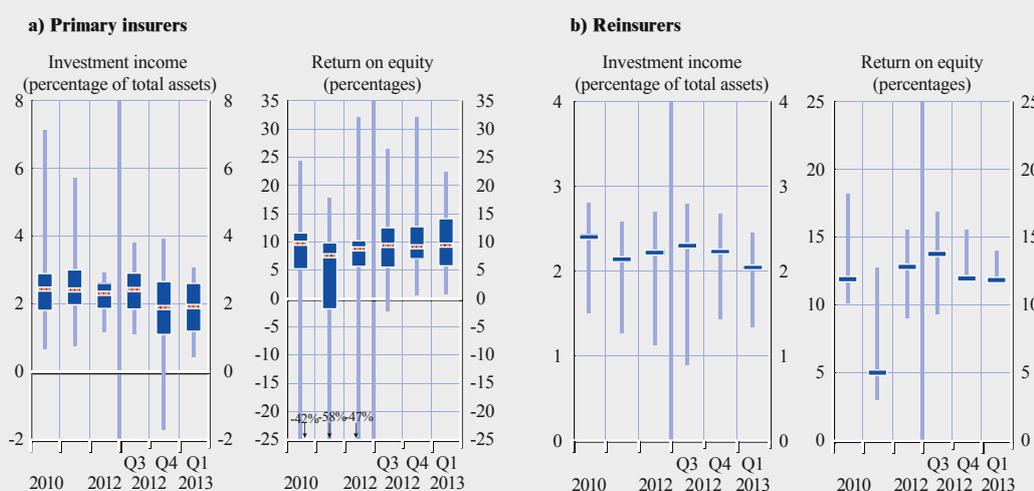
The performance of large euro area insurers remained stable despite the financial and economic crisis. Both profitability and capital positions remained steady owing to a good full-year underwriting result and investment income in 2012 (see Chart 3.33). Indeed, investment income was positive for almost all of the insurers in the sample, partly on account of gains from the sales of highly valued fixed income assets in particular in the fourth quarter of 2012. Hurricane Sandy was the biggest loss event of 2012, with estimated insured losses of USD 25 billion, and dented the fourth-quarter underwriting result of some primary insurers and reinsurers. However, combined ratios (incurred losses and expenses as a proportion of premiums earned) remained below 100% for all the insurers in the sample for the last quarter of 2012 and the first quarter of 2013, thereby signalling profitable underwriting activity (see Chart S.3.27). That said, new business declined on average in the first quarter of 2013 on account of weak economic activity, with insurers in countries experiencing economic contractions often exhibiting the most pronounced declines in gross premiums written (see Chart S.3.26). Although natural catastrophe, motor and marine insurance saw high demand and price increases, competitive pressures persisted in European property and casualty insurance in general, and life insurance continued to suffer from competition from other savings vehicles in an environment of subdued pricing possibilities.

Insurers' performance remained modest but stable

Chart 3.33 Investment income and return on equity for selected large euro area insurers

(2010 – Q1 2013; maximum, minimum, interquartile distribution and median)

(2010 – Q1 2013; minimum-maximum distribution and weighted average)

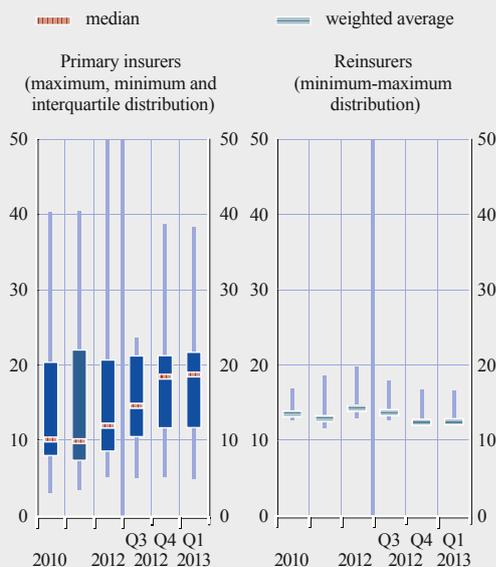


Sources: Bloomberg, individual institutions' financial reports and ECB calculations.
Note: The quarterly data are annualised.

9 The analysis is based on a sample of 19 listed primary insurers with total combined assets of about €4.3 trillion, representing 60% of the gross premiums written in the euro area insurance sector, and on a sample of three reinsurers with total combined assets of about €346 billion, representing about 30% of total global reinsurance premiums. Quarterly data were only available for a sub-sample of these insurers.

Chart 3.34 Capital positions of selected large euro area insurers

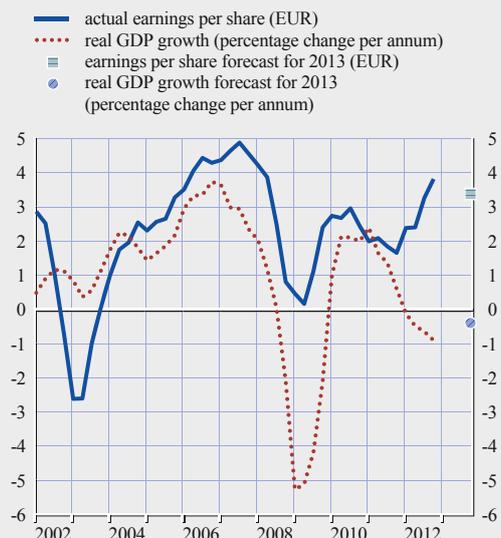
(2010 – Q1 2013; percentage of total assets)



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

Chart 3.35 Earnings per share of selected large euro area insurers and real GDP growth

(Q1 2002 – Q4 2013)



Sources: European Commission, Thomson Reuters and ECB calculations.

Capital buffers comfortable, although possibly inflated

The stable performance has enabled large euro area insurers to continue accumulating capital buffers through retained earnings, with the exception of a few reinsurers which released capital which they considered excessive (see Chart 3.34). However, the capital positions also partly reflect accounting effects, as low yields on highly rated government bonds inflate insurance assets, and because liabilities are not marked to market in most jurisdictions in the euro area.¹⁰

Overall outlook stable but heterogeneous

INSURANCE SECTOR OUTLOOK AND RISKS

In contrast to the volatility seen in the banking sector, the financial situation of large euro area insurers is expected to remain resilient on aggregate, albeit with a high level of heterogeneity across institutions and countries. This resilience can be attributed to the long-term nature of the traditional insurance business model, in which assets are generally held until maturity with a long-term view which looks through market volatility. At the same time, medium-term issues require monitoring, including a low-yield environment that is weighing on the profitability outlook of the sector. In the short term, volatility in government bond yields could impact balance sheet valuations and, therefore, capital, the direction of the impact depending on the liability valuation rules of the jurisdiction. Insurers may also be tempted to search for yield from more lucrative investments or non-core activities, which is a development that warrants continuous monitoring. The potentially higher capital needs of the risk-based requirements of the forthcoming Solvency II framework, the limited opportunities for capital raising and the bleak investment income outlook are likely to keep many insurers in a capital-conserving mode in the near future.

¹⁰ Large, listed euro area insurers generally follow International Financial Reporting Standards (IFRSs), which provide for a uniform treatment of financial assets (depending on their respective accounting classification), but (currently) not for like treatment of insurance liabilities.

Analysts expect
stable earnings

Improved pricing,
but risks to growth
and investment
income

Government and
corporate bond
markets key for
investment risk

Although market
developments and
accounting rules
fragment the risk
landscape...

Earnings outlook

Analysts expect insurance earnings to remain at comfortable levels in 2013 (see Chart 3.35), an outlook confirmed by market-based indicators for insurers such as credit default swap (CDS) spreads and equity prices (see Charts S.3.33 and S.3.36).

Although earnings are expected to benefit from a more favourable pricing of selected insurance products, this upside is likely to be offset by muted economic growth and prospects of a low investment return. Weak economic growth translates into sluggish demand for primary insurance, limited pricing opportunities and potentially increased credit risk in corporate bond markets. Persistent low yields on highly rated government bonds – a mainstay of large insurers’ traditional investment strategies – clearly serve to erode investment income over time. Although large euro area insurers are in general well diversified in geographical and business terms and many have also already significantly adjusted their business models to the new environment, some life insurers may be squeezed by a thin or even negative margin between investment returns and minimum guarantees made to policyholders in the past. Finally, high yields on lower-rated euro area government bonds also incorporate profitability risks for life insurers insofar as competition for clients from other available savings products results in higher guarantees on new policies and exposure to yield volatility in the future. So far, the modest developments in gross premiums written and anecdotal evidence point towards cautious granting of guarantees, which also suggests subdued demand in the near future.

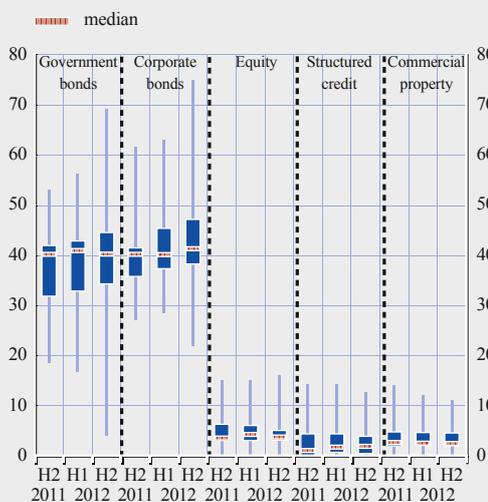
Main solvency risks

The most important solvency risks for the insurance sector emanate from investment activity, which remains concentrated in government and corporate bond markets. There have been some signs of substitution recently, with some insurers clearly moving from government bond exposures towards corporate bonds and vice versa, although there has been little aggregate increase in exposure to other assets such as equity, structured credit or commercial property. The substitution may be a reflection of the prevailing high uncertainty in the government bond markets in particular, as the companies most affected by the low-yield environment seek other sources of investment income (see Charts 3.36 and 3.37).

The divergence in **government bond** yields and differences in the accounting treatment of liabilities across jurisdictions imply that the short-term solvency risks differ from country to country. The investment profile of each institution, together with the extent of maturity mismatch, hedging strategies and product design, also play a decisive role in how the risks outlined below affect an individual institution. That said, many insurers are vulnerable to a sudden rise in yields, which could imply a significant decrease in asset valuation. Any observed impact on solvency may be significant in the absence of an immediate reaction in the discount rate for liabilities, a case which applies for most euro

Chart 3.36 Investment mix for selected large euro area insurers

(H2 2011 – H2 2012; percentage of total investments; maximum, minimum and interquartile distribution)



Sources: JPMorgan Cazenove, individual institutions’ financial reports and ECB calculations.
Notes: Based on consolidated financial accounts data. The equity exposure data exclude investment in mutual funds.

... low yields are the key risk in the medium term

area jurisdictions owing to the use of historical liabilities accounting under the current rules (Section 3.3 presents a rough estimate of the impact in economic terms when a swap curve is used for the discount rate). It should be noted, however, that insurers can mitigate the impact of a sudden increase in yields in many ways, for example through hedging or by shifting assets into the held-to-maturity portfolio.

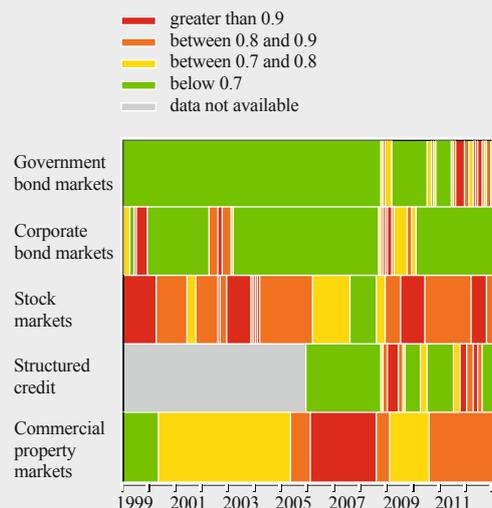
Low yields on highly rated government bonds constitute the key underlying solvency risk in the medium term – and an immediate potential problem in those jurisdictions where they coincide with a market-consistent approach to the treatment of liabilities (where solvency is, in addition to reduced profitability, squeezed through a balance sheet impact as the value of liabilities is high when yields are low). Although currently limited to only a few euro area countries, the liability effect will gain in importance on the eve of the introduction of the Solvency II regime. In the light of the persisting low-yield environment and the need to adjust to the forthcoming regulatory framework, the European Insurance and Occupational Pensions Authority (EIOPA) recently recommended that national supervisors intensify their monitoring of risks related to low yields and potentially unsustainable business models that are based on investment income, irrespective of the accounting regime of the jurisdiction.¹¹

Portfolio shift towards corporates

With a fragmented and in some cases low-yielding government bond market, **corporate bond** portfolios of large euro area insurers are growing. This rise on average indicates a possible shift in investment strategy. For some of the insurers in the sample, the move appears to have been induced by the low-yield environment and the good selling opportunities for certain government bonds in the fourth quarter of 2012.¹² Although corporate bond market conditions do not appear to give rise to immediate concern (see Chart 3.37), the lull seen in the market along with yields at historical lows may point to a hunt for yield-driven underpricing of credit risk (see Section 2). Insurers' increasing exposure to this asset class, together with a weakening macroeconomic outlook and potential rating downgrades, may imply an increased market and credit risk in the future. Within the class of corporates, insurers remain particularly exposed to developments in the financial sector (see the next section on interlinkages).

Chart 3.37 Investment uncertainty map for euro area insurers

(Jan. 1999 – Apr. 2013)



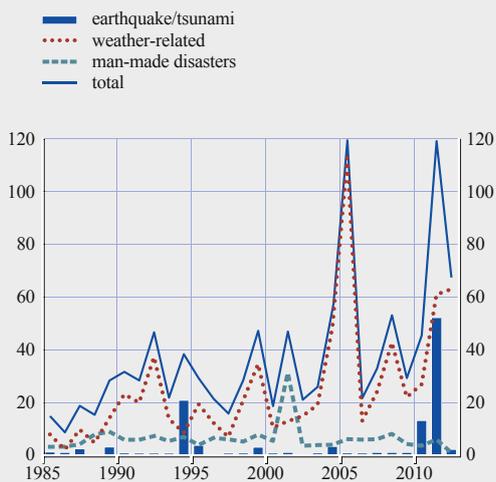
Sources: ECB, Bloomberg, JPMorgan Chase & Co., Moody's, Jones Lang LaSalle and ECB calculations.
Notes: The chart shows the level of each indicator in comparison with its "worst" level (i.e. its highest or lowest level, depending on what is worse from an insurer's perspective regarding investment) since January 1999. An indicator value of one signifies the worst conditions in that market since January 1999. "Government bond markets" represent the euro area ten-year government bond yield and the option-implied volatility of ten-year government bond yields in Germany; "Corporate bond markets" the average of euro area A-rated corporations' bond spreads and European speculative-grade corporations' actual and forecast default rates; "Stock markets" the average of the index level and the price/earnings ratio of the Dow Jones EURO STOXX 50 index; "Structured credit" the average of euro area residential mortgage-backed securities and European commercial mortgage-backed securities spreads; and "Commercial property markets" the average of average euro area commercial property capital values and value-to-rent ratios. For further details on how the uncertainty map is created, see Box 13 in ECB, *Financial Stability Review*, December 2009.

11 See the EIOPA Opinion of 28 February 2013 on the supervisory response to a prolonged low interest rate environment (available at <https://eiopa.europa.eu>).

12 As long-term investors, insurers typically hold investments until maturity in the absence of exceptionally attractive selling opportunities. To some extent, such opportunities have materialised lately in the government bond portfolios of some insurers.

Chart 3.38 Insured catastrophe losses

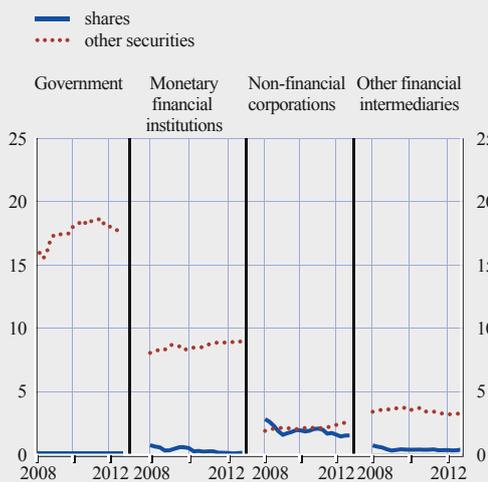
(1985 – 2012; USD billions)



Sources: EQECAT, Munich Re, Swiss Re and ECB calculations.

Chart 3.39 Financial assets of euro area insurance companies and pension funds

(Q1 2008 – Q4 2012; percentage of total financial assets)



Source: ECB.

A search for more profitable investment opportunities has the potential to push insurers beyond traditional activities – be it in terms of geographical exposure or asset classes. In particular, European insurers may seek to shift some funds towards emerging market economies as they search for yield, diversify and pursue a strategy of underwriting activities in less mature markets. Insurers are also becoming increasingly active in project and infrastructure financing as well as lending. While these activities may yield diversification benefits, they may also imply new channels of risk requiring close monitoring.

Solvency risks related to **insurance underwriting** remain moderate in the context of comfortable capital buffers following a year of relatively low insured losses (see Chart 3.38). The comfortable level of capitalisation is likely to have contributed to the modest overall increases in price levels. The recent price increases in some sectors have nevertheless improved the potential for generating capital through retained earnings during the coming quarters. For life insurers, the improved funding conditions of banks have reduced the risk of forced asset sales by insurers on account of a liquidity squeeze that could impact solvency.

Moderate underwriting risks

Interlinkages with the banking sector

Investment by insurers in bank bonds has remained robust during the financial crisis (see Chart 3.39) and fears that certain features of the expected calibration of the risk-based capital requirements in the Solvency II framework reduce incentives for investment in bank bonds have so far not materialised.¹³ Bank bonds accounted for 23% of insurers' and pension funds' total holdings of debt securities, and for 9% of their total financial assets, in the fourth quarter of 2012. The low yields on highly rated government bonds might also continue to spur investment in bank bonds in the next six to twelve months.

Insurers remain important for bank funding

¹³ Current Solvency II proposals include a differentiated treatment of bank bonds, which may partly explain the behaviour observed in Chart 3.39. In particular, although the long-term bank bonds may receive a stricter treatment, the bulk of the bank bond investment by insurers lies in the bracket of 3-5 years and would not be greatly affected by the current proposals. Covered bonds also retain attractive risk weights according to the proposals.

*Risks from credit
risk protection
remain small*

More direct linkages – either through insurance sector assumption of credit risk or through financial groups – have been stable. Credit risk protection selling has remained modest, as part of a decreasing trend since 2009. While limited, financial stability risks related to these activities warrant continued monitoring. Perhaps the tightest direct link, however, is through the “bancassurance” model, popular in Europe as many insurers have close ties with banks through financial groups (see Box 7).

Box 7

FINANCIAL STABILITY AND BANCASSURANCE GROUPS – LESSONS FROM THE EURO AREA EXPERIENCE DURING THE FINANCIAL CRISIS

A popular financial services model in Europe is a melding of banking and insurance activities together under one roof – or so-called bancassurance groups. These arrangements can yield many benefits, including economies of size and scope, and sectoral diversification can reduce income and balance sheet volatility.¹ The financial crisis, however, also highlighted the fragilities of this model, with recourse to state aid by several financial groups with significant banking and insurance activities. First, the complexity and the inherent opacity of the structure pose challenges in terms of risk management, market discipline and supervisory control. Second, the multiple use of regulatory capital may overstate the capacity of a group to absorb losses – either across the various regulated entities within the group (double or multiple gearing) or through the use of debt issued at the holding company level to acquire equity stakes in subsidiaries (double leverage). Third, intra-group transactions may lead to risk transfers and contagion channels within the group. Finally, the various units of a group may individually build up risk positions, which may lead to an uncontrolled concentration of risk at the group level. In the European Union, bancassurance groups are subject to supplementary supervision concentrating on these risks, provided that they match the criteria stipulated in the Financial Conglomerates Directive (FiCoD).²

An analysis of bancassurance groups that suffered distress during the financial crisis can offer several insights into potential fragilities of this business model. To begin with, it is notable that many euro area bancassurance groups that received state aid in the context of the financial crisis did not qualify for the supplementary supervision under FiCoD (see Chart A).

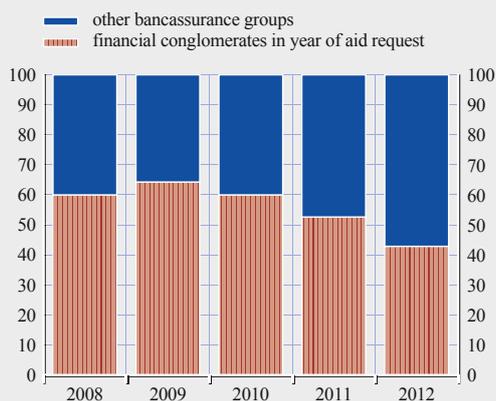
An analysis of the causes of state-aid requests gives rise to three immediate observations (see Chart B). First, the number of cross-border and/or cross-sectoral cases underlines the importance of further enhancing group-level control and supervision – both at a euro area and at a global level (given a plethora of cross-border issues). Indeed, many of the state-aid requests at the start of the crisis were related to impairments in US entities. Concrete cases of cross-sectoral problems include in particular correlated exposures across the units and double leverage – such as the case of SNS Reaal, where a first request for state aid in 2008 was triggered by pressure on the capital of the insurance arm, with considerable group-level difficulties related to double leverage. The recent rescue further underlined the risks related to double leverage, as disentangling parts out of the group proved impossible owing to the need to repay the loans taken out by the holding company.

1 See F. Dierick, “The supervision of mixed financial services groups in Europe”, *ECB Occasional Paper Series*, No 20, August 2004.

2 Broadly speaking, a financial conglomerate has to operate in the insurance sector and also have other (banking or investment) activities, and the extent of the activities should exceed the minimum thresholds.

Chart A Composition of euro area bancassurance groups having received financial crisis-related state aid

(2008 – 2012; percentage of the cumulative number of bancassurance groups having received state aid)

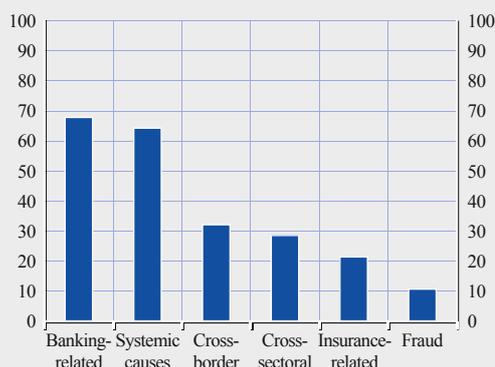


Sources: List of identified financial conglomerates, European Commission and national ministries of finance.

Note: The sample consists of 28 cases of state aid to financial groups with both banking and insurance activities for which sufficient information was available.

Chart B Main contributors to financial crisis-related state-aid requests for euro area bancassurance groups

(percentages)



Sources: European Commission, national ministries of finance and ECB calculations.

Notes: Multiple entries are possible. Cross-sectoral contributors include multiple gearing, double leverage, intra-group contagion, and concentrated exposures across sectors. Systemic causes include, inter alia, requirements to raise capital above regulatory minima owing to a general loss of confidence, and are included only when they are considered to have had a decisive impact on the aid request.

Second, the need for state aid seems to have originated predominantly from the banking units of the groups. The causes include in particular reliance on short-term funding and excessive mortgage or commercial property lending during the years preceding the crisis. Requests originating from the insurance arms have typically related to mark-to-market valuation declines in investments, sometimes combined with non-standard business features that have allowed policyholders to withdraw policies at low cost (e.g. Ethias). Despite these high-profile cases of difficulties with conglomerates, it should be acknowledged that many other cases have underlined the benefits of diversification (such as the case of Irish Life & Permanent Group).

Third, the majority of cases involve systemic causes, a result that underlines the importance of improved macro-prudential supervision and policies to maintain general confidence and contain accumulations of system-wide risks.

The number of cases of distress and their heterogeneity have culminated in a regulatory push to enhance the supervision of financial conglomerates. This includes measures to strengthen financial stability in four areas. First, the identification of conglomerates will be improved with the introduction of risk-based assessments in addition to quantitative thresholds as part of the first review of FiCoD by mid-2013, alongside enhanced transparency for legal and operational structures.³ Second, the same legislation will see the introduction of living wills

³ A second review has also already been initiated, motivated inter alia by the need to further improve the identification of financial conglomerates and the potential systemic issues related to them. The conclusion of the review will take place once the new sectoral legislation has become applicable.

for conglomerates, which should facilitate the separation of units in resolution cases in the future.⁴ Third, elements of improved group supervision (e.g. with regard to the double counting of holdings in insurance subsidiaries, corporate governance and remuneration policies) are included in the new sectoral legislation, in particular CRD IV and Solvency II. Finally, the single supervisory mechanism (SSM) will inevitably improve cross-border supervision in the participating countries. The macro-prudential aspects of supervision will be strengthened by the mandate of the SSM. The SSM is also expected to take over the supplementary supervision of bank-led conglomerates.

All in all, the analysis of euro area bancassurance groups that experienced distress during the financial crisis suggests that contagion has more often taken place from the banking units towards the insurance units than vice versa. This implies that the close ownership ties with banks do have an impact on the performance of the sector. Close monitoring of potential contagion channels within financial groups, including via liquidity swaps, is thus important for the stability of the sector – which several ongoing regulatory initiatives should help to address.⁵

4 The living wills requirement will be further reinforced by the European Bank Recovery and Resolution Framework.

5 A recent EIOPA survey highlighted the risks related to liquidity swaps. Although the extent of such activity was found to be low, careful consideration of intra-group swaps was recommended as they may not be motivated by the business needs of the insurer. See EIOPA, *Financial Stability Report 2012 – Second half-year report*, December 2012.

3.3 A QUANTITATIVE ASSESSMENT OF THE IMPACT OF SELECTED MACRO-FINANCIAL SCENARIOS ON FINANCIAL INSTITUTIONS

A quantitative assessment of macro-financial scenarios mapping systemic risks...

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 Financial Stability Review (FSR) (see Table 3.1):¹⁴

- (i) *a further decline in bank profitability, linked to credit losses and a weak macroeconomic environment* – materialising through negative shocks to aggregate demand and aggregate supply in a number of EU countries;
- (ii) *the risk of renewed tensions in euro area sovereign debt markets due to low growth and slow reform implementation* – materialising through an increase in long-term interest rates and declining stock prices;
- (iii) *bank funding challenges in stressed countries* – reflected by reduced access to wholesale debt financing and deposit outflows in distressed countries with detrimental effects on loan supply;
- (iv) *the risk of a reassessment of risk premia in global markets* – reflected by a sharp increase in investor risk aversion worldwide, leading to falling stock and corporate bond prices and lower euro area external demand.

14 The assessment is based on a macro-prudential simulation exercise involving top-down stress-testing tools. The results are not comparable with those of micro-prudential stress tests used for supervisory purposes, which analyse the solvency of individual financial institutions. The tools employed are: (i) a forward-looking solvency analysis, similar to a top-down stress test, for euro area LCBGs; and (ii) a forward-looking analysis of the assets and liabilities side of the euro area insurance sector. The results are based on publicly available data up to the fourth quarter of 2012 (or a few quarters earlier) for individual banks and insurance companies, as well as bank exposure data disclosed in the 2011 EU-wide stress test and the 2011 EU capital exercise, as coordinated by the European Banking Authority (EBA).

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

Risk	Scenario	Key assumptions driving impact on GDP
Decline in bank profitability, linked to credit losses and a weak macroeconomic environment	Economic growth scenario	Shocks to investment and consumption as well as user cost of capital and nominal wages
Renewed tensions in euro area sovereign debt markets due to low growth and slow reform implementation	Sovereign debt crisis scenario	An aggravation of the sovereign debt crisis fuelling interest rate increases and stock price declines
Bank funding challenges in stressed countries	Funding stress scenario	Restricted access to funding fuelling bank deleveraging and restricting loan supply
Reassessment of risk premia in global markets	Risk aversion scenario	A shock to confidence and rise in risk aversion worldwide fuelling stock price declines and corporate bond yield increases and eventually affecting euro area external demand

MACRO-FINANCIAL SCENARIOS AND THE IMPACT ON GDP

The four adverse scenarios described below and summarised in Tables 3.1 and 3.2 display the key driving factors at play, as well as the overall impact on euro area GDP, with the latter giving an indication of the scenario impact on the whole spectrum of macro-financial model variables that respond to the shocks set in each scenario. The impact of the adverse scenarios is assumed to be felt from the first quarter of 2013 onwards, reflecting the fact that the bank balance sheet data used in the solvency analysis refer to the fourth quarter of 2012.¹⁵

Adverse euro area growth

A clear thread throughout this Review is the detrimental impact of weakening macroeconomic activity on both the macro-financial environment and financial institutions. In order to capture the risk of weaker than anticipated domestic economic activity in many euro area countries, this scenario involves country-specific negative shocks to aggregate demand, via a slowdown in fixed investment and private consumption, and to aggregate supply, via increases in the user cost of capital and nominal wages. The calibration of the country-specific shocks was based on a quantitative and qualitative ranking of the most pertinent risks at the country level. The effect on GDP is derived using “stress-test elasticities”.¹⁶

These assumptions result in an overall impact on euro area real GDP growth, expressed in percentage point deviations from baseline growth rates, of -0.4 percentage point in 2013 and -0.9 percentage point in 2014. The real economic impact varies considerably across euro area countries, with countries under sovereign stress being the most negatively affected.

To illustrate the strong interconnections between the sovereign debt crisis, economic activity and the banking sector, a further joint scenario combining the sovereign debt shock and the adverse economic growth shock is also considered. Under such a combined scenario, the impact on euro area real GDP growth, expressed in percentage point deviations from baseline growth rates, amounts to -0.5 percentage point by the end of 2013 and -1.2 percentage points by the end of 2014, again with considerable variation across countries.

¹⁵ The 2012 shock sizes have been “de-annualised” to account for the fact that only the last quarter of the year is relevant when calculating the impact on the banks’ income and losses and ultimately on their solvency.

¹⁶ Stress-test elasticities are a simulation tool based on impulse response functions (taken from ESCB central banks’ models) of endogenous variables to predefined exogenous shocks. They incorporate intra-EU trade spillovers.

The first scenario is based on a shock to aggregate demand and supply

Under the second scenario, euro area sovereign bond yields rise to abnormally high levels...

... accompanied by a sharp decline in stock prices, an increase in short-term interest rates and an increase in sovereign CDS spreads

This implies losses in the trading book and an increase in banks' cost of funding and credit risk

Increased funding difficulties in some countries...

Aggravation of the sovereign debt crisis

Sovereign stresses have been at the heart of the crisis. This scenario attempts to capture such stresses, envisaging a rise in euro area sovereign bond yields to elevated levels, while taking into account dependencies with other asset prices (stock prices in particular). The shocks are assumed to emanate from euro area countries particularly vulnerable to possible further contagion from euro area EU/IMF programme countries.¹⁷

The design of this shock is predicated on the following assumptions. First, a permanent shock to long-term government bond yields, at the cut-off date, is assumed for all euro area countries except Greece and Cyprus, which are outliers in this regard, ranging from no impact to up to 370 basis points. Second, the slope of national yield curves at the cut-off date is used to transpose the simulated shock to other maturities. Third, the shock to bond yields has spillover effects on stock prices, ranging from 0% to -38% across the euro area countries, with the strongest negative impact observed in Spanish and Italian stock markets. The simulated shocks to bond yields and stock prices lead to an immediate and persistent increase in short-term market interest rates.¹⁸ Lastly, the calibrated shocks to ten-year government bond yields determine country-specific shocks to sovereign credit default swap (CDS) spreads.¹⁹

These factors lead to a varied rise in sovereign bond yields, depending on the country, resulting in marking-to-market valuation losses on euro area banks' sovereign exposures in the trading book,²⁰ while the increase in sovereign credit spreads also raises the cost of euro area banks' funding. The country-specific shocks to interest rates and stock prices also have direct implications for the macroeconomic outlook, which in turn affects banks' credit risk. Ultimately, the average impact on euro area real GDP – assuming unchanged monetary policy and expressed in percentage point deviations from baseline growth rates – amounts to -0.3 percentage point at the end of 2013 and -0.6 percentage point at the end of 2014.²¹

Renewed funding stress

A third key risk relates to the potential for pronounced funding difficulties for banks in countries where the sovereign is under stress which could seriously hamper credit intermediation, for example by inducing banks to restrain their lending. To account for the diverse stress factors affecting bank funding markets in some euro area countries, a number of shocks are considered. First, some deposit outflows from banks in the more distressed euro area countries

17 The selection of countries that are potentially vulnerable to further contagion is based on a systematic shock simulation to identify the countries/markets that are most influential in the sense of causing the most widespread responses when being shocked themselves. Smaller countries, e.g. Cyprus and Slovenia, have not been considered as countries from which shocks may emanate since their sovereign bonds outstanding are insufficient or their data quality is inadequate for carrying out a robust analysis. The calibration of the sovereign bond yield shock is based on daily compounded changes in ten-year government bond yields and stock prices observed since January 2011. These observations are used to simulate a joint, multivariate forward distribution of yields and stock prices 60 days ahead. In the simulation, long-term interest rates and stock prices in countries that are currently perceived by market participants as being particularly vulnerable to possible further contagion are shock-originating markets, with the shocks assumed to occur with a 1% probability. The response for all other markets/countries is computed using a non-parametric model consistent with the shock probability assumption. The resulting shock sizes are in principle dependent on the selected sample period. However, sensitivity analyses show that the shocks do not materially change by, for instance, reducing the sample size by using a cut-off date in mid-2011.

18 The same simulation procedure as that used for calibrating long-term bond yield shocks across euro area countries has been applied for the three-month EURIBOR.

19 They are based on estimated regressions of sovereign CDS spreads on long-term government bond yields.

20 By contrast, securities held in the available-for-sale portfolio and in the banking book are assumed to be unaffected by the asset price shock, in line with the treatment in the EBA 2011 EU-wide stress test. The valuation haircuts are calibrated to the new levels of government bond yields, using the sovereign debt haircut methodology applied in the EBA 2011 stress-test exercise.

21 The impact of these shocks on euro area economic growth was derived using the stress-test elasticities.

are assumed.²² Second, banks are assumed to roll over only part of their wholesale debt maturing over the next two years, reflecting differences across banks in terms of their access to wholesale funding markets and a more system-wide drive to gradually reduce reliance on (especially short-term) wholesale funding.²³ Third, country-specific loan-to-deposit ratio targets are imposed to reflect a more general need to reduce reliance on wholesale funding (also in the light of upcoming Basel III liquidity requirements).²⁴

To capture how funding constraints restrain loan supply, banks' announcements concerning ongoing restructuring plans are taken into account and are seen as a lower bound for banks' minimum deleveraging. For many banks, the estimated impact of funding stress on deleveraging exceeds the short-term liquidity shortages that were addressed by the two three-year longer-term refinancing operations (LTROs).

A pecking order of deleveraging is assumed to derive quantitative constraints on lending (loan supply shocks). Banks are first expected to shed more liquid assets (such as non-domestic sovereign bonds and interbank exposures) and foreign credit exposures, and reduce their domestic loan book only as a last resort. These loan supply shocks are applied to a dynamic stochastic general equilibrium (DSGE) model, which includes a household sector subject to borrowing constraints (linked to the value of their collateral) and a capital-constrained profit-optimising banking sector to account for the direct feedback effect on real economic activity.²⁵ The size of the loan supply shocks ranges from slightly negative in a few countries to close to -10% of the outstanding loan book in the countries affected most.

Overall, the funding stress scenario impacts average real GDP growth in the euro area by -1.6 percentage points at the end of 2013 and by -0.3 percentage point at the end of 2014, again with significant differences across countries.

Increased risk aversion

The fourth adverse scenario concerns the potential for a mis-pricing of risk across various market segments around the world and is modelled as an abrupt decrease in investor confidence and increase in risk aversion worldwide. More specifically, a negative confidence and stock price-driven shock emanating from the United States is assumed. This would lead to a recession in the United States and – via trade and confidence spillovers – have negative implications for the global economic outlook, including euro area foreign demand. This also includes the impact of endogenously derived increases in oil and other commodity prices, as well as an appreciation of the euro exchange rate against the US dollar. The impact on euro area foreign demand is derived

... with deposit outflows and limited access to wholesale markets in some countries...

... combined with deleveraging and resulting loan supply shocks...

... forcing banks to shed assets, leading to a feedback effect on the real economy

Abrupt decrease in investor confidence, leading to a stock price-driven shock emanating from the United States...

22 Deposit outflows have been calibrated on the basis of observed outflows between mid-2011 and December 2012, with countries being grouped according to sovereign risk, using prevailing credit ratings. The assumed deposit outflows range from 15% of outstanding volumes for banks in countries rated below investment grade to 2% for banks in AA-rated countries.

23 Banks are assumed to roll over between 60% and 90% of their maturing wholesale debt in 2013 and 2014 depending on the level of sovereign distress in the country where the bank has its headquarters. These percentages correspond to the 25th and 75th percentiles respectively of the monthly wholesale funding rollovers of European banks observed since January 2007. The resulting funding gap is corrected for individual banks' take-up of the three-year LTROs, taking into account LTRO usage to redeem maturing debt.

24 More stringent loan-to-deposit ratio targets are assumed for countries facing greater distress, also reflecting explicit requirements under ongoing EU/IMF programmes. Hence, loan-to-deposit ratio targets are assumed to be 110% for banks in countries with credit ratings below BBB, 125% for BBB-rated countries, 150% for A-rated countries, 165% for AA-rated countries and 175% for AAA-rated countries.

25 See M. Darracq Pariès, C. Kok and D. Rodríguez Palenzuela, "Macroeconomic propagation under different regulatory regimes: an estimated DSGE model for the euro area", *ECB Working Paper Series*, No 1251, October 2010, also published in the *International Journal of Central Banking* in December 2011.

... with a negative impact on euro area external demand and eventually euro area GDP

Table 3.2 Overall impact on euro area GDP growth under the baseline and the adverse scenarios

(2013 – 2014; percentages; percentage point deviations from baseline growth rates)

	2013	2014
Baseline (European Commission spring 2013 forecast; annual growth rate)	-0.4%	1.2%
<i>Percentage point deviations from baseline growth rates:</i>		
Economic growth scenario	-0.4	-0.9
Sovereign debt crisis scenario	-0.3	-0.6
Joint debt crisis and economic growth scenario	-0.5	-1.2
Funding stress scenario	-1.6	-0.3
Risk aversion scenario	-0.6	-0.5

Sources: ECB and ECB calculations.

with the National Institute Global Economic Model (NiGEM). Lastly, the increase in risk aversion is assumed to lead to a marked increase of corporate bond spreads from their current low levels.²⁶

On the basis of these assumptions, the US stock price shock amounts to -16% in the first quarter of 2013, with US stock prices assumed to gradually recover but to remain -8% below the baseline at the end of 2014. The resulting negative impact on euro area external demand, expressed in percentage changes from baseline levels, amounts to -2.4% at the end of 2013 and -2.9% at the end of 2014. The simulated shock to corporate bond prices corresponds on average to a haircut of around -4.5% on banks' corporate bond holdings.

The impact of the external demand shock on the euro area economies is derived using the stress-test elasticities. The average overall impact on euro area real GDP, expressed in percentage point deviations from baseline growth rates, is -0.6 percentage point by the end of 2013 and -0.5 percentage point by the end of 2014. The real economic impact differs considerably across the euro area countries depending in particular on their export orientation and exchange rate sensitivity.

BANK SOLVENCY RESULTS

Bank solvency impacts are broken down into both *individual* profit and loss results, and also impacts stemming from cross-institutional *contagion*.

The impact on euro area banks' profit and loss accounts (and solvency positions) from the four scenarios is obtained from a projection of the main variables determining banks' solvency, such as the credit risk parameters, profits and risk-weighted assets.²⁷ Details of the technical assumptions for all relevant variables are contained in Table 3.3. 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' core Tier 1 capital ratios.

Under the **baseline scenario**, euro area LCBGs' core Tier 1 capitalisation is projected to increase on average from 11.2% in the fourth quarter of 2012 to 11.3% by the end of 2014 (see Chart 3.40).

Under the baseline scenario, the average core Tier 1 capital ratio is projected to increase from 11.2% to 11.3% at the end of 2014

26 The corporate bond rate shock has been calibrated using the same simulation approach as that applied to government bond yields under the sovereign debt crisis scenario.

27 The balance sheet and profit and loss data are based on banks' published financial reports, while also taking into account the supervisory information (in particular, the granular geographical breakdowns of exposures at default) that was disclosed in the context of the EBA 2011 EU-wide stress test and the EBA 2011 EU capital exercise. To the extent possible, the data have been updated to cover the period up until the fourth quarter of 2012, i.e. including capital buffers accumulated in the context of the EBA 2011 EU capital exercise as well as more recent capital injections (e.g. in Belgium, Greece and Spain). The sample includes 17 euro area LCBGs. Data consolidated at the banking group level are used. Bank balance sheets are assumed to remain unchanged over the simulation horizon, except when explicitly assumed otherwise, e.g. in the funding stress scenario.

Table 3.3 Technical assumptions regarding the individual risk drivers of banks' solvency ratios

Credit risk	Changes to probabilities of default (PDs) and loss given default (LGD) estimated by exposure types (i.e. loans to non-financial corporations, retail and commercial property loans). ¹ Projected changes at the country level applied to bank-specific loss rates to calculate the expected losses. ² For exposures to sovereigns and financial institutions, provisioning is based on rating-implied PDs, similar to what was done in the EBA's exercise. ³
Net interest income	Based on a loan-deposit margin multiplier approach to assess the impact of interest rate changes. ⁴ Changes in short-term loan and deposit rates are then multiplied by the outstanding amounts of loans and deposits for each bank at the beginning of the horizon. To account for a marginal pricing of deposit rates, which have risen sharply in many euro area countries in recent years, changes in the short-term rate have been adjusted by adding the spread between the three-month money market rate and new business time deposit rates at country level as of end-December 2012.
Other operating income	Trading income developments correspond, for each bank, to its average trading income over the period 2007-12 under the baseline, and to the average of the three years of severe financial crisis (2008-10) under the adverse scenarios. Fee and commission income is assumed to remain constant in nominal terms.
Taxes and dividends	Tax and dividend assumptions are bank-specific, using the average ratio of positive tax payments to pre-tax profits over the period 2008-10 and the median dividend-to-net income ratio over the same period.
Risk-weighted assets	Risk-weighted assets are calculated at the bank level, using the Basel formulae for IRB banks and assuming fixed LGDs. ⁵

Source: ECB.

Notes:

1) For the forecasting methodology applied, see ECB, "2011 EU-wide EBA stress test: ECB staff forecasts for probability of default and loss rate benchmark", 4 April 2011.

2) More technically, the range from the starting levels of both the PDs and LGDs to the maximum of actual 2011 provisioning rates for the non-financial corporate, retail and commercial property sector was calibrated conservatively.

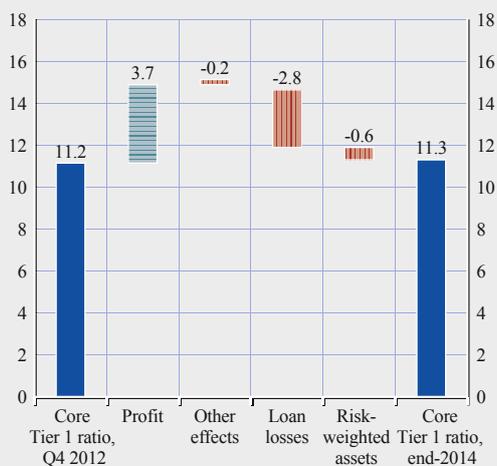
3) See EBA, "2011 EU-wide Stress Test: Methodological Note – Additional Guidance", 9 June 2011.

4) See Box 7 of the December 2010 FSR and Box 13 of the June 2009 FSR for further details.

5) Risk-weighted assets are defined according to the so-called Basel 2.5 (or CRD III) framework, including higher risk weights on re-securitisations in the banking book and certain market risk elements in the trading book.

Chart 3.40 Average contribution of profits, loan losses and risk-weighted assets to core Tier I capital ratios of euro area LCBGs under the baseline scenario

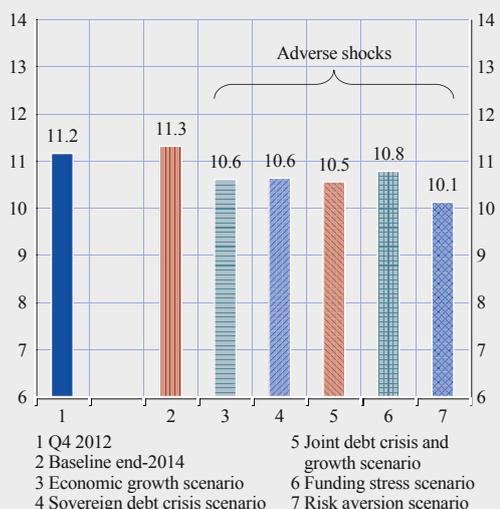
(percentage of the core Tier I capital ratio and percentage point contribution)



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

Chart 3.41 Average core Tier I capital ratios of euro area LCBGs under the baseline and adverse scenarios

(2012 – 2014; percentages; average of euro area banks)



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

Combining the sovereign debt crisis and the economic growth scenarios leads to an average core Tier 1 capital ratio of 10.5% at the end of 2014

This mainly results from an expected improvement in pre-provision profits, which is sufficient to offset negative influences, predominantly from projected loan losses. The average development of euro area banks' solvency positions, however, masks substantial variation across individual banks and euro area countries. Increases in loan losses and higher risk-weighted assets are mitigated by positive retained earnings.

All four distinct **adverse scenarios** discussed above would have a notable adverse impact on euro area banks' solvency, with average core Tier 1 capital ratios declining by 0.5 percentage point or more in comparison with the baseline scenario by the end of 2014 (see Chart 3.41). Under the sovereign debt crisis scenario and the low economic growth scenario, euro area banks' core Tier 1 ratios would decline, on average, to 10.6% by the end of 2014. A somewhat milder adverse impact is found under the funding stress scenario (10.8%). The global risk aversion scenario and the combined sovereign debt crisis and economic growth scenario would produce the most negative results: the average euro area core Tier 1 capital ratio would decline to 10.1% and 10.5%, respectively, by the end of 2014.

The main driving factors under all scenarios are the increase in loan losses and lower or negative retained earnings with respect to the baseline. Notably, under the sovereign debt crisis, the funding stress and the returning risk aversion scenarios, the decline in profits is relatively strong, owing to marking-to-market and fire-sale losses. Under the low economic growth scenario, the adverse impact largely originates from high loan losses. Under the sovereign debt crisis scenario, results are mainly driven by marking-to-market valuation losses, whereas the relatively mild GDP impact (see Table 3.2) contributes to only limited loan losses.

In general, the decline in banks' core Tier 1 capital ratios under the adverse scenarios is relatively mild given that euro area LCBGs are in general better capitalised than smaller banks. Nonetheless, there is considerable dispersion across euro area countries in terms of banking sector recapitalisation needs under the adverse scenarios (for a complementary approach to the forward-looking solvency analysis presented in this section, see also Box 8 below).

POTENTIAL INTERBANK CONTAGION DUE TO BANK FAILURES

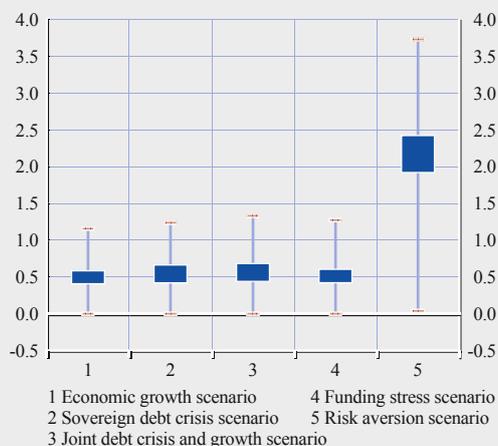
Adverse shocks to individual banks' solvency positions can lead to contagion effects via interbank liabilities

The deterioration in a given bank's solvency position under the adverse scenarios may spill over to other banks in the system. This can happen if, for example, the failure of a bank to comply with a threshold capital level (e.g. a targeted core Tier 1 ratio of 6%) would imply losses for interbank creditors – resulting in additional system-wide losses.

Interbank contagion effects could be further amplified if, in response to distressed interbank loans, banks sell their securities holdings to fill the gap in their balance sheets. This may give rise to fire-sale losses, which may adversely

Chart 3.42 “Worst case” percentage point reduction in the core Tier 1 capital ratio of EU banks due to interbank contagion: dispersion across simulations

(percentage point reduction of the core Tier 1 capital ratio; 90th to 95th percentile)



Sources: Individual institutions' financial reports, EBA, ECB and ECB calculations.
Note: The distributions, illustrated for each scenario, are based on individual banks' reactions to 20,000 randomly generated interbank networks.

affect the marking-to-market valuation of their securities portfolios and further depress their capacity to fully honour interbank liabilities. If these actions are taken by many banks at the same time, they would magnify the implied impact on market prices of the assets being sold.

In the absence of detailed data on interbank exposures, publicly available information is used to generate prospective instances through dynamic network modelling where one (or more) financial entity can have contagious effects throughout the financial system.²⁸ The interbank contagion results, derived by applying such a methodology to the four adverse scenarios considered above, are illustrated in Chart 3.42.

In 90% of the randomly generated interbank networks, contagion losses are marginal. This highlights the highly non-linear nature of interbank network structures. Substantial contagion effects are only observed in the upper percentiles of the distribution of randomly simulated interbank networks, in particular when allowing for a fire-sale impact. For a small number of the simulated networks, however, system-wide core Tier 1 capital reductions could reach around 3.5 percentage points, with some countries being much more severely affected.

²⁸ This exercise is based on a sample of 89 banks that were also covered in the 2011 EU-wide stress-testing exercise conducted by the EBA. An interbank network is randomly generated based on banks' interbank placements and deposits, taking into account the geographical breakdown of banks' activities. Once the distribution of interbank networks has been calibrated, the system can be shocked to assess how specific shocks are transmitted throughout the system and to gauge the implications for the overall resilience of the banking sector. The shock is typically a given bank's default on all its interbank payments. The model consists of three main building blocks: the interbank probability map, the random interbank network generator and the equilibrium interbank payments. For a more detailed description of the methodology, see G. Halaj and C. Kok, "Assessing interbank contagion using simulated networks", *ECB Working Paper Series*, No 1506, 2013.

Box 8

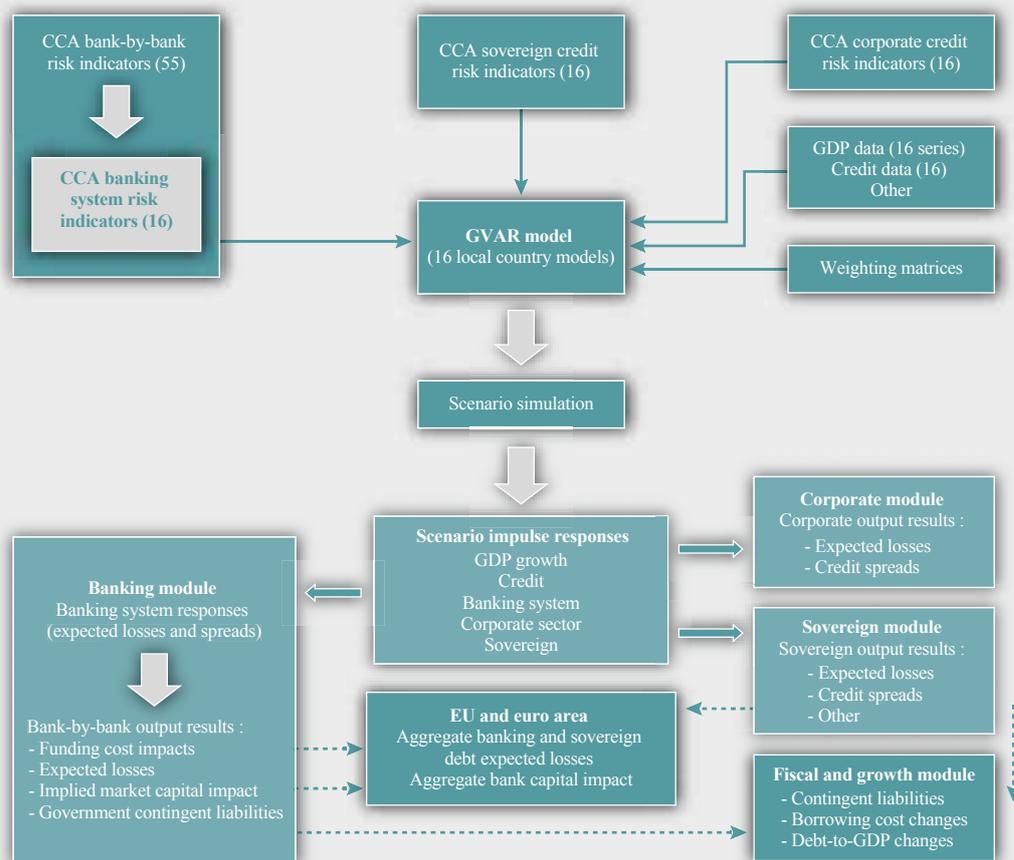
MODELLING THE JOINT DYNAMICS OF BANKING, SOVEREIGN, MACRO AND CORPORATE RISK

While the global financial crisis has seen many phases, a main feature has been the interplay of risks across various economic and financial sectors, even culminating in outright risk transfer in some cases. Prominent examples have included the spillover of fragilities from the financial sector to the broader economy and from the banking sector to the sovereign sector. In monitoring the propensity for such phenomena to occur and in evaluating their impact, direct (i.e. accounting) linkages tend to understate risks. Earlier and more robust signals of the possibility for cross-sectoral linkages to cause systemic stress can be obtained via contingent claims analysis (CCA), which augments cross-sectoral linkages on the basis of the main tenets of financial option pricing.¹

This box applies such a methodology to the joint dynamics among three sectors that are key in crisis propagation (the banking, sovereign and corporate sectors), along with real economic

¹ Contingent claims analysis is a risk-adjusted balance sheet approach for banks, corporates and sovereigns, where the value of liabilities is derived from assets and assets are uncertain. The value of assets equals the value of equity plus risky debt, where risky debt is the default-free value of debt minus the expected loss due to default. CCA balance sheets are very useful as they incorporate forward-looking credit risk, which is non-linear, and can analyse risk transmission between banks, corporates, sovereigns and the macroeconomy. CCA balance sheets are calibrated using the value and volatility of equity plus accounting information on debt in an option-theoretic framework. For a summary of the main research in this field, see D. Gray and S. Malone, *Macrofinancial Risk Analysis*, John Wiley & Sons, 2008.

Chart A CCA-GVAR modelling framework



Source: ECB.

activity and credit growth in a Global Vector Autoregressive (GVAR) model.² The model, which allows for explicit cross-sectoral (and cross-country) interactions, is set up for 13 EU countries as well as Norway, Switzerland and the United States and has been estimated based on a sample period from January 2002 to December 2012.³ The model is used to assess the same scenarios that are analysed by means of a solvency analysis earlier in this section of the FSR. The advantage of the CCA-GVAR approach is that it allows for an endogenous reaction of all relevant sectors in the economy. The analysis relies on three forward-looking risk indicators derived from CCA: (i) fair-value spreads⁴, which pool multiple sources of default risk, including the market price of risk; (ii) loss given default; and (iii) the expected default frequency. The main difference between the CCA-GVAR model approach and the forward-looking solvency analysis, as presented earlier in this section, is that the CCA-GVAR framework operates with

2 See Table 3.2 for the GDP shocks that were used as input to the CCA-GVAR model (note that monthly GDP data are obtained via interpolation). For a detailed description of the methodology, see D. Gray, M. Groß, J. Paredes and M. Sydow, "Modeling Banking, Sovereign and Macro Risk in a CCA Global VAR", *IMF Working Paper*, forthcoming.

3 The model sample includes nine euro area countries, namely Austria, Belgium, France, Germany, Ireland, Italy, the Netherlands, Portugal and Spain. Other euro area countries have been excluded from the sample due to data limitations regarding available historical time series.

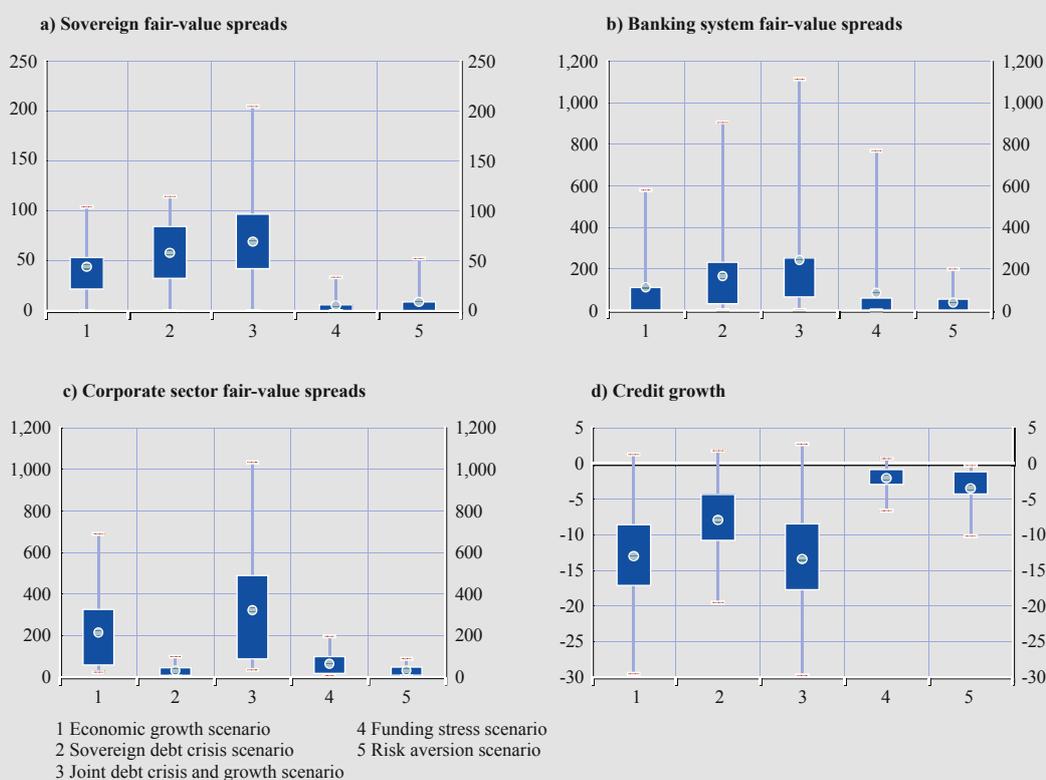
4 Historically, fair-value spreads exhibit differences in terms of magnitude compared with CDS spreads, e.g. for some banks in the sample, fair-value spreads can be a multiple of the corresponding CDS spread.

broad balance sheet items (i.e. assets, liabilities and equity capital) aggregated at the country level. In that sense, it has a “macro” perspective to the balance sheet, instead of the “micro” view that the solvency analysis takes, which involves specific models for various bank balance sheet components (such as interest income, interest expense, loan losses, mark-to-market valuation losses, etc.) that are then applied at a bank-by-bank level. Chart A presents a schematic overview of the overall modelling framework.

The results suggest that a joint sovereign debt crisis and growth shock scenario is the most potent for inducing stress for sovereigns, banks and the corporate sector – with other shocks being more sector-specific (see Chart B). For *sovereigns*, the average maximum cumulative response over two years is significant, approaching 70 basis points in terms of changes in fair-value spreads. Regarding other scenarios, the sovereign debt crisis, growth and risk aversion shock scenarios carry the largest impacts, with a fair degree of positive skew towards higher impacts in selected countries. For the *banking sector*, the cross-country distributions are even more strongly skewed, with average fair-value spread responses under all five scenarios being close to the upper quartiles, meaning that there are a few banking systems that are particularly severely hit (with fair-value spread responses surpassing 1,000 basis points for some banking systems).

Chart B Distribution of country-specific responses under different adverse shock scenarios

(2013 – 2014; cumulative; basis points; maximum, minimum, interquartile distribution and average)



Sources: ECB, Moody's Analytics and ECB calculations.

Notes: Responses are the maximum cumulative deviation from end-sample (December 2012) spread levels over a two-year forward horizon. For panels a)-c), an increase in spreads reflects a higher level of risk perception. The following countries are covered in this analysis: Austria, Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States.

It is striking that credit spread responses for banks are more pronounced than the sovereign risk measures, on average by a factor of approximately three across scenarios and countries. Again, the strongest average spread responses can be found under the joint sovereign debt crisis and growth shock scenario, with the average maximum cumulative response for the banking system fair-value spreads approaching 250 basis points. For the *corporate sector*, the responses are somewhat more pronounced than those of the banking sector, with average fair-value spread responses under the joint sovereign debt crisis and contagion scenario approaching 320 basis points. Moreover, it is worth highlighting that across countries for all remaining scenarios the corporate sector is mainly affected by the economic growth scenario. With regard to *credit growth*, the joint sovereign debt crisis and economic growth scenario leads on average to a 13% reduction in credit, with less pronounced effects under the sovereign debt crisis and risk aversion scenarios. The impact conditional on the funding stress scenario appears to be small indeed.

Under all scenarios, euro area countries are more strongly affected by the adverse shocks than the other countries that are part of the sample.

The finding that the joint sovereign debt crisis and economic growth scenario has the most adverse implications for the banking sector is fairly consistent with the solvency analysis in this section of the FSR based on more traditional stress-testing tools, where this scenario is ranked second in terms of severity.⁵ In terms of policy implications, this underscores a key role for both economic growth (and stabilisation) as well as measures to limit the contagious forces that are central to the crisis.

5 In the CCA-GVAR analysis, the impact of the risk aversion scenario is smaller than the one under the joint sovereign debt crisis and economic growth scenario, the reason being that only a partial set of features that characterise the scenario, specifically the GDP growth assumptions (see Table 3.2 for an overview of GDP growth impacts under all scenarios), are used to feed the CCA-GVAR model. Specifically, the risk aversion scenario envisages further sources of risk that are not reflected in GDP responses and, therefore, not reflected in the results from the CCA-GVAR model output, in particular the impact on corporate bond holdings from the initial corporate bond yield shock.

Major risks are quantified using a market-consistent approach for the assets and liabilities side...

ASSESSING THE RESILIENCE OF EURO AREA INSURERS

The assessment of the impact of the four main euro area financial stability risks on large euro area insurers is conducted using publicly available data for 13 major euro area insurance groups up to the fourth quarter of 2012. It relies on a market-consistent approach to the quantification of risks and ignores the heterogeneity of current institutional settings and accounting practices among jurisdictions. It is applied to both the *assets* and the *liabilities* side of insurance corporations' balance sheets. Rather than trying to gauge the impact in terms of prudential solvency ratios, given the strong heterogeneity of the individual reporting in this sector, the approach aims to spell out the main risks in economic terms.²⁹

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 in the creditworthiness of borrowers through a widening of credit spreads for marketable instruments; (iv) lapse rate³⁰ increases; and (v) an increase in loss rates on loan portfolios.

29 The exercise is not related to the EU-wide stress test in the insurance sector coordinated by the European Insurance and Occupational Pensions Authority.

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

Table 3.4 The parameters for the assessment of euro area insurers

	Baseline	Economic growth scenario	Sovereign debt crisis scenario	Joint debt crisis and growth scenario	Funding stress scenario	Risk aversion scenario
Average euro area increase in long-term government bond yields (basis points)	0	0	208	208	0	0
Average add-on in corporate bond yields (basis points)	0	0	172	172	0	0
Shock to equity prices	0%	0%	-22%	-22%	0%	-16%
Shock to property prices	0%	0.0%	-1.4%	-0.6%	0%	0%
Cumulative loss rates over two years	0.3%	0.4%	0.8%	0.9%	0.4%	0.4%
Average add-on in lapse rates	0%	0.6%	0.5%	0.9%	0.6%	0.6%

Source: ECB calculations.

Using the same adverse scenarios as those for banks in the previous section, the risks for insurance companies are transmitted through three channels, namely: (i) valuation effects on financial securities and liabilities owing to changes in sovereign yields and swap rates; (ii) sales of assets due to unforeseen payments resulting from increased lapse rates; and (iii) changes in the credit quality of loan portfolios.

A number of simplifying assumptions had to be made for this exercise. First, decreases in market values of insurance corporations' holdings of shares, bonds and property are assumed to occur instantaneously, before institutions have an opportunity to adjust their portfolios (see Table 3.4 for an overview across scenarios). This implies that no hedging or other risk-mitigation measures³¹ were taken into account; consequently, losses might be overestimated. Second, available granular data (e.g. on investment in sovereign bonds, broken down by jurisdiction, on investment in corporate bonds and on loans, broken down by credit ratings, as well as on liabilities and debt assets, broken down by maturity) were used wherever possible, but broad aggregates of financial investments were used in some instances. The relative weights of various investments, broken down by instrument, are shown in Chart 3.36. Third, all income and expenses related to the underwriting business are assumed to be fixed. For example, reduced demand for insurance products is not taken into account and each maturing contract is expected to be replaced, so that the underwriting income of each insurer remains constant. The underwriting component of income is stressed only in the form of increasing lapse rates. Details of the technical assumptions for all relevant variables are given in Table 3.5.

The results confirm the importance of credit risks, although the vulnerability to the materialisation of macro-financial risk is very heterogeneous across individual insurance groups (see Chart 3.43).

The sovereign debt crisis scenario and the joint debt crisis and low growth scenario result in the most significant asset changes for insurance companies – where losses mainly originate from credit risk (mainly corporate) amounting on average to 1.4% of their assets.³²

By contrast, the rising yields under the adverse scenarios do not have an adverse impact on the economic solvency of the insurers in the sample. An increase in net assets by 2.5% is explained

31 For example, interest rate risk hedging, asset-liability matching techniques and counter-cyclical premia (to dampen the effect of temporary adverse interest rate shocks through offsetting changes in the valuation of liabilities).

32 Expressed as a percentage of net assets (assets – liabilities) the effect would be equal to 19.5%.

... under the macro-financial scenarios set out earlier

Simplifying assumptions necessary

The joint sovereign debt crisis and economic growth scenario has a stronger impact

Rising yields have no adverse impact on insurers' economic solvency

Table 3.5 Technical assumptions regarding the individual risk drivers of insurers' balance sheets

Credit risk	Credit risk assessment carried out using (i) breakdowns by rating or region, depending on data availability, and (ii) loss-rate starting levels, which are stressed using the same methodology as that applied for assessing the resilience of euro area banks.
Interest rate risk transmission	Sensitivities to interest rate changes computed for each interest rate-sensitive asset and liability exposure. Relevant yield curves used to project asset and liability cashflow streams, to calculate internal rates of return, and to discount the cash flows using yield curve shocks.
Haircut definition	Haircuts for <i>debt securities</i> derived from changes in the value of representative securities implied by the increase in interest rates under each scenario and uniformly applied across the sample of large euro area insurers. Valuation haircuts on <i>government bond portfolios</i> estimated on the basis of representative euro area sovereign bonds across maturities. Haircuts for <i>corporate bonds</i> derived from a widening of credit spreads.
Lapse risk	Lapse risk quantified by projecting insurers' cash flows over a two-year horizon, assuming a <i>static composition</i> of contracts and the reinvestment of maturing assets without a change in the asset allocation. Lapse rates linked to macroeconomic variables. ¹⁾ Unexpected component of lapses ²⁾ leads to <i>surrender payments</i> . ³⁾ In case of negative cash flows from surrender payments, insurer 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 <i>reinvested assets</i> shocked on the basis of investment income earned at the beginning of the simulation horizon. <i>All other assets</i> assumed to earn the initial investment income throughout the simulation horizon. Maturing fixed income assets reinvested retaining the initial asset composition. <i>Underwriting business component</i> of operating profit assumed to remain constant throughout the simulation horizon. No distribution of <i>dividends</i> assumed.

Source: ECB calculations.

Notes:

1) 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. R. Honegger and C. Mathis, "Duration of life insurance liabilities and asset liability management", working paper, Actuarial Approach for Financial Risks (AFIR), 1993; C. Kim, "Report to the policyholder behaviour in the tail subgroups project", technical report, Society of Actuaries, 2005; S. Smith, "Stopping short? Evidence on contributions to long-term savings from aggregate and micro data", discussion paper, Financial Markets Group, LSE, 2004) and from ECB calculations.

2) 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.

3) 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).

by the longer duration of liabilities and, consequently, their greater sensitivity to the applied discount rate. Clearly, prudential solvency ratios would likely decrease on average, as most insurers in the sample belong to jurisdictions where liabilities are not marked-to-market.³³ Variations in equity price losses are largely related to the heterogeneity in the volume of such investments. The impact of an adverse equity price shock on assets reaches 0.3% on average.³⁴ Additionally, adverse macroeconomic developments lead to average lapse risk-related losses amounting to 0.15% of assets.³⁵

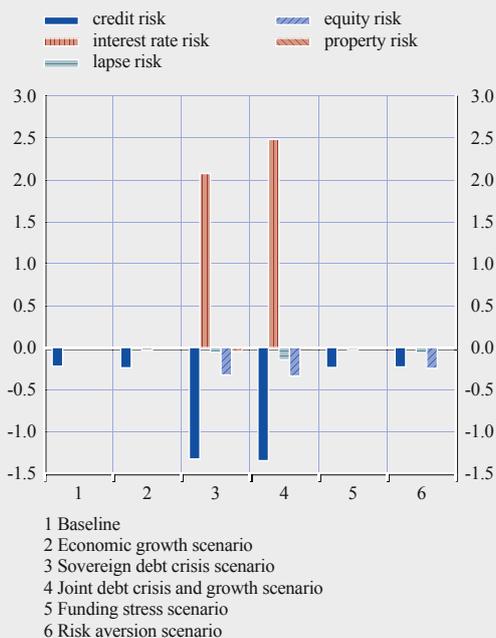
33 Regarding interest rate risk, the forthcoming Solvency II regime is expected to replace the current practices with a uniform approach consisting of using the swap curve for the discount rate. To gauge the rough impact of such a regime, a projected swap curve, calculated using a model linking swap rates to sovereign yields, was used to discount liabilities. Under the joint sovereign debt crisis and economic growth scenario, the application of Solvency II valuation would lead to a reduction in assets of 4.1%, on average, as the adverse valuation effects in insurers' fixed income portfolio would not be offset by respective movements on the liabilities side since the swap rate would remain decoupled from sovereign yields. It is important to note that the effect of any counter-cyclical instruments under Solvency II, which are currently under discussion, was not included in this exercise. Consequently, the negative impact in this exercise is likely to appear significantly more pronounced than it would be under a fully defined Solvency II regime.

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

35 A sensitivity analysis of the impact of a property price shock is also conducted. An additional house price shock is calibrated with reference to a simulated forward distribution, using the same non-parametric simulation technique that is employed to calibrate financial market shocks. A shortfall measure conditional on a 1% percentile is computed based on the resulting forward distribution. The calibrated shock amounts to an 8.6% decrease in property prices. The losses associated with such a shock are found to represent 0.2% of insurers' assets on average.

Chart 3.43 Asset value changes for large euro area insurers under different scenarios

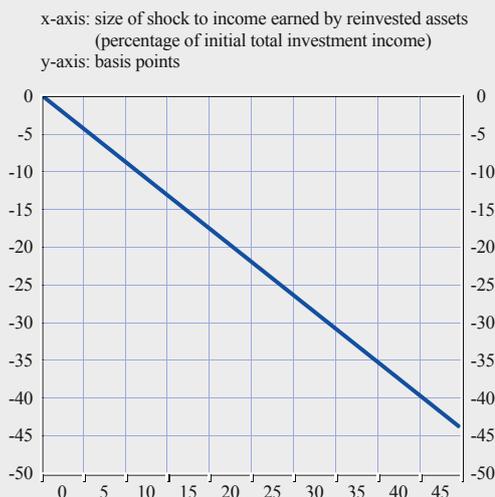
(Q4 2012 – Q4 2014; percentage of total assets)



Source: Individual institutions' financial reports and ECB calculations.

Chart 3.44 Sensitivity of total investment income to shocks to the yields on newly invested assets for large euro area insurers

(Q4 2012 – Q4 2014)



Sources: Individual institutions' financial reports and ECB calculations.

The materialisation of risks under the remaining scenarios leads to milder effects on insurers' balance sheets.

Another risk faced by insurers is a continuation of the current low-yield environment or a further weakening of their investment income. Chart 3.44 depicts the change in total investment income as a function of the shock to income earned from newly invested assets relative to the income earned by existing assets over a two-year horizon. If, for instance, the income earned on newly invested assets is halved, the total investment income would be lowered on average by approximately 45 basis points. A comparison with the current average investment income of euro area insurers (see the previous section) suggests, however, that in itself such a scenario does not imply a key challenge for the solvency of the sector.³⁶

Halving the income on newly invested assets leads to a 45 basis point reduction in total investment income

3.4 RESHAPING THE REGULATORY AND SUPERVISORY FRAMEWORK FOR FINANCIAL INSTITUTIONS, MARKETS AND INFRASTRUCTURES

The regulatory and supervisory framework for financial institutions, markets and infrastructures continued to be overhauled in the first half of 2013, both at the global and at the EU level. The December 2012 FSR provided a concise overview of the implementation of certain key elements

The regulatory framework continued to be overhauled both globally and at the EU level during the first half of 2013

³⁶ The result is in line with earlier contributions concluding that insurance companies can cope with the low-yield scenario in the medium term. See e.g. A. Kablau and M. Wedow, "Gauging the impact of a low-interest rate environment on German life insurers", *Discussion Paper Series 2: Banking and Financial Studies*, No 02/2011, Deutsche Bundesbank, 2011.

Table 3.6 Selected legislative proposals in the EU for the banking sector

Initiative	Description	Current status
Banking union	A single supervisory mechanism (SSM) with strong ECB powers (in cooperation with national competent authorities) for the supervision of all banks in participating Member States (euro area as well as non-euro area Member States which join the system). Further components of the proposal: a single bank resolution mechanism (SRM) and a common deposit guarantee scheme.	On 18 April 2013 the Permanent Representatives Committee approved a compromise agreed with the European Parliament on the establishment of the SSM. If the Parliament votes accordingly, the Council will approve the text without further discussion. A Commission proposal on the SRM is expected in June 2013.
Capital Requirements Regulation and Directive (CRR/CRD IV)	The proposal implements Basel III standards in the EU. The overarching goal is to strengthen the resilience of the EU banking sector, while ensuring that banks continue to finance economic activity and growth. The proposal consists of a Directive, which relates primarily to the national supervisory process, and a Regulation, which sets prudential standards for financial institutions.	The European Commission's proposal was published in July 2011. On 27 March 2013 the Permanent Representatives Committee reached a political agreement on a compromise text on stricter capital requirements for banks. The European Parliament approved the text on 16 April. The Council is expected to approve the text without further discussion.
Bank Recovery and Resolution Directive	The proposed framework sets out the necessary steps and powers to ensure that bank failures across the EU are managed in a way which avoids financial instability and minimises costs for taxpayers. The proposed tools are divided into powers relating to "prevention", "early intervention" and "resolution".	The European Commission's proposal was published in June 2012. Negotiations between the Commission and the Council are ongoing, with the aim of reaching an agreement by June 2013.
Directive on Deposit Guarantee Schemes	The legislative proposal deals mainly with the harmonisation and simplification of protected deposits, a faster payout, and an improved financing of schemes.	The European Commission's proposal was published in July 2010.

of the global regulatory reform agenda within the European Union (EU).³⁷ Tables 3.6-3.8 provide an update of the major regulatory initiatives in the EU, followed by a short discussion of selected policy measures from the perspective of financial stability and macro-prudential policy.

The proposal for a banking union aims to set up, inter alia, a single supervisory mechanism within the EU

The Commission's proposal for a **banking union** aims, inter alia, to set up a single supervisory mechanism (SSM) for participating Member States, including euro area as well as non-euro area Member States which join the system, with specific micro- and macro-prudential tasks being conferred upon the ECB. According to the proposed SSM Regulation, the power to initiate and implement macro-prudential measures will primarily remain with the national authorities, subject to a notification and coordination mechanism vis-à-vis the ECB. Moreover, any national competent or designated authority may propose to the ECB to act in order to address the specific situation of the financial system and the economy in its Member State.

An important feature of the proposed SSM Regulation is that the ECB may, if deemed necessary, also apply macro-prudential measures, subject to the conditions and procedures specifically set out in the Capital Requirements Directive (CRD IV) and the Capital Requirements Regulation (CRR).

The **Capital Requirements Regulation and Directive (CRR/CRD IV)** aim to implement the Basel Committee's capital and liquidity framework for internationally active banks (so-called Basel III)

The CRR/CRD IV aims to implement the Basel III capital and liquidity framework in the EU

³⁷ See ECB, *Financial Stability Review*, December 2012, as well as Financial Stability Board, "Overview of Progress in the Implementation of the G20 Recommendations for Strengthening Financial Stability", available at http://www.financialstabilityboard.org/publications/r_120619a.pdf, and Basel Committee on Banking Supervision, "Report to G20 Leaders on Basel III implementation", available at <http://www.bis.org/publ/bcb220.pdf>.

in the EU. The framework is the spearhead of global financial reform efforts and it is regarded by the ECB as key for increasing the resilience of the banking system, restoring market confidence and providing a level playing field for the banking industry. The CRR/CRD IV proposal envisages an application scope of the framework that covers all credit institutions and investment firms in the EU and incorporates several provisions that are relevant for macro-prudential policy-making.

In this regard, the Regulation will enable Member States to impose, in cooperation with European authorities, stricter macro-prudential requirements on domestically authorised institutions in order to address increased risks to financial stability. These stricter measures can be applied on a temporary basis, covering inter alia the level of own funds, liquidity requirements, large exposure requirements, the level of the capital conservation buffer, public disclosure requirements, intra-financial sector exposures, and risk weights for targeting asset bubbles in the property sector.

The Directive will be transposed into national law by the Member States. In line with Basel III, it will introduce measures that are of particular relevance for macro-prudential policy, such as additional requirements for a capital conservation buffer of common equity Tier 1 (CET 1) capital, identical for all institutions in the EU, as well as an institution-specific counter-cyclical capital buffer. Moreover, Member States will have the possibility to introduce a systemic risk buffer of additional CET 1 capital for the financial sector, or subsets of it, or ad hoc buffers for selected institutions. In addition, specific buffer requirements will be mandatory for global systemically important institutions (G-SIIs³⁸) in the EU, and voluntary for other institutions at EU or domestic level (O-SIIs). On the basis of their systemic importance, G-SIIs will be subject to progressive additional CET 1 capital surcharges.

With regard to liquidity regulation, the CRR/CRD IV currently foresees implementation of the liquidity coverage ratio (LCR) by 2018. The LCR requires banks to hold a minimum level of high-quality liquid assets to withstand a stress scenario lasting 30 days. Similarly to Basel III, the LCR will be gradually phased in, starting in 2015. Full implementation is planned by 2018. This schedule implies a swifter implementation than currently envisaged by the Basel Committee, which agreed to reach the minimum requirement by 2019. However, the CRR/CRD IV also allows modifications to the implementation schedule including a deferment to 2019. The European Banking Authority (EBA), after consulting the European Systemic Risk Board, is tasked with assessing and reporting on the need for any modification to the LCR schedule to the European Commission by 30 June 2016. Moreover, the EBA will also have to report on the possible unintended consequences of the LCR on the EU economy, financial markets and the conduct of monetary policy by 31 January 2014.

Finally, the agreed CRR/CRD IV text also includes a number of new provisions on corporate governance, in particular regarding the restrictions imposed on variable remuneration.

The proposal for a Directive setting up an EU framework for the **recovery and resolution** of credit institutions and investment firms will, once it has been finalised and adopted, provide common and efficient tools and powers for addressing a banking crisis pre-emptively and managing bank failures in an orderly way in all Member States. For this purpose, the range of powers available to the relevant authorities consists of three elements: (i) preparatory steps and plans to minimise the risks of potential problems; (ii) in the event of emerging problems, powers to halt a bank's deteriorating situation at an early stage in order to avoid a failure (early intervention); and (iii) if an institution is failing or likely to fail, clear means to reorganise or wind down the bank in an orderly fashion while

38 Not to be confused with global systemically important insurers (also referred to as "G-SIIs" by the Financial Stability Board and the International Association of Insurance Supervisors).

preserving its critical functions and limiting the impact on taxpayers, given that normal insolvency proceedings present a concern in terms of the general public interest. As stated in the ECB opinion on the proposed Directive³⁹, the ECB fully supports the development of a recovery and resolution framework and is of the view that the Directive should be adopted rapidly.

Concerning recovery and resolution for financial market infrastructures (FMIs), the European Commission published in October 2012 a consultation on a possible recovery and resolution framework for financial institutions other than banks. At the same time, work is ongoing at the global level where the Committee on Payment and Settlement Systems and the International Organization of Securities Commissions are currently in the process of finalising their recommendations on recovery and resolution of FMIs.

With regard to the revision of the **Directive on Deposit Guarantee Schemes (DGS)**, the overarching objectives are to maintain financial stability by strengthening depositor confidence and protecting their wealth in order to avoid bank runs in times of financial stress. The pursuit of these objectives is, in addition, driven by the need to further harmonise depositors' protection so as to enhance the internal market. The Directive sets a maximum ceiling of €100,000 for deposit protection in Europe. The DGS Directive and the Bank Recovery and Resolution Directive are important to achieve clear and harmonised frameworks in the EU and to make further progress towards the banking union.

Some technical progress on **insurance regulation in Europe** was made in the first half of 2013, but final decisions are expected only later this year. The Solvency II Directive and the Omnibus II Directive aim to harmonise the fragmented insurance regulation and will introduce, inter alia, a new regime of common capital requirements for insurers. The capital requirements of the current Solvency I regime are not risk-based and this absence of risk sensitivity in solvency calculations constitutes a significant drawback of the regime, as accounting valuations may mask true market and credit risks. What is more, the significant leeway that jurisdictions and insurers currently have in their solvency calculations implies that solvency ratios are not comparable across institutions or jurisdictions. While the forthcoming Solvency II regime will introduce a harmonised regime with risk-based capital ratios and an economic valuation of the balance sheet, it will also contain the impact of excessive market volatility. In order to reduce this "artificial" excessive volatility in the balance sheet, the "trialogue"

Solvency II will harmonise insurance regulation in the EU and introduce a new regime of capital requirements for insurers

Table 3.7 Selected legislative proposals in the EU for the insurance sector

Initiative	Description	Current status
Solvency II	The Solvency II Directive aims to harmonise the different regulatory regimes for insurance corporations in the European Economic Area.	The Directive was adopted in November 2009. In July 2012, a short amending Directive was adopted by the European Commission that will move the date for implementation by Member States to 30 June 2013, and the date for application by companies to 1 January 2014. The Omnibus II Directive will set the date of entry into force of the Solvency II regime.
Omnibus II	The initial proposal will, inter alia, amend the Solvency II Directive.	The European Commission's proposal was published in January 2011. The key vote of the European Parliament is scheduled for October 2013. EIOPA will publish the results of the impact assessment of rules on insurance products offering long-term guarantees in June 2013, followed by "trialogue" negotiations between the Commission, Parliament and Council.

³⁹ Opinion of the European Central Bank of 29 November 2012 on a proposal for a directive establishing a framework for recovery and resolution of credit institutions and investment firms (CON/2012/99), available at http://www.ecb.int/ecb/legal/pdf/en_con_2012_99_f_sign.pdf.

Table 3.8 Selected legislative proposals in the EU for financial markets

Initiative	Description	Current status
The European Market Infrastructure Regulation (EMIR)	The Regulation aims to bring more safety and transparency to the over-the-counter (OTC) derivatives market.	The Regulation entered into force in August 2012. Related Commission Implementing and Delegated Regulations entered into force in January and March 2013, respectively. According to EMIR transitional provisions, trade repositories and central counterparties will have to apply for registration, authorisation or recognition (as appropriate) by mid-September 2013.
Regulation on improving the safety and efficiency of securities settlement in the EU and on central securities depositories (CSDR)	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 European Commission's proposal was published in March 2012. The proposal is currently being negotiated within the European Parliament, the European Council and the European Commission. In its opinion the ECB, inter alia, recommended that the proposed regulation and the corresponding implementing acts be adopted prior to the launch of TARGET2-Securities (T2S) in June 2015.
Review of the Markets in Financial Instruments Directive and Regulation (MiFID II/MiFIR)	The proposals, consisting of a Directive and a Regulation, aim to make financial markets more efficient, resilient and transparent, and to strengthen the protection of investors. The new framework will also increase the supervisory powers of regulators and provide clear operating rules for all trading activities.	The European Commission's proposal was published in October 2011. The proposals are currently being negotiated by the Council and the Commission and they are likely to be adopted by the end of 2013, with subsequent implementation by Member States and adoption of Level 2 technical standards. MiFIR will enter into force within 32 months of the adoption of the Level 1 acts, save where differently provided for.
Regulation on short selling and certain aspects of credit default swaps	The Regulation aims to establish a specific regulatory framework that can avoid the creation of obstacles to the proper functioning of the internal market. It harmonises the fragmented rules across Europe, confers powers on the European Securities and Markets Authority and aims to reduce the risk of settlement failures and market volatility.	The Regulation was adopted in March 2012. Both the Regulation and the implementation measures entered into force on 1 November 2012.
Revision of the Directive relating to undertakings for collective investment in transferable securities (UCITS V)	The proposal aims to ensure the safety of investors and the integrity of the financial markets.	The European Commission's proposal was published in July 2012. The proposal is currently being negotiated by the Council and the Commission.
Proposals on credit rating agencies (CRA III)	The general objective of the proposal is to contribute to reducing risks to financial stability and restoring the confidence of investors and other market participants in financial markets and the quality of ratings.	The European Commission's proposal was published in November 2011. The proposal was approved by the European Parliament on 16 January 2013.

parties agreed to request that the European Insurance and Occupational Pensions Authority (EIOPA) conduct an assessment of various countermeasures that could impact products with long-term guarantees. EIOPA will report the results of its assessment to the trialogue parties in June 2013.

In addition to the legislative proposals listed in the above tables, further regulatory initiatives are being considered by policy-makers in the EU. In this regard, on 14 February 2013 the European Commission published a proposal for implementing a **financial transaction tax (FTT)** in 11 euro area Member States⁴⁰ via enhanced cooperation.

40 Austria, Belgium, Estonia, France, Germany, Greece, Italy, Portugal, Slovakia, Slovenia and Spain.

According to the proposal, the FTT is intended to: (i) enhance financial stability by curbing speculative trading; (ii) obtain a significant contribution from the financial sector for past and future crisis resolution; (iii) generate revenue; (iv) reap the benefits of the Single Market; and (v) compensate for the exemption of the sector from value added tax. In addition, the European Commission seeks to establish the FTT as an independent source of revenue to finance the EU budget.

The proposal is based on the residence principle complemented by the issuance principle, i.e. a transaction in a financial instrument is taxable if at least one of the parties in the transaction is established in one of the Member States participating in the enhanced cooperation or if the issuer of the financial instrument is located in a participating Member State. The Member State where the financial institution is established is the primary collector of the tax revenue. The proposed FTT is aimed at a broad scope of financial institutions and transactions, also including OTC transactions.

The impact of an FTT on financial stability is ambiguous. An FTT may curb high-frequency trading effectively if it is charged at the trading rather than at the settlement part of the securities transaction chain. However, the impact of high-frequency trading on overall financial stability is disputed. While an FTT will reduce the trading volume, in particular in derivatives markets, the evidence about the link between volume and volatility is inconclusive and contradictory. In the short term, volume and volatility are positively correlated, mainly because a large part of trading volume reflects the new arrival of information, which is incorporated in prices over time. However, a high trading volume may also in some circumstances produce its own volatility beyond that based on fundamentals.

In the field of **banking structures**, the High-level Expert Group on reforming the structure of the EU banking sector, chaired by Erkki Liikanen, presented its report to the European Commission on 2 October 2012. Considering the next steps, the Commission will look into the impact of these recommendations both on growth and on the safety and integrity of financial services in the course of 2013 and present legislative proposals.

With respect to **shadow banking**, the Financial Stability Board (FSB) is developing recommendations aimed at strengthening the oversight and regulation of this segment of the financial system, in order to address the systemic risks that stem from maturity and liquidity transformation, excessive leverage and regulatory arbitrage. Following a public consultation launched in November 2012, focused on (i) shadow banking entities other than money market funds and (ii) securities lending and repos, the FSB is expected to deliver a final package of policy recommendations in September 2013.

The FSB is expected to issue final policy recommendations on shadow banking in September 2013