3 EURO AREA FINANCIAL INSTITUTIONS

The economic and financial environment for euro area financial institutions remains challenging. Despite the alleviation of financial market tensions, the economic environment and the outlook for euro area banks and insurers remain subdued, pulling down profitability and exposing credit risk. For banks, ***financial performance*** *suffers from elevated loan loss provisioning levels and sluggish revenue growth. While euro area insurers' profitability has been impacted less directly by the crisis, performance has also been hampered by weak macroeconomic prospects. More generally, real and financial fragmentation in the euro area has implied considerable heterogeneity across financial institutions – closely tied to the respective country of residence.*

These challenges, which are in many ways linked to the economic cycle, contrast with more generalised, sustained steps towards structural balance sheet repair. With a more than 4 percentage point increase in regulatory capital ratios since the onset of the global financial crisis, the ***capital positions*** *of large and complex banking groups (LCBGs) in the euro area have risen to levels comparable with those of their global peers. At the same time, deleveraging in the euro area banking sector has accelerated somewhat, mainly in activities unrelated to domestic bank lending. Where euro area insurers are concerned, capital buffers remain resilient, despite some increased volatility in global debt markets throughout the summer. Meanwhile, balance sheet repairs have also extended to banks' funding models, where there is a continued move towards more stable sources, benefiting from a lesser fragmentation of deposit flows.*

Notwithstanding ongoing progress, the ***risk outlook*** *for banks and insurers remains elevated in four main areas. First and foremost, while progress is continuing to be made in loss recognition, as witnessed by rising non-performing loan ratios, concerns remain regarding asset quality and profitability prospects in a weak economic environment. Second, while conditions in euro area sovereign debt markets have indisputably strengthened over the past year, there remains a risk of renewed tensions on account of low growth and a slow implementation of reforms. Third, euro area financial institutions remain vulnerable to a possible reassessment of risk premia in global markets – including a potential for further fluctuations in global bond markets such as those witnessed this summer. Lastly, the euro area bank funding situation has normalised somewhat, but still remains challenging given the persistent fragmentation of market-based funding sources, mainly for smaller banks from countries under stress. Scenario-based analysis suggests that a materialisation of key risks could have significant implications for euro area financial institutions, as well as for the wider economy – although ongoing actions at the bank and policy level may ultimately mitigate the severity of these estimated impacts.*

Alongside these developments in euro area financial institutions, a concerted strengthening of the ***regulatory and supervisory framework*** *for financial institutions, markets and infrastructures continues. The most noteworthy development in this sphere at the EU level has been the adoption of the Capital Requirements Regulation and the Capital Requirements Directive (CRR/CRD IV), through which the Basel Committee's new global standards for capital and liquidity (Basel III) will be implemented in the EU as from the beginning of 2014. At the same time, steady progress is continuing to be made along the path towards a banking union in the euro area.*

Box 5

A NEW BANK SAMPLE FOR THE ECB'S FINANCIAL STABILITY REVIEW

The financial crisis illustrated that the size of banks, along with other factors such as complexity or interconnectedness, can lend a systemic dimension to financial instability. This has led to a global effort to improve the regulation and supervision of the financial sector. Stress specific to mainly the euro area involved a vicious circle between banks and sovereigns, thereby underscoring the need for a better governed and deeper economic and monetary union to support the single currency. A key pillar of these efforts was the European Council's decision of December 2012 to embark on the creation of a banking union in the European Union.

In particular, this includes the conferral of new euro area banking supervision powers on the ECB. Within the scope of the single supervisory mechanism (SSM), banks that are either large or of domestic significance – currently estimated at around 130 entities[1] – will fall under direct ECB supervision towards the end of next year, with an option also in place for bringing other banks under direct ECB supervision when warranted.

With a view to these new SSM-related tasks, the set of euro area banks analysed in this FSR has been extended to include all significant banking groups that publish financial statements, while a focus on large and complex banking groups (LCBGs) has also been retained for purposes of comparison with, and benchmarking with respect to, large global banks.

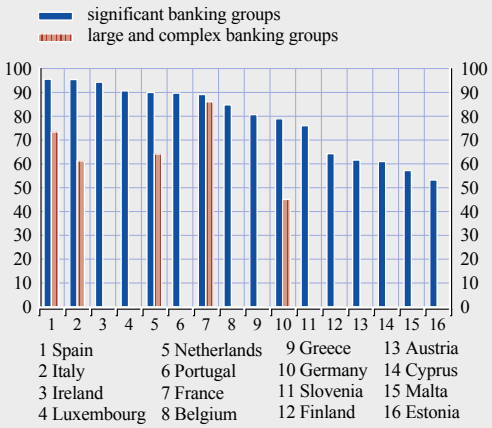
1. A new set of "significant banking groups" for euro area analysis

The approximately 130 banking entities that are currently seen as being subject to direct supervision by the ECB include around 90 parent institutions and stand-alone banks, referred to as "significant banking groups" (SBGs) in this FSR, on the basis of group-level consolidation.[2]

A focus on group-level dynamics for purposes of monitoring financial stability stems from the desire to present a consolidated analysis of the financial stability of banking groups as a whole.

Total assets of significant banking groups and large and complex banking groups relative to estimated total domestic banking sector assets

(H1 2013; percentage of total domestic banking sector assets)



Sources: SNL Financial and ECB.
Notes: In most cases, the reported figures are somewhat overstated as the consolidated accounts for the banking groups considered also include assets related to insurance activities that are not covered by the data on total banking sector assets.

1 The ECB will directly supervise banks with total assets in excess of €30 billion, or in excess of €5 billion if they represent more than 20% of notional GDP, and at least the three largest banks in each country. Other criteria mentioned in Article 6(4) of the SSM Regulation that involve supervisory judgements for classifying institutions as significant were not considered, since such judgements should be made at a later stage, i.e. once the SSM's operational arrangements have been published in accordance with Article 33(2) of the SSM Regulation.

2 Around 30 bank *subsidiaries* and six banks that are currently undergoing orderly *resolution processes* are not considered.

The SBGs under consideration had combined assets of around €23 trillion in mid-2013, which represent about 80% of total euro area banking sector assets. However, the proportion of each country's total domestic banking sector assets accounted for by the banks covered differs across countries as a result of both differences in bank concentration and the large number of foreign banks operating in some euro area countries (see the chart on the previous page).

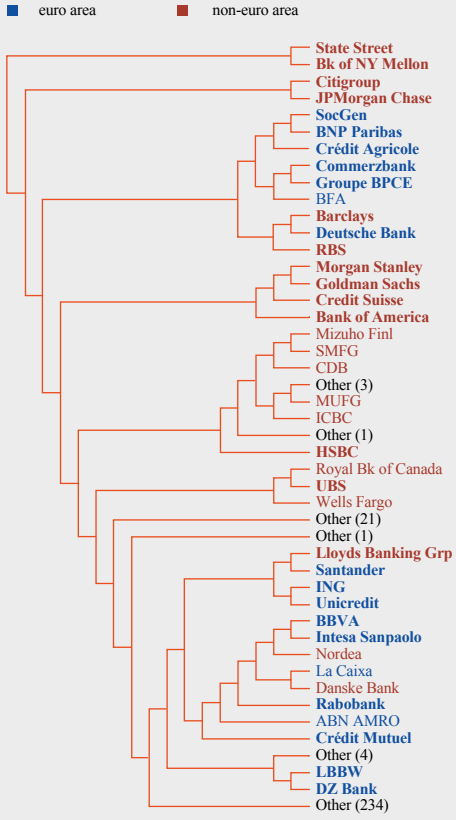
Moreover, in countries with a high proportion of foreign bank ownership, actual coverage of domestic banking sector activity is higher than suggested in the chart because domestic assets are in some cases accounted for in the consolidated accounts of banks' domiciled in other euro area countries.

Until such time as the SSM has become operational and the ECB can make use of data collected for supervisory purposes, the analysis in the FSR will continue to rely on publicly available information. Such information is not available for all SBGs, and some banks only report at a lower frequency (annually or semi-annually). This means that data for all of the banks in the samples cannot be included for all individual analyses in the FSR.[3] Although this gives rise to some inconsistencies with respect to the number of banks included in the different sections/charts across the FSR, it does not unduly impact overall consistency since many of the banks are the same, and those that are omitted are often the smaller entities.

2. Retention and refinement of "large and complex banking groups" for euro area and global benchmarking purposes

The updated sample of LCBGs includes 18 euro area and 22 global banks – identified on the basis of clusters reported in the adjacent figure. The largest, less substitutable and most interconnected banks play a particularly important role for financial stability, and the group of LCBGs – which is a subset of the SBGs – is still considered separately, in addition to the broader SBG sample for some financial stability analyses, also when benchmarking these often internationally active euro area banks against their peers around the globe.

Dendrogramme of large and complex banking groups



Sources: SNL Financial, Dealogic, Globalcustody.net, ECB and ECB calculations.
Notes: Bold font indicates banks that were identified as LCBGs in the last update and normal font indicates newly identified LCBGs. A dendrogramme is a branching diagram representing similarities among a group of entities – it can be thought of as a tree where the leaves' proximity within the tree is determined by the similarity of their characteristics. The category "Other" represents banks not identified as LCBGs in the analysis.

3 For example, the analysis of quarterly financial statements includes data for around 50 banking groups for which quarterly data are available from public data sources (although all the indicators considered are not available for all banks). Likewise, some of the analysis presented in Section 3.3 relies on data published by the European Banking Authority, which is available for 62 banks.

The clustering methodology used to identify LCBGs was introduced in December 2006,[4] with the aim of incorporating the "importance" of institutions in characteristics extending beyond the volume of their total assets, such as their complexity.

Several improvements have been made to the original LCBG identification procedure since the initial application of the methodology in 2006.[5] Instead of a strict ranking, the identification of LCBGs by means of cluster analysis categorises banking groups as similar or unique in terms of the characteristics of systemic importance – deemed to be given in the case of (i) banks with large balance sheets, (ii) banks with a substantial share of non-traditional activities, (iii) banks focused on investment banking, (iv) custodian banks and (v) highly interconnected banks.

4 See ECB, "Identifying large and complex banking groups for financial system stability assessment", *Financial Stability Review*, December 2006, and ECB, "Identifying large and complex banking groups for financial system stability assessment: an update", *Financial Stability Review*, December 2007.

5 First, banks with consolidated assets in excess of €30 billion are considered, and global and euro area banks are treated equally. Second, the indicators used concentrate on succinctly capturing the three characteristics that determine the importance of banks, namely size (total assets), substitutability (assets other than loans as a percentage of total assets, proceeds from issuance and assets under custody) and interconnectedness (bilateral exposures via loans, securities, derivatives and off-balance-sheet positions). The interconnectedness indicator is available primarily for banks with operations in Europe, which results in some bias towards banks operating there. Finally, the distance between banks in the clustering methodology has been changed (*Mahalanobis* instead of the *Euclidean* distance) to take into account the correlation between variables.

3.1 THE EURO AREA BANKING SECTOR: CONTINUING BALANCE SHEET REPAIR

Bank profitability remains subdued...

The **profitability** of significant euro area banks remained subdued in the first three quarters of 2013, dragged down by still elevated loan loss provisioning levels and sluggish revenue growth. While the results for the second and third quarters of this year show a slight improvement in banks' return on equity (ROE) on a year-on-year basis, the wide dispersion of bank ROEs suggests continued challenges for several banks and, indeed, banking sectors (see Chart 3.1). In the latter respect, both the *geographic location* and the *size* of banks remain crucial determinants of financial performance. A close link to sovereign and macroeconomic conditions suggests that cyclical as well as structural challenges are at play, with banks from stressed countries typically showing weaker profitability than their peers in other euro area countries, mainly on account of higher loan loss provisions. Similarly, euro area large and complex banking groups (LCBGs) have outperformed smaller significant banking groups (SBGs) in recent years and quarters, thanks largely to their lower credit risk costs (see Chart 3.2).

... as revenue growth remains modest amid weak growth and low interest rates…

A modest development of income remains at the core of muted profitability (see Chart 3.2), not least given a relatively stable or improving cost base. Euro area banks' net interest income continued to face headwinds from weak or negative lending growth, as well as from low interest rates, which negatively affect deposit margins (see Chart S.3.6) and the lending margins of banks with a high proportion of variable rate mortgage loans.

At the same time, improvements on the funding cost side over recent quarters have also been witnessed, helped by the gradual shift in the funding structure away from wholesale funding towards lower-cost customer deposits. A deeper look into the sources of interest income in 2012 reveals notable differences across countries. Although interest income from loans and receivables

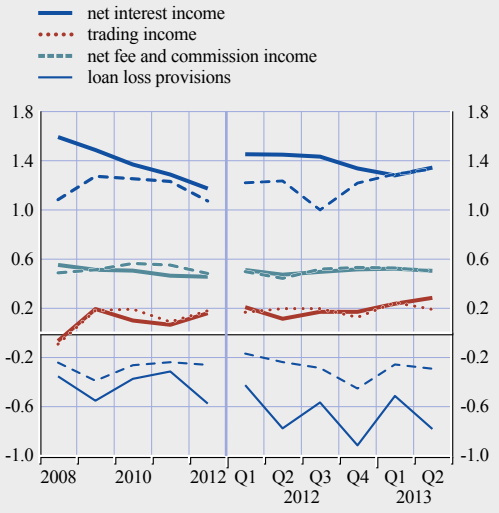
Chart 3.1 Euro area banks' return on equity

(2008 – Q3 2013; percentages; 10th and 90th percentile and interquartile range distribution across SBGs)

Source: SNL Financial.
Note: Based on publicly available data on SBGs, including LCBGs, that report annual financial statements and on data on a subset of those banks that report on a quarterly basis.

Chart 3.2 Breakdown of euro area banks' sources of income and provisioning costs

(2008 – Q2 2013; percentage of total assets)



Source: SNL Financial.
Notes: Based on publicly available data on SBGs, including LCBGs, that report annual financial statements and on data on a subset of those banks that report on a quarterly basis. The solid lines indicate SBGs and the dotted lines show LBCGs.

accounted for most of total interest income in all countries, its share varied from around 50% to more than 90% (see Chart 3.3). In some countries, interest income from other financial assets – mainly bonds – was also significant, suggesting the use of carry trade strategies by some banks, in particular those characterised by weak credit trends.

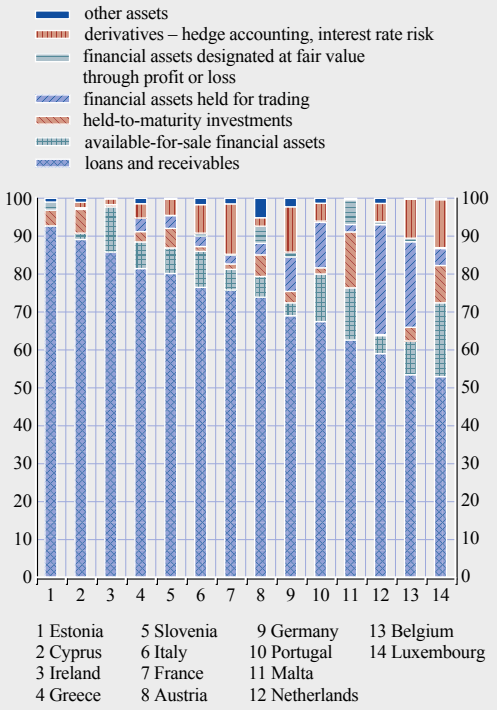
The evolution of non-interest income appears to reflect some adaptation of business models, as well as some efforts to keep costs contained. Fees and commissions have seen slight increases as a percentage of total assets in recent quarters (see Chart 3.2). For some banks, higher fee and commission income reflects a gradual shift in business models towards those that generate fees (e.g. asset management). Banks' trading income benefited from more buoyant equity markets in the second and third quarters of 2013, but this was offset by falling revenues related to fixed-income trading, in particular in the third quarter of the year. At the same time, the improvement in pre-provisioning profits was supported by banks' efforts to contain costs. This contributed to the decline in SBGs' median cost-to-income ratio from 64% in 2012 to 60% in the first half of 2013. Nevertheless, the ratios remain above their previous lows in 2009, indicating that there is scope for further efficiency gains.

... and provisioning needs remain high, mainly in stressed countries...

The main factor behind differences in banks' financial performance relates to diverging patterns in loan loss provisioning (see Chart 3.4). Differences in provisioning trends across banks have been driven mainly by factors related to the economic cycle, with banks in stressed countries recording a sharp rise in loan loss provisions since 2011, along with a deterioration of their asset quality. For some of these banks, provisioning costs have eaten up an increasing part of their pre-provisioning profits, making a return to profitability unlikely before macroeconomic conditions improve further.

Chart 3.3 Structure of interest income in euro area banking sectors

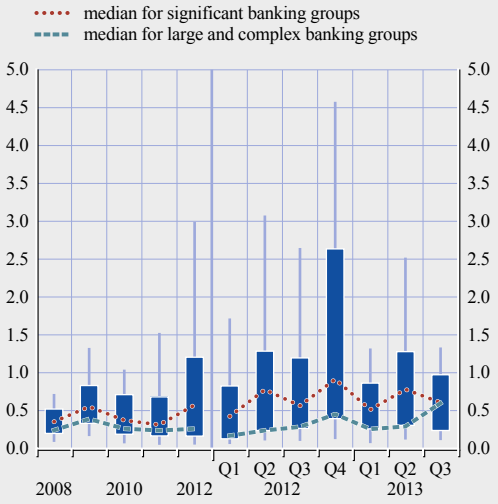
(2012; all domestic banks; percentage of total interest income)



Source: ECB/FSC Consolidated Banking Data statistics.
Note: Data are not available for Finland, Spain and Slovakia.

Chart 3.4 Loan loss provisions of euro area banks

(2008 – Q3 2013; percentage of total assets; 10th and 90th percentile and interquartile range distribution across SBGs)



Source: SNL Financial.
Note: Based on publicly available data on SBGs, including LCBGs, that report annual financial statements and on data on a subset of those banks that report on a quarterly basis.

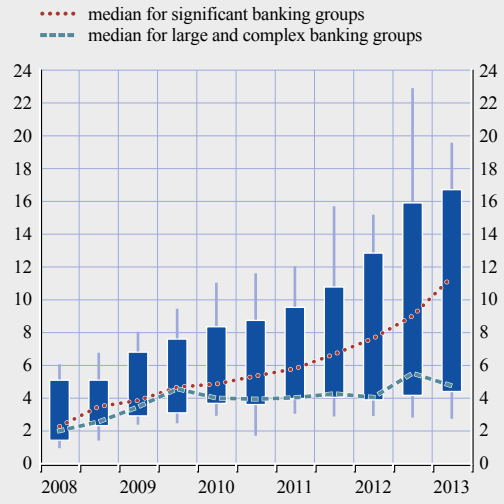
... amid a continued deterioration in asset quality

Asset quality developments continued to diverge between banks of different size, with broadly stable impaired loan ratios in the case of LCBGs contrasting with a continued deterioration of asset quality in that of smaller SBGs (see Chart 3.5). There is some evidence that, at least for some banks, some of the newly recorded non-performing loans (NPLs) are related to the reclassification of restructured loans as NPLs, also on account of new supervisory requirements (as in Spain, for instance).

It is noteworthy that, more generally, NPL ratios have been diverging considerably when viewed in terms of bank size since the start of the crisis (see Chart 3.5), while coverage ratios, when viewed in the same terms, have tended to move rather more in tandem (see Chart 3.6). Ultimately, however, the expansion of reserves has only kept pace with the deterioration in asset quality. As a result, coverage ratios have remained broadly flat, albeit with some improvement in recent quarters, in particular in the case of LCBGs. The dispersion across banks remains wide, which is partly due to national differences in the definition of NPLs and/or differences in the collateralisation of loans. However, the recent divergence of coverage ratios across banks even within countries suggests that part of the variation in coverage ratios reflects differences in banks' provisioning policies.

Chart 3.5 Impaired loans of euro area banks

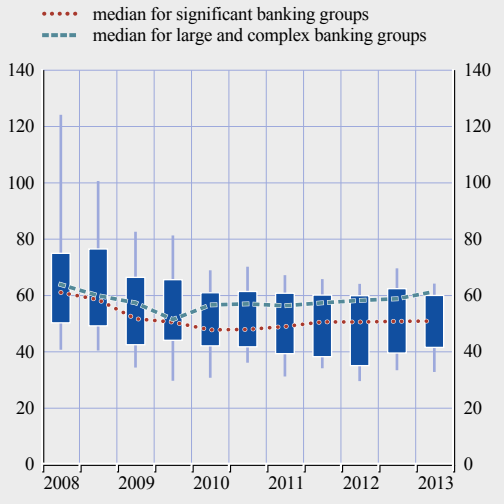
(H1 2008 – H1 2013; percentage of total loans; 10th and 90th percentile and interquartile range distribution across SBGs)



Source: SNL Financial.
Note: Based on publicly available data on SBGs, including LCBGs, that report semi-annual financial statements.

Chart 3.6 Coverage ratio in euro area banks

(H1 2008 – H1 2013; loan loss reserves as a percentage of impaired loans; 10th and 90th percentile and interquartile range distribution across SBGs)



Source: SNL Financial.
Note: Based on publicly available data on SBGs, including LCBGs, that report semi-annual financial statements.

Box 6

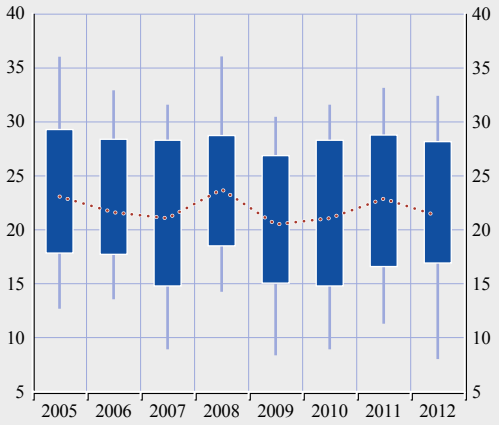
THE DYNAMICS OF FEE AND COMMISSION INCOME IN EURO AREA BANKS

The financial crisis has tested the resilience of banks across advanced economies – in terms of not only the composition of their balance sheets, but also the robustness of their business models in generating profits even in times of acute distress. While fee and commission income has been a key and relatively stable mainstay of profitability in euro area banks, it is more closely linked to macro-financial conditions than is often assumed. Indeed, this source of income tends to be loosely modelled in forward-looking analyses such as stress tests.

The evolution of fee and commission income in euro area banks since 2005 has been characterised by three broad tendencies. First, it has continued to account for a relatively significant share of euro area SBGs' income in the face of marked changes in the prevailing operating environment. Indeed, revenues from this source have hovered at around one-fifth to a quarter of banks' total income – and in some cases, even accounting for up to one-third of their income (see Chart A). The share is clearly linked to the business model – and includes the shares accounted for by traditional retail customer business, such as granting loans and managing deposit accounts, as well as investment banking activities (e.g. securities underwriting, merger and acquisition-related business, brokerage services, etc.) and asset management.

Chart A Euro area banks' fee and commission income

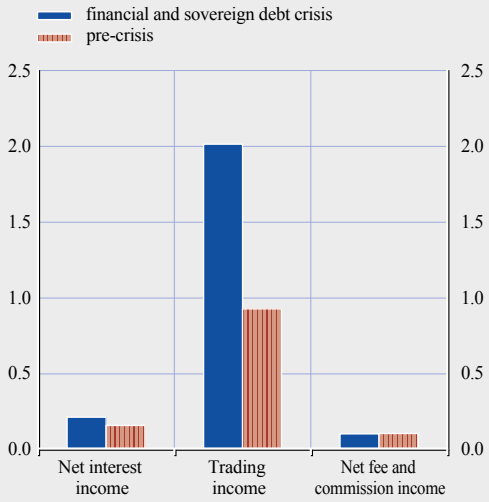
(2005 – 2012; percentage of total income; median, 10th and 90th percentile and interquartile range distribution across SBGs)



Source: SNL Financial.
Note: Sample of 62 euro area SBGs.

Chart B Changes in euro area banks' income sources

(2006 – H1 2013; coefficient of variation)



Source: SNL Financial.
Notes: Sample of 62 euro area SBGs. "Pre-crisis" refers to the period from January 2006 to June 2008, while "financial and sovereign debt crisis" refers to the period from July 2008 to June 2013.

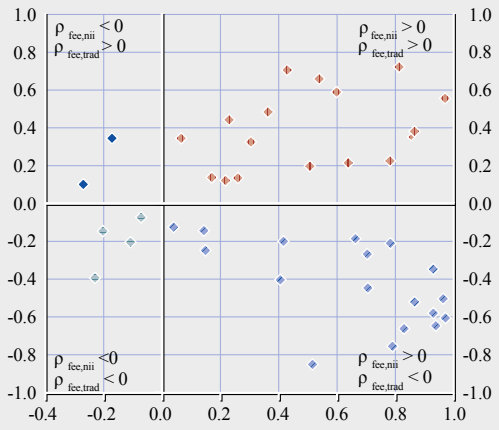
Second, fee and commission income – together with net interest income – has been a certain anchor for profitability in the face of marked volatility in trading income (see Chart B). This observation is also confirmed when standard portfolio theory is used to decompose the contributions of different income sources to the volatility of total net operating income growth.[1] For the sample of euro area SBGs analysed in this box, the contribution of the volatility of fee and commission income to the variation of total operating income was around eight times lower than the contribution of other income sources. These results are corroborated by findings in the academic literature that suggest that fees and commissions are a more stable source of income than banks' other sources of income (trading income in particular).[2]

Third, notwithstanding the limited volatility, fee and commission income has proven to exhibit some relatively pronounced cyclical tendencies. Indeed, the fee and commission income of euro area SBGs has generally tended to correlate strongly with net interest income over the last few years (see Chart C). This suggests that both sources of income are driven by some common underlying factors, such as broad macroeconomic activity and retail customer business activities.[3] Activities of a cyclical nature probably relate to economic and financial market activities, such as financial services (including those to retail customers), securities and loan underwriting, advisory services related to mergers and acquisitions (M&As) and

1 This analysis follows C. Calmés and Y. Liu, "Financial structure change and banking income: A Canada-U.S. comparison", *Journal of International Financial Markets*, Vol. 19(1), February 2009, for the United States and Canada respectively.
2 See, for example, A. Saunders and I. Walters, *Universal banking in the United States: What could we gain? What could we lose?*, Oxford University Press, 1994, and H. Kwan and S. Laderman, "On the portfolio effects of financial convergence – a review of the literature", *Federal Reserve Bank of San Francisco Economic Review*. 1999.
3 This is not surprising as many products offered by banks have both an interest rate and a fee component (e.g. customer accounts and various forms of credit agreements).

Chart C Correlation between the subcomponents of significant banking groups' income

(2005 – 2012; correlation coefficient of fee and commission income with net interest income ($\rho_{fee,nii}$; x-axis) and with trading income ($\rho_{fee,trad}$; y-axis) for each bank)



Source: SNL Financial.
Note: Sample of 62 euro area significant banking groups.

Correlation between average euro area banks' net fee and commission income and economic and financial variables

(2005 - 2012 ; average across banks of correlation coefficients)

European-level variables	
GDP (euro area 17)	35.44%
EURO STOXX 50 – prices	-10.33%
EURO STOXX 50 – volatility	25.45%
Euro-denominated securities – gross issuance (euro area 17)	36.26%
EONIA	4.66%
Spread between 12-month and 1-week EURIBOR	27.43%
Interest rate on loans to households and non-financial corporations (euro area 17)	11.75%
Country-level data	
GDP	44.27%
Stock market return	17.18%
Stock market volatility	21.20%
Bonds – gross issuance	24.74%
Interest rate on loans to households and non-financial corporations	16.45%
Bank-level variables	
Operating expenses	55.35%
Total assets	54.29%
Loans/total assets	27.34%
Common equity Tier 1 capital ratio	8.28%
Mergers and acquisitions - value of fees*	13.45%

Source: ECB calculations.
Note: * Value of the M&A fees generated in deals for which the bank acted as main adviser.

securities brokerage business. However, also more structural factors, such as payment transactions, safe custody administration and bank competition, are important determinants.

By contrast, the movement of fee and commission income in relation to trading income has been more heterogeneous across banks in the SBG sample, as evidenced by both positive and negative correlation coefficients.[4]

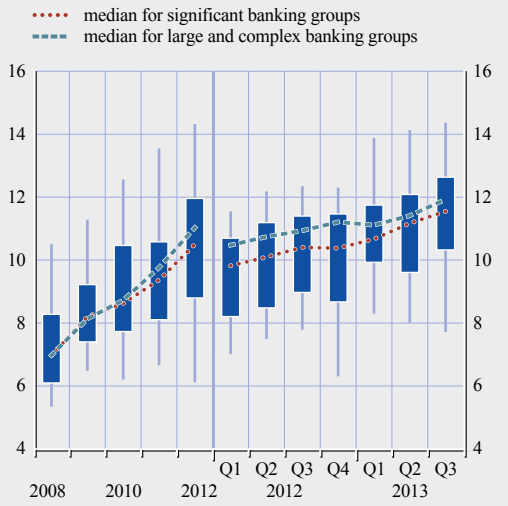
This cyclicality, even in relation to other income sources, is confirmed by simple correlation analysis. This suggests a link to real economic activity (e.g. GDP), as well as to equity price developments – not least because securities and M&A transactions affect banks' trading and underwriting activities. Positive relationships are also found with regard to overall bank business volumes (e.g. operating expenses, total assets and loan volumes).

This analysis suggests that fee and commission income provides a good source of relative stability in generating profitability through turbulent times. At the same time, while simple and illustrative, the results suggest that fee and commission income is also impacted by the cyclicality of general economic activity and is related to changes in banks' other income components. For that reason, a more systematic modelling of fee and commission income in relation to underlying macro-financial drivers could help in forward-looking exercises such as stress tests – in contrast to the frequently applied assumption of a constant or judgemental evolution.

4 This may reflect the fact that, although trading activity can trigger fee and commission income, it can be highly volatile (on account of price valuation adjustments) during periods of turbulence that do not necessarily affect banks' trading-related fees and commissions (which are linked to business volumes). Although such an imperfect correlation may suggest some potential diversification effects, the findings of the academic literature are ambiguous in this regard (see, for example, K. Stiroh and A. Rumble, "The dark side of diversification: The case of US financial holding companies", *Journal of Banking & Finance*, Vol. 30(8), August 2006).

Chart 3.7 Core Tier 1 capital ratios of euro area banks

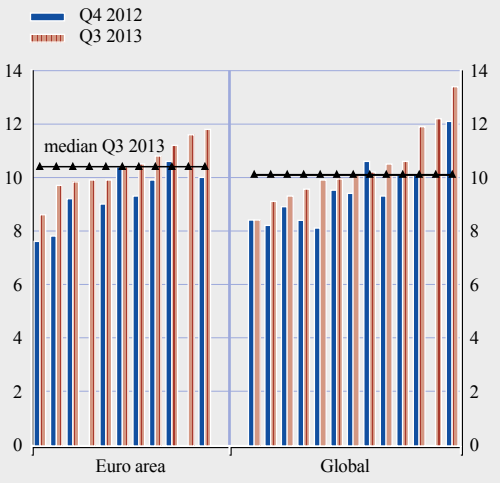
(percentages; 10th and 90th percentile and interquartile range distribution across SBGs)



Source: SNL Financial.
Note: Based on publicly available data on SBGs, including LCBGs, that report annual financial statements and on data on a subset of those banks that report on a quarterly basis.

Chart 3.8 Basel III common equity Tier 1 capital ratios of euro area and global large and complex banking groups

(percentages)



Source: SNL Financial.
Note: Based on publicly available data on euro area and global LCBGs that report fully loaded Basel III Common Equity Tier 1 ratios in their financial statements.

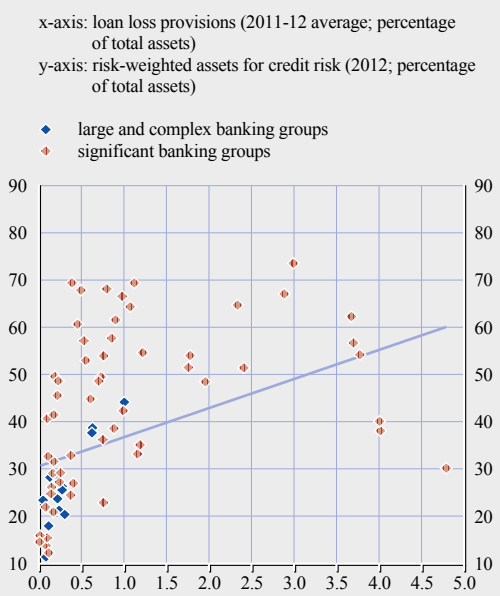
Euro area banks improved their capital positions further

Despite relatively weak profitability, euro area banks have continued to steadily strengthen their **capital positions**, although the extent of the improvement differed across banks, depending on the various available metrics used to assess capital strength. On the one hand, euro area banks continued to increase their risk-weighted capital ratios bringing the median core Tier 1 capital ratio for euro area SBGs to over 11% in the third quarter of 2013 – a more than 4 percentage point increase from the beginning of the global financial crisis in 2008 (see Chart 3.7). Similarly, many large banks that already report Basel III Common Equity Tier 1 ratios reached or surpassed levels of 9% by September 2013. As a result, the Basel III Common Equity Tier 1 ratios of euro area LCBGs at the end of the third quarter of this year were broadly comparable with those of their global peers (see Chart 3.8). These improvements in euro area banks were achieved through a combination of capital increases and reductions of risk-weighted assets, with the relative contribution of these two factors varying, in particular across SBGs. As for the measures used to raise capital, many SBGs increased their core Tier 1 capital further both via rights issues and by retaining earnings, or through the repurchase of hybrid capital instruments in some cases. Amid a continued deleveraging and de-risking of balance sheets, risk-weighted assets of both LCBGs and other SBGs continued to decline in the first three quarters of 2013. In the case of some banks, this partly reflected a shift towards assets with lower risk weights (including government bonds).

Notwithstanding continued efforts by regulators, including reviews by the Basel Committee and the European Banking Authority (EBA), uncertainty remains with regard to the consistency of calculations of risk-weighted assets and whether the risk weights derived from internal models truly reflect the riskiness of bank portfolios. While there is generally some correlation between risk weightings and losses incurred – as internal rating models use historical loan losses as input modelling the risk weighting – some banks have suffered higher loan losses than would have been expected on the basis of the average risk weight of their portfolios (see Chart 3.9).

Chart 3.9 Risk-weighted assets for credit risk and loan losses of euro area banks

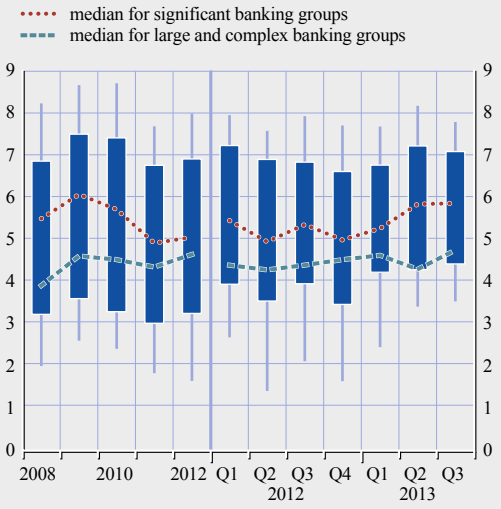
(percentages)



Source: SNL Financial.
Note: Based on publicly available data on SBGs, including LCBGs, that report annual financial statements and on data on a subset of those banks that report on a quarterly basis.

Chart 3.10 Euro area banks' ratios of total equity to total assets

(2008 – Q3 2013; percentages; 10th and 90th percentile and interquartile range distribution across SBGs)



Source: SNL Financial.
Note: Based on publicly available data on SBGs, including LCBGs, that report annual financial statements and on data on a subset of those banks that report on a quarterly basis.

Against this background, analysts' attention has increasingly shifted towards **leverage** ratios, despite their shortcomings in signalling the riskiness of bank balance sheets. Notwithstanding the marked improvement in regulatory capital ratios, improvements in balance sheet-based leverage ratios have been more modest and dispersion remains significantly wider than in the case of risk-weighted capital ratios (see Chart 3.10). This partly relates to business models, whereby some LCBGs with large capital market operations remain highly leveraged (see Box 7). While regulatory decisions on the implementation of leverage ratios in the euro area are still outstanding, some large banks seem already to be taking action or have announced plans to improve reported leverage positions by reducing their non-core assets, derivatives exposures (for instance, via trade compression), reverse repos, liquidity pools or off-balance-sheet commitments.

Box 7

EURO AREA BANKS AND LEVERAGE RATIO REQUIREMENTS

As disillusionment has grown with heterogeneous and opaque risk weighting calculations of banks, the use of simple leverage (i.e. leverage that is not adjusted for risk) has been gaining prominence among analysts, investors and regulators alike to serve as a backstop for risk-based requirements. While Basel III reforms already foresaw the use of such a leverage ratio, there

have been some calls for a more rapid and stringent implementation than currently envisaged.[1] This box evaluates euro area banks' capitalisation by comparing their leverage ratios with their risk-weighted capital ratios and investigates the relationship between these ratios and market-based indicators. Finally, it attempts to compare euro area LCBGs' leverage ratios to those of their global peers.

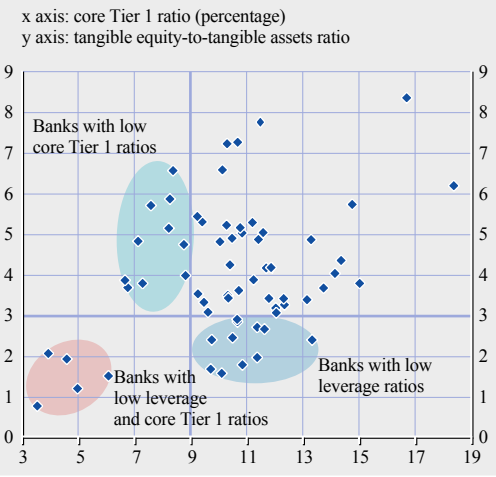
While, conceptually, a simple leverage ratio should be just that – simple (and transparent) – in practice, details such as the netting of derivative positions, the treatment of securities financing transactions or, more generally, differences between accounting frameworks can obfuscate any meaningful comparison of banks' currently reported leverage ratios. In addition, although regulators are regularly monitoring banks' preparedness to meet forthcoming leverage ratio requirements,[2] it is not possible at present to calculate fully comparable leverage ratios using publicly available information.[3]

Pending clarification of a commonly accepted measure of bank leverage and adequate public disclosure by banks, illustrative insights into euro area banks' preparedness to meet leverage ratio requirements can be gleaned by analysing a simple proxy for leverage ratios (tangible equity-to-tangible asset ratios) and comparing the outcome with regulatory (risk-based) measures.[4] While this measure of leverage ratios corresponds to the core Tier 1 capital ratio in the case of most euro area banks, for some banks, these two measures send conflicting signals with regard to solvency (see Chart A).

This may reflect the diversity of banks' business models, in particular in cases where they have large investment banking businesses or large amounts of low risk-weight mortgages on their balance sheets. Interestingly, market pricing of banks appears to bear a closer resemblance to traditional measures of solvency than to leverage ratios, despite the latter's heightened prominence in the current

Chart A Leverage versus core Tier 1 capital ratios of euro area banks

(2012; euro area SBGs)



Source: SNL Financial.

1 A revised Basel III leverage ratio framework was published for consultation in June 2013. In *principle*, implementation of leverage ratios of 3% as a Pillar 1 requirement is only envisaged as of 2018, but the monitoring phase has begun with bank-level reporting to supervisors since January 2013, and public disclosure starting in January 2015. Final adjustments to the definition and calibration of the leverage ratio will be made by 2017. In *practice*, there are proposals for an early implementation of Basel III requirements in the United Kingdom and for increased leverage ratio requirements in the United States where regulators have proposed a significant tightening of the Basel III leverage ratio (based on the initial version of the leverage ratio framework, however, which was generally less conservative) for large banks from the current level of 3% to 5% for bank holding companies and to 6% for subsidiaries with insured deposits.

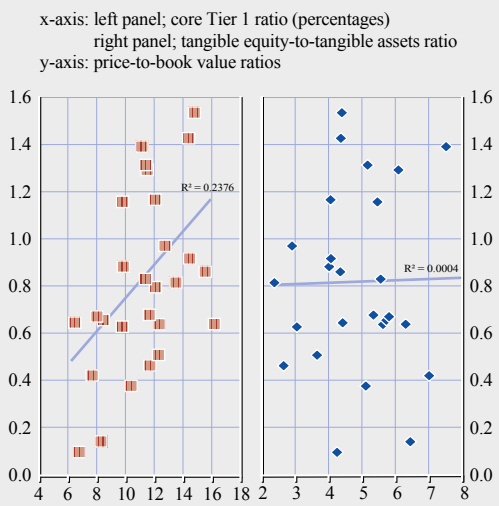
2 See Basel Committee on Banking Supervision, "Basel III Monitoring Report", September 2013, and European Banking Authority, "Basel III monitoring exercise – results based on data as of 31 December 2012", September 2013.

3 Some analysts have identified at least nine different ways of calculating leverage ratios and have highlighted that, for some banks, the ratio halves or doubles depending on the definition used. See Barclays, "European banks and the leverage ratio", September 2013.

4 However, the Basel III leverage ratio has a broader scope since it is defined as Tier 1 capital divided by total exposure including off-balance-sheet exposures.

Chart B Capital and leverage ratios vs. price-to-book value ratios of listed euro area banks

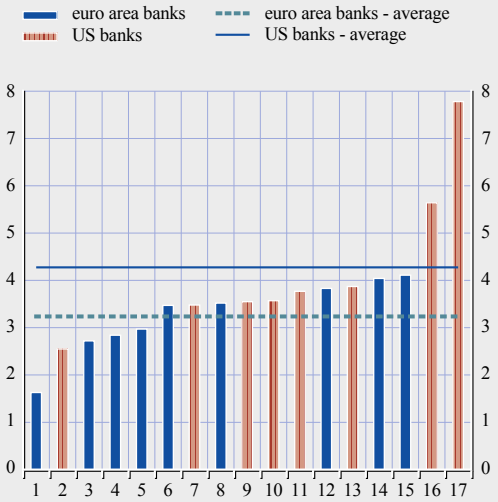
(H1 2013; SBGs)



Source: SNL Financial.

Chart C Leverage ratios of selected large euro area and US banks

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



1 Deutsche Bank
2 Morgan Stanley
3 Crédit Agricole
4 Société Générale
5 Santander
6 BNP Paribas
7 JP Morgan
8 BPCE
9 Bank of America
10 Citigroup
11 Bank of New York
12 Unicredit
13 Goldman Sachs
14 BBVA
15 ING Bank
16 State Street
17 Wells Fargo

Source: Federal Deposit Insurance Corporation (FDIC).
Notes: For US banks, assets are adjusted to account for the different treatment of derivatives under US GAAP and IFRS rules. Adjusted tangible equity and adjusted tangible assets do not include goodwill, other intangibles and deferred tax assets.

debate (see Chart B).[5] This could be explained by a multitude of measures of leverage, or by the fact that implementation is only envisaged as of 2018.

Viewed in international terms, while price-to-book ratios of euro area banks tend to be lower than those of their US peers, leverage ratios do not appear to be a consistent explanatory factor – at least not on a comparable basis.[6] Specifically, even when corrected for accounting differences such as the treatment of derivative positions,[7] the leverage ratios of large euro area banks still tend to be lower than those of their US peers on an IFRS-equivalent basis (see Chart C). This holds particularly true of euro area banks with large or significant investment banking activities. The remaining differences between euro area and US banks' leverage ratios can be explained, to some extent, by the different frameworks for regulation on capital requirements. Indeed, there is some evidence that euro area/European banks tended to have a higher share of assets with a low risk weight, allowing them to report strong capital ratios under Basel II rules. By contrast,

5 Similarly, no positive relationship was found between SBGs' share price changes between June and September, a period when the focus of analysts and investors shifted towards leverage ratios, and their leverage ratios.
6 See, for example, Thomas M. Hoenig, "Financial Stability: Incentives Matter", speech presented by the Vice Chairman of the Federal Deposit Insurance Corporation (FDIC) at the Asian Banker Summit, April 2013.
7 Banks reporting under the Generally Accepted Accounting Principles (GAAP) in the United States only report the net value of derivative positions under a single master agreement with the same counterparty. The same treatment is also allowed for repurchase agreements and reverse repurchase agreements.

US banks have traditionally been subject to binding leverage ratios and the less risk-sensitive Basel I requirements, which may have induced them to focus on assets with higher returns.[8]

All in all, from a financial stability perspective, the inclusion of a simple, transparent, non-risk based leverage ratio in the regulatory toolbox as a complementary measure to the risk-based capital requirements is welcome, since it will help to contain the build-up of leverage in the banking sector. At the same time, such a measure on its own has clear limitations, such as its indiscriminate treatment of collateralised lending (e.g. mortgages) alongside assets of a clearly riskier nature (e.g. unsecured lending to risky borrowers). As such, its calibration and implementation needs to be careful and well thought out, so that it is indeed complementary to risk-weighted measures as foreseen, and not a binding substitute with a potential to create incentives for banks to shift their businesses towards higher-risk assets. Moreover, in finalising the rules related to the Basel III definition of the leverage ratio, particular attention should be paid to avoiding unintended consequences for repo markets, which may affect the liquidity of related financial markets, and could potentially impair the transmission of monetary policy. Parallel initiatives should be fostered to shed light on the opacity of risk-weighting formulas by enhancing transparency and disclosure.

8 See V. Le Lesle and S. Avramova, "Revisiting Risk-Weighted Assets", *IMF Working Paper*, No 12/90, International Monetary Fund, March 2012.

Deleveraging process continued, mainly affecting assets other than domestic loans

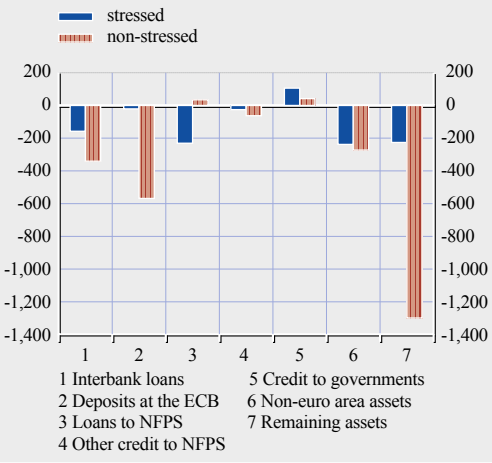
Looking more generally at the **deleveraging** process in the broader euro area banking sector, after reaching a peak in May 2012, total assets of MFIs located in the euro area have fallen by 10% (€3.5 trillion) on an aggregated balance sheet basis. Apart from two small increases in July 2012 and February 2013, the downward trend has been persistent. A substantial decline in remaining assets of €1.5 trillion – mainly driven by the fall in the market values of derivatives – accounted for almost half the overall reduction in total assets since May 2012.

A comparison of changes in total assets in non-stressed countries with those in stressed countries reveals significant differences in the extent and nature of deleveraging (see Chart 3.11).

For banks in non-stressed countries, a reduction in deposits with the Eurosystem, strongly correlated with repayments of longer-term refinancing operations, was one of the key drivers of balance sheet shrinkage. Loans to the non-financial sector (adjusted for sales and securitisation) declined significantly in stressed countries, while a modest increase was recorded by banks in non-stressed countries. Banks' plans to target non-domestic assets in their asset reductions were reflected in a drop of over €500 billion in credit to non-euro area residents, which accounted for 15% of the overall decline, with banks in both stressed and non-stressed countries reducing their foreign exposures. Within the euro area, reductions in interbank lending persisted, accounting for 14%

Chart 3.11 Changes in euro area MFIs' key assets since May 2012

(EUR billions)



Sources: ECB and ECB calculations.
Notes: NFPS refers to non-financial private sector. Loans to the non-financial private sector are adjusted for sales and securitisation.

of the decline. The only broad category to record an increase over this period was credit to domestic governments, in particular for banks located in stressed countries.

BANKING SECTOR OUTLOOK AND RISKS

Outlook for the banking sector on the basis of market indicators

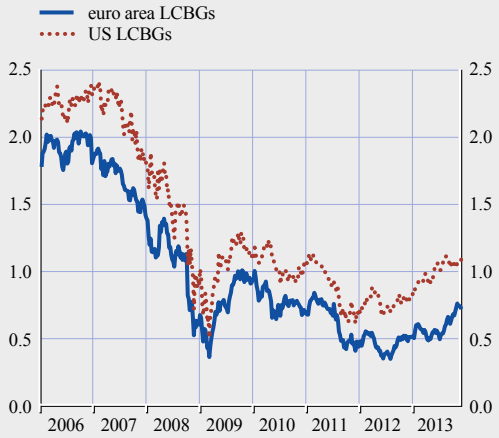
Volatility in market indicators and lingering concerns

Despite some volatility, as a consequence of increased risk aversion in global bond markets, most market-based indicators have shown some improvement in the outlook for euro area banks since the finalisation of the last FSR. Nevertheless, the latest reading of some indicators also suggests that concerns continue to linger about banks' asset quality and earnings outlook. Indeed, the implied volatility of euro area bank share prices, although declining, remained 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 in comparison with, for instance, that for the non-financial sectors. Similarly, while euro area LCBGs' price-to-book ratios rose after July 2013, thanks to some improvement in the growth outlook and investors' increasing appetite for euro area bank stocks, LCBGs' average ratios of prices to book values remain well below 1 and still compare unfavourably with the average for their US peers (see Chart 3.12).

At the same time, a key measure of banking sector stress that draws on market-based pricing suggests that, following a temporary rise induced by increased volatility in debt markets, systemic risk within euro area banks is currently at the lowest level recorded in two and a half years (see Chart 3.13). At the individual bank level, the median spread of credit default swaps (CDSs) of large euro area banks has followed a similar pattern, but the dispersion of CDS spreads, while narrowing in recent months, remained wide, partly highlighting financial fragmentation and also indicating differences in the outlook for asset quality (see Chart S.3.27). The equity price and balance sheet-based SRISK measure, an alternative measure of systemic risk, also declined in the last few months, falling to a level similar to that observed in mid-2011 (see Chart 3.14).

Chart 3.12 Price-to-book ratios of large and complex banking groups in the euro area and the United States

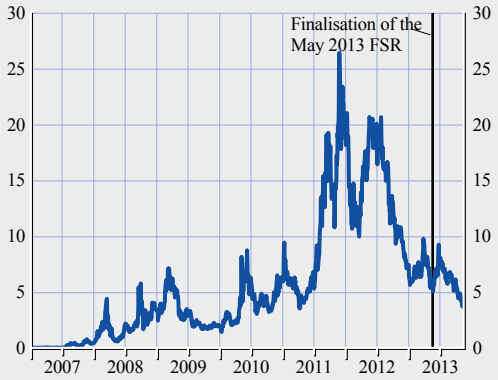
(Jan. 2006 – Nov. 2013; average)



Sources: Bloomberg and ECB calculations.
Note: Average for LCBGs in the United States and the euro area.

Chart 3.13 Measure of euro area banking sector stress

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



Sources: Bloomberg and ECB calculations.
Notes: The measure contains the credit default swap-implied probability of two or more of a sample of 15 banks defaulting simultaneously over a one-year horizon. See Box 8, *Financial Stability Review*, ECB, June 2012, for further details.

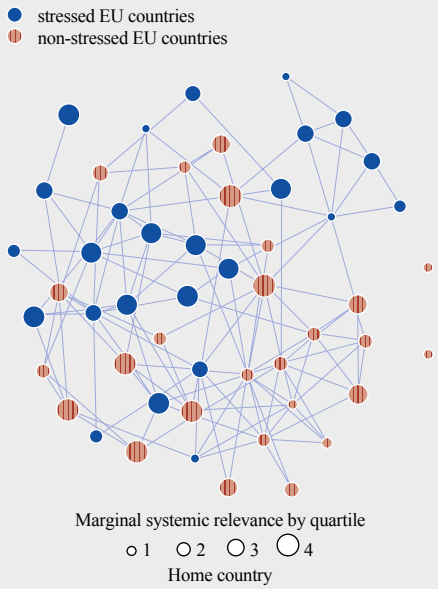
Chart 3.14 SRISK for euro area financial institutions

(Jan. 2008 – Nov. 2013; USD billions)

Sources: NYU VLAB and ECB calculations.

Chart 3.15 Estimated systemic risk contributions of individual banks to EU banking sector risk

(estimation sample: July 2011-July 2013)



Source: F. Betz, N. Hautsch, T. Peltonen and M. Schienle, "Measuring systemic risk contributions of European banks", *Working Paper Series*, ECB, forthcoming.
Note: The sample includes 51 large listed EU banks.

At the individual bank level, market indicator-based systemic risk contributions continue to exhibit a high degree of tail-dependence in the banking system. Chart 3.15 illustrates market measures of tail dependence, combining a value-at-risk (VaR) concept with time-varying interconnectedness within the banking sector. Specifically, for each included bank, relevant tail-risk drivers of the bank's VaR are identified on the basis of a set of macro-financial fundamentals, bank-specific characteristics and risk spillovers from other banks. 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 whole banking system, conditional on the bank's position within the financial network, the structural balance-sheet characteristics of the individual bank and overall macro-financial conditions.[1] These results reveal a high degree of tail-dependence among large European banks, with several banks from both stressed and non-stressed countries in the highest quartile of the systemic risk distribution.

Credit risks emanating from banks' loan books

Credit risk remains elevated

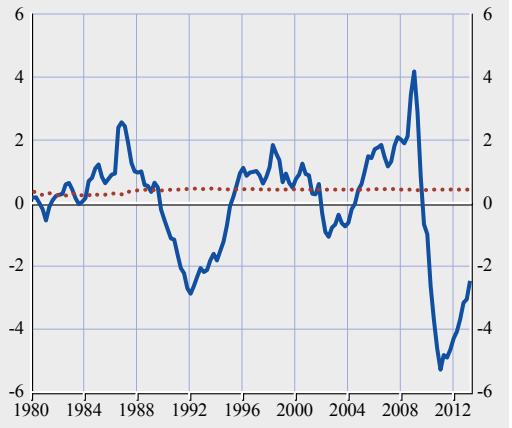
Much of the decline in reported asset quality, particularly among smaller entities, appears to stem from the **credit risk** confronting the euro area banking sector, particularly in countries experiencing strong cyclical declines in economic activity.

To some extent, subdued growth in credit at the aggregate euro area level reflects a more global phenomenon of relatively weak credit developments in relation to recent historical norms. This is readily apparent in a global credit gap indicator which, despite some further improvement at

1 For more detail, see Box 6, entitled "Measuring systemic risk contributions of European banks", *Financial Stability Review*, ECB, May 2013.

Chart 3.16 Global credit gap and optimal early warning threshold

(Q1 1980 – Q2 2013; percentages)

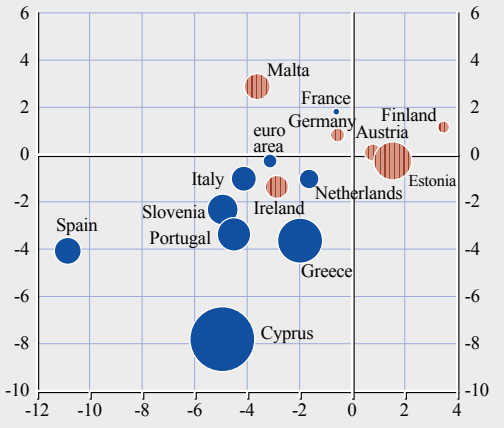


Sources: ECB and ECB calculations.
Note: Index for 18 OECD countries – see L. Alessi and C. Detken, "Quasi real time early warning indicators for costly asset price boom/bust cycles: A role for global liquidity", *European Journal of Political Economy*, Vol. 27(3), September 2011.

Chart 3.17 Credit and GDP growth in euro area countries

(Dec. 2012 – Sep. 2013; percentage change year-to-date)

x-axis: credit growth to non-financial corporations
y-axis: credit growth to households



Sources: ECB and European Commission.
Notes: The size of the bubble indicates the GDP growth forecast for 2013. Blue bubbles denote a decrease in GDP, while red bubbles show an increase in GDP.

the beginning of 2013, is still well below its early-warning threshold for costly asset price booms (see Chart 3.16).

Within the euro area, MFI **lending to the non-financial private sector** has remained generally muted. The greatest source of weakness is still to be found in lending to non-financial corporations, in contrast to broadly stable lending to households. Clearly, country developments remain diverse, with continuing sharp declines in lending volumes to the non-financial private sector in countries under stress being partly offset by moderate lending growth in other countries (see Chart 3.17).

The latest results of the ECB's bank lending survey suggest that a more prominent role of demand-side factors might underlie the subdued lending activity to the non-financial private sector (see Chart 3.18). Indeed, the latest bank lending survey results indicate that cost-of-funds and balance-sheet constraints had a lesser part in the further moderate tightening of lending standards, which can instead be attributed to worsening macroeconomic or sectoral outlooks. Furthermore, for the first time in four years, euro area banks expected, in net terms, some easing of credit standards on loans to non-financial corporations for the fourth quarter of 2013, as well as a slight easing of those for household loans for the first time since the fourth quarter of 2010.

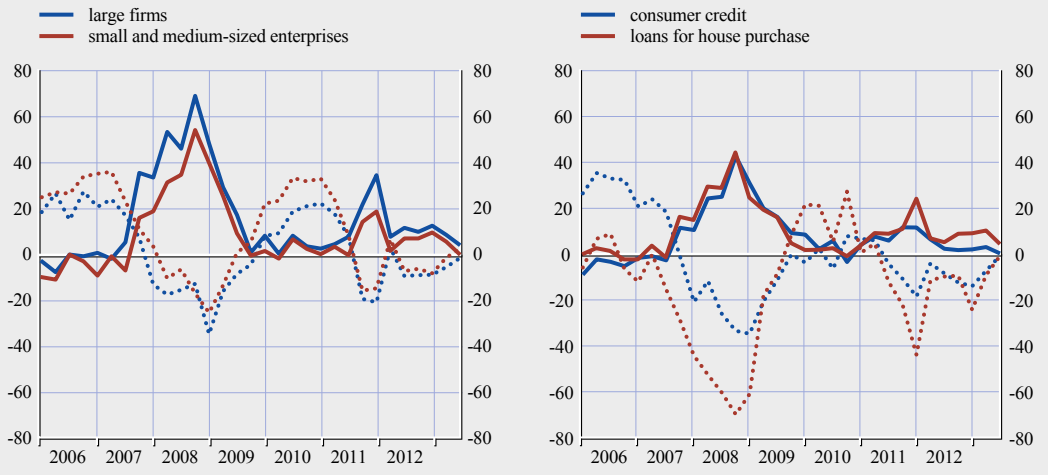
Asset quality outlook remains negative…

The longer weak economic conditions persist, the more income and earnings of both households and non-financial corporations are at risk. The interplay of any protracted economic weakness with legacy balance sheet issues, amid continued corrections in residential and commercial property markets in some countries, has a clear potential to negatively affect borrowers' debt servicing capabilities.

While the above interplay appears to be a compelling explanation for the rise in non-performing loans (NPLs) that is particularly visible in countries under stress, a key question is whether the

Chart 3.18 Credit standards and demand conditions in the non-financial corporate and household sectors

(Q1 2006 – Q3 2013, weighted net percentages)

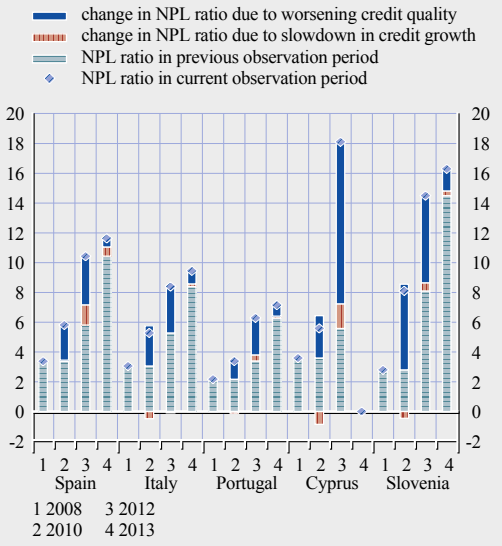


Source: ECB.
Note: The solid lines denote credit standards, and the dotted lines demand.

increase is structural (i.e. related to balance sheets) or cyclical (i.e. related to economic factors which might dissipate with time). The decomposition of NPL ratios indicates that worsening credit quality is indeed the main driving force behind the increase in these ratios, although more recently, the slowdown of credit growth in some countries has also contributed to rising NPL ratios there (see Chart 3.19). Furthermore, in some cases, NPL ratios might understate asset quality problems to the extent that banks exercise forbearance towards borrowers with low creditworthiness. This in turn can reduce banks' capacity to extend new loans to productive sectors/firms as the high proportion of NPLs and loans involving forbearance tie up capital and funding. Uncertainty remains, however, about the scope and extent of loan forbearance. This also highlights the importance of a thorough assessment of banks' asset quality and the subsequent rapid cleaning-up of banks' balance sheets.

Chart 3.19 Decomposition of changes in non-performing loan ratios in selected euro area countries

(Q4 2008 – Q2 2013; percentages)



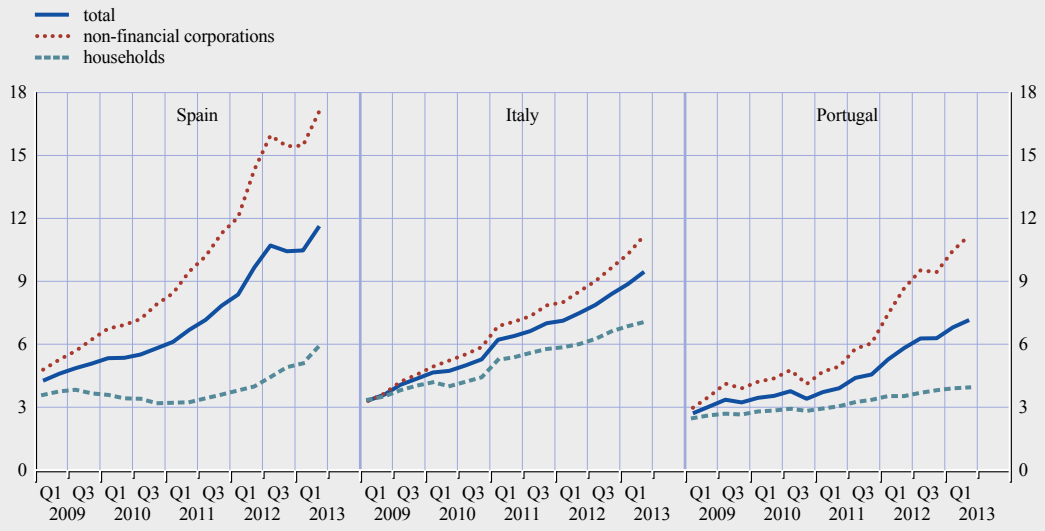
Source: National central banks and IMF (FSI statistics).
Note: Given differences in national NPL definitions, cross-country comparability is limited.

… further progress is needed in cleaning up bank balance sheets

A further breakdown using available sectoral data suggests that the increase in NPLs is being driven mainly by deteriorating credit quality in the corporate sector, and rather less so by worsening asset quality in the household sector (see Chart 3.20). Ultimately, write-off rates on MFI loans to non-financial corporations have continued to increase, albeit only slightly after a sharp rise in late 2012 and early 2013, largely on account of the transfer of NPLs by Spanish banks to Spain's bad bank SAREB (see Chart 3.21).

Chart 3.20 Non-performing loan ratios in selected euro area countries, broken down by economic sector

(Q1 2009 – Q2 2013; percentages)



Source: National central banks.
Note: Given differences in national NPL definitions, cross-country comparability is limited.

Counterparty credit risk

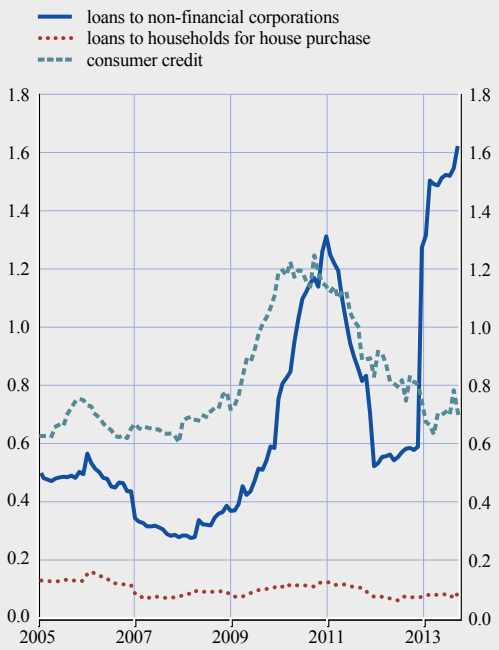
The median cost of protection against the default of a euro area LCBG, as reflected by CDS spreads, has declined since mid-May 2013, despite some increase in June (see Chart S.3.27). The difference between the median CDS spreads of euro area and non-euro area LCBGs has also decreased, but remained positive, suggesting that market participants continued to view euro area LCBGs as somewhat less creditworthy than their non-euro area counterparts.

Perceived counterparty credit risk of euro area LCBGs has declined

In contrast to the results of the June 2013 ECB survey on credit terms and conditions in euro-denominated securities financing and over-the-counter derivatives markets (SESFOD) where large banks reported an easing of price terms (such as financing rates/spreads), on balance, for all of the important types of counterparties included in the survey, the responses to the September 2013 SESFOD[2] did not indicate any significant change in price terms over the three-month reference period ending in August 2013. Offered non-price terms (including, for example, the maximum amount of funding, haircuts,

Chart 3.21 Write-off rates on euro area MFIs' loans to the non-financial private sector

(Jan. 2005 – Sep. 2013; percentages)



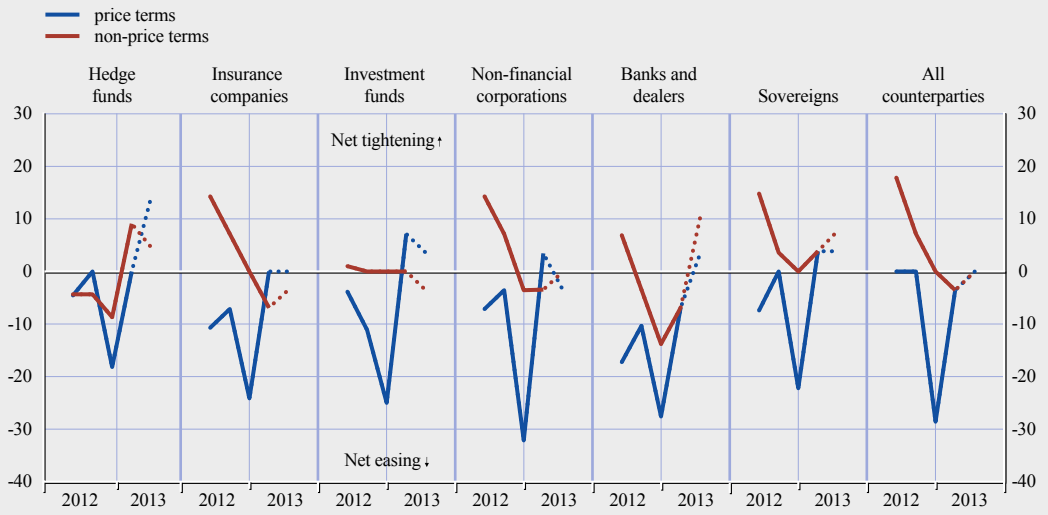
Source: ECB.

Price and non-price credit terms for wholesale counterparties appear to have remained basically unchanged

2 See ECB, "Results of the September 2013 ECB survey on credit terms and conditions in euro-denominated securities financing and OTC derivatives markets", press release of 14 October 2013, and Special Feature C in ECB, *Financial Stability Review*, May 2013.

Chart 3.22 Actual and expected changes in credit terms for euro-denominated securities financing and over-the-counter derivatives markets for selected counterparties

(Q4 2012 – Q4 2013; net percentage of respondents)



Source: ECB.
Notes: The net percentage is defined as the difference between the percentage of respondents reporting "tightened considerably" or "tightened somewhat" and those reporting "eased somewhat" and "eased considerably". The group "investment funds" excludes hedge funds, but includes exchange-traded funds, pension plans and other institutional investment pools. The dotted lines refer to expected changes.

cure periods and covenants, and triggers), on balance, also remained basically unchanged for the covered types of counterparties (see Chart 3.22). However, five large banks (17% of all respondents) reported that price and non-price terms, taken together, had eased overall for banks and dealers.

Hedge fund leverage has declined somewhat

At the same time, high volatility in credit markets since late May 2013 seems to have led to some reduction in the use of leverage by hedge funds, which are important and usually very active leveraged non-bank counterparties (see Chart 3.23). Despite investment loses in June 2013, the year-to-date investment performance of the hedge fund sector as a whole has been rather positive in 2013, keeping the estimated proportion of hedge funds breaching triggers of cumulative total decline in net asset value (NAV)[3] – an indicator of stress in the hedge fund sector – around its longer-term median (see Chart 3.24).

Increased focus on CCP exposures and attempts to create a single industry-wide initial margin model for non-CCP derivatives

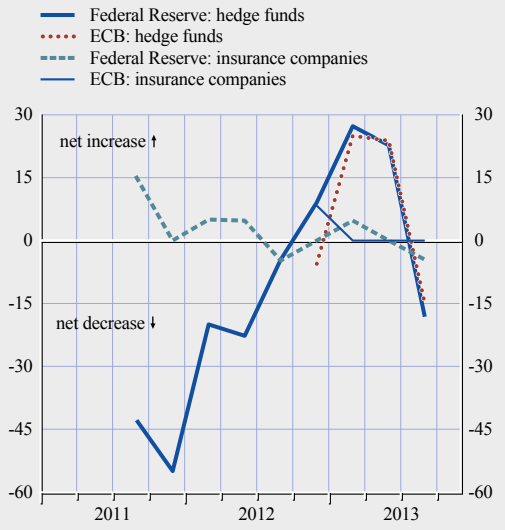
The focus on growing counterparty credit exposures to central counterparties (CCPs) has remained elevated. While this has recently been very much due to the forthcoming mandatory central clearing of standardised derivatives contracts, the increased attention is likely to become permanent in view of the role of a number of key CCPs as systemically important financial infrastructures. Of note are also market participants' attempts to create a so-called single industry-wide margin model for OTC derivatives transactions that will continue to be cleared non-centrally. This market initiative emerged largely because of a necessity for counterparties to reconcile different initial margin (collateral) estimates derived by using internal models, on the one hand, and a willingness to avoid the use of the standardised initial margin schedule, on the other, that only marginally takes into account the netting benefits and would thus lead to substantially higher collateral needs.[4]

3 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 to 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.

4 Basel Committee on Banking Supervision and Board of the International Organization of Securities Commissions, "Margin requirements for non-centrally cleared derivatives", September 2013.

Chart 3.23 Changes in the use of leverage by hedge funds and insurance companies

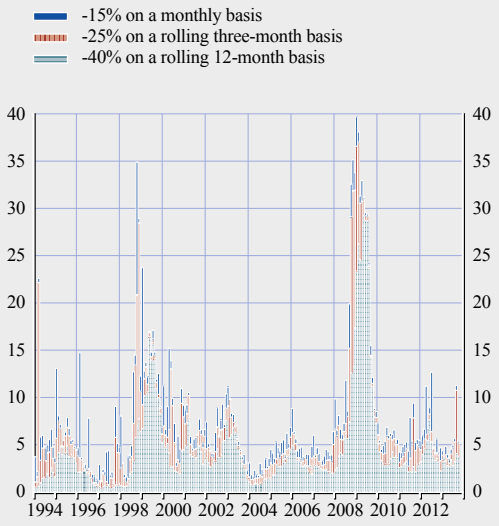
(Q3 2011 – Q3 2013; net percentage of respondents reporting an increase in the use of leverage over the past three months)



Sources: ECB and Federal Reserve Board.
Note: 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".

Chart 3.24 Estimated proportion of hedge funds breaching triggers of cumulative total NAV decline

(Jan. 1994 – Oct. 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.

Funding liquidity risk

Funding conditions remained favourable…

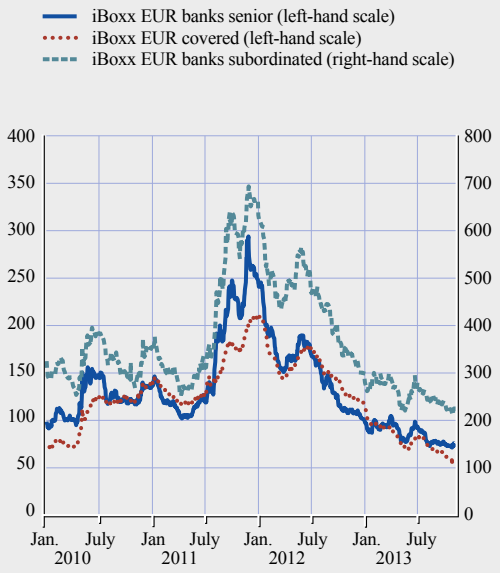
Market-based bank funding conditions are arguably the most favourable recorded since the euro area strains came to the fore in the course of 2010. In particular, average bank funding costs reached the lowest levels observed for more than three years across all major debt instruments in November (see Chart 3.25). Nevertheless, banks' debt issuance activity was temporarily affected by increased volatility in debt markets in the summer and – despite some recovery in September and October (see Chart 3.26) – year-to-date issuance of both senior unsecured debt and covered bonds remained well below 2012 levels. At the same time, issuance of subordinated debt, in particular by large banks, picked up considerably, albeit from low levels. This was partly driven by an increased supply of Basel III-compliant contingent capital instruments and by continued strong investor demand for high-yielding (hybrid) debt instruments.

… and the shift towards deposit funding continued…

At the same time, euro area banks' funding situation benefited from continued **deposit** inflows in most countries, including a reversal of the euro area fragmentation that had previously had a negative effect on deposits in some countries under stress. As a result, a generalised shift in euro area banks' funding structures towards more stable funding sources continued. Banks' reliance on funding sources that had proven to be volatile through euro area strains, such as wholesale funding and foreign deposits, dropped further, partly in conjunction with the continued deleveraging process (see Chart 3.27). Moreover, banks in many euro area countries, including some stressed countries, continued to reduce their dependence on central bank funding by repaying funds borrowed through

Chart 3.25 Spreads on banks' senior debt, subordinated debt and covered bonds

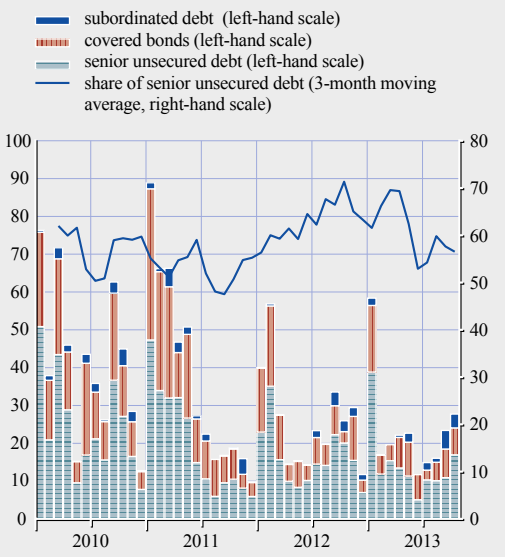
(Jan. 2010 – Nov. 2013; basis points)



Source: Markit.

Chart 3.26 Monthly debt issuance by euro area banks, broken down by type of debt

(Jan. 2010 – Oct. 2013; EUR billions, percentage)



Source: Dealogic.
Note: Excludes retained deals.

three-year LTROs, although repayment rates still varied widely across banking sectors.

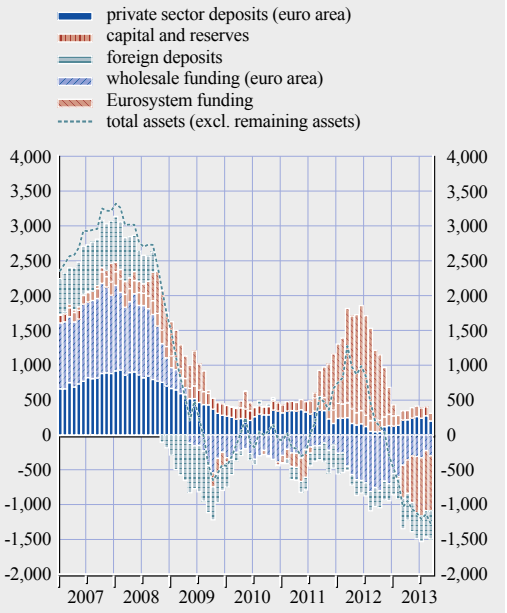
Following a significant increase from the previous lows of mid-2012, the exposure of US prime money market funds (MMFs) to euro area banks has remained broadly stable since May 2013 (see Chart 3.28). This development is noteworthy since it points, on the one hand, to increased confidence in euro area banks, but, on the other, also to renewed stronger reliance of some euro area banks on more volatile funding sources, although it remained well below the peak levels observed in mid-2011.

… but fragmentation in market-based funding markets persists

While **financial fragmentation** appears to have improved in the case of deposit funding, the fragmentation of the availability and cost of market funding remains significant in terms of both the country of residence and the balance sheet strength of banks. One aspect common to virtually all euro area banks was a marked fall in debt issuance during the sovereign debt crisis. This process, however, was most pronounced for smaller banks from stressed

Chart 3.27 Monthly flows in main liabilities of the euro area banking sector

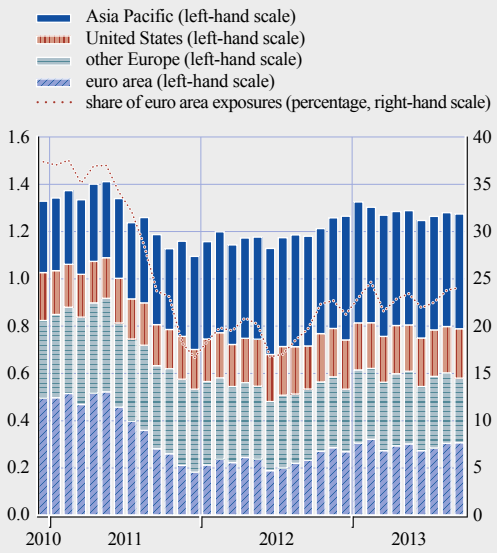
(Jan. 2007 – Sep. 2013; 12-month flows, EUR billions)



Source: ECB.
Note: Total assets are adjusted for remaining assets, which largely consist of derivatives.

Chart 3.28 US prime money market funds' bank exposure, by geographical area

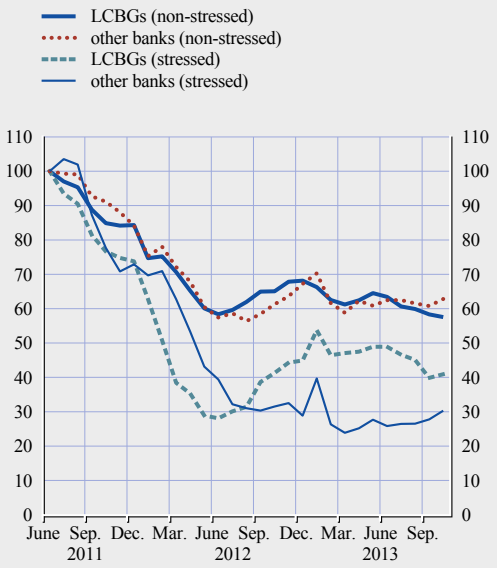
(Dec. 2010 – Sep. 2013; EUR billions, percentage)



Source: US Securities and Exchange Commission.
Notes: "Other Europe" includes Norway, Sweden, Switzerland and the United Kingdom.

Chart 3.29 Debt issuance by large and complex banking groups and other banks in non-stressed countries versus that in stressed countries since mid-2011

(June 2011 – Oct. 2013; index: June 2011 = 100)



Sources: Dealogic and ECB calculations.
Notes: Excludes retained deals. Indices are based on 12-month moving sums. "Stressed countries" refer to Cyprus, Greece, Ireland, Italy, Portugal, Slovenia and Spain.

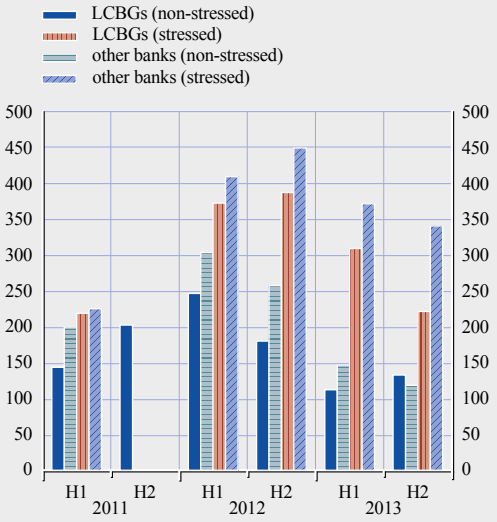
countries, where issuance over the year leading up to October 2013 was less than one-third of the corresponding level only two years ago. By contrast, debt issuance by banks in non-stressed countries was more resilient to changing conditions, given a decrease of between around 40% and 45% in the same period, compared with a drop of around 60% in issuance by LCBGs in stressed countries (see Chart 3.29).

Similar patterns can be observed in the pricing of newly issued debt by euro area banks. In particular, smaller banks from stressed countries continue to have to pay higher spreads on their newly issued senior unsecured debt than their large counterparts, whereas the difference between the spreads for large and smaller banks in non-stressed countries is less significant (see Chart 3.30).

Overall, this suggests that, while sovereign risk perceptions remain a major factor in explaining financial fragmentation, bank-specific factors – such as differences in capital positions and

Chart 3.30 Spreads on senior unsecured debt for banks in non-stressed countries versus those in stressed countries

(H1 2011 – H2 2013; basis points; spread over benchmarks)



Sources: Dealogic and ECB calculations.
Notes: Based on euro-denominated fixed rate deals with an issue size of at least €250 million. Excludes retained deals and government-guaranteed debt. In the first half of 2011, only LCBGs from non-stressed countries issued debt that met the above-mentioned criteria.

asset quality – also play an important role in the differentiation across banks in terms of the availability and cost of market funding.

Market-related risks

Interest rate risk increased further…

Banks' **interest rate risk** has increased further in recent months, which is not surprising given the global bond market volatility following the start of the debate on the Federal Reserve's tapering-off of its bond purchases in May this year. Risk indicators have risen in terms of both interest rate volatility and yield curve developments – despite some stabilisation following central bank communications on both sides of the Atlantic in the summer.

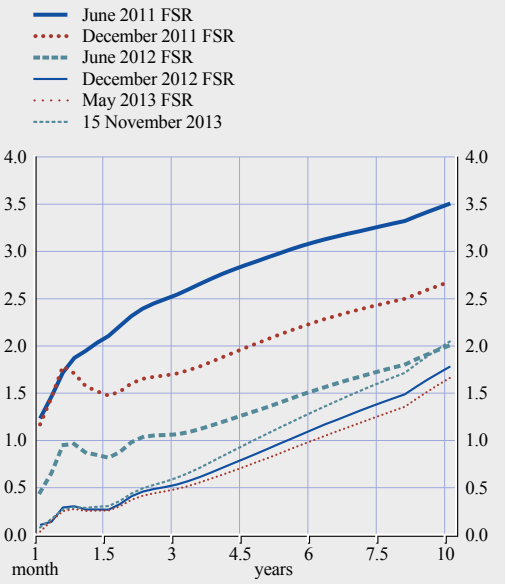
Furthermore, a steepening of government bond yield curves is visible in the United States and Europe when compared with the term structures observed at the time of the finalisation of the May 2013 FSR (see Charts 3.31 and S.2.5). While rates at the long end of the euro area yield curve increased sharply, in particular from late May to early July, yields on bonds with shorter maturities rose only modestly. This steepening of the yield curve could, in principle, imply higher income from banks' maturity transformation activities, depending on the extent of fixed versus floating rate lending, while, more generally, this effect could vary across banks in line with differences in the repricing of assets. On the other hand, however, should long-term bond yields continue to rise, banks could suffer further valuation losses on their government bond portfolios, to the extent that their positions are not adequately hedged.

... and banks increased their exposures to sovereigns further…

Data on MFIs' **holdings of government debt** show a continuation of the expansion of domestic government debt holdings for banks in most euro area countries (see Chart 3.32). However, the degree to which these higher 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 remains limited. By contrast, banks' exposure to domestic sovereign debt in other

Chart 3.31 Developments in the euro area yield curve

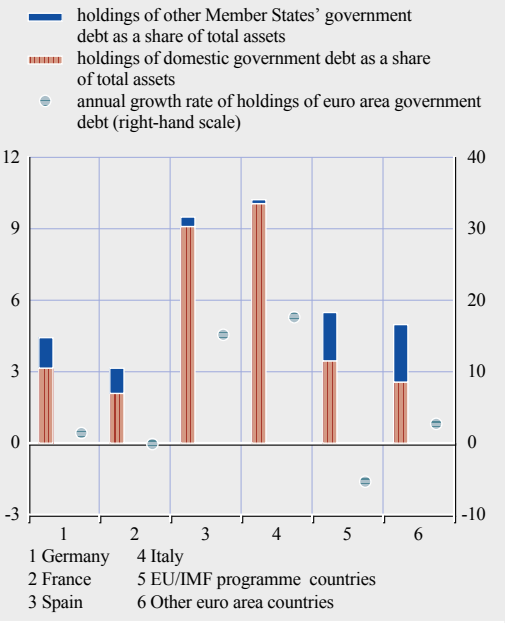
(percentages)



Sources: ECB and Reuters.

Chart 3.32 MFIs' holdings of domestic and other euro area sovereign debt, broken down by country

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



Source: ECB.

countries characterised by intermittent bank stress is far higher. For example, aggregate bank exposure to sovereign debt in both Italy and Spain have risen markedly to 10% and 9% respectively of total assets (see Chart 3.32) – increases of 2 and nearly 3 percentage points respectively in comparison with a year earlier.

Some of the increase in sovereign debt holdings may have been driven by banks' carry-trade activities, in particular in some stressed countries, in conjunction with low-cost financing available in the form of the ECB's LTROs. In fact, country-level data show that the contribution of interest income on available-for-sale assets (which account for most of the recent increase in government bond holdings) to total interest income increased significantly in some cases. This increase was most pronounced for Italian banks, with the share of interest income on available-for-sale assets rising from 4% in 2010 to 10% in 2012.

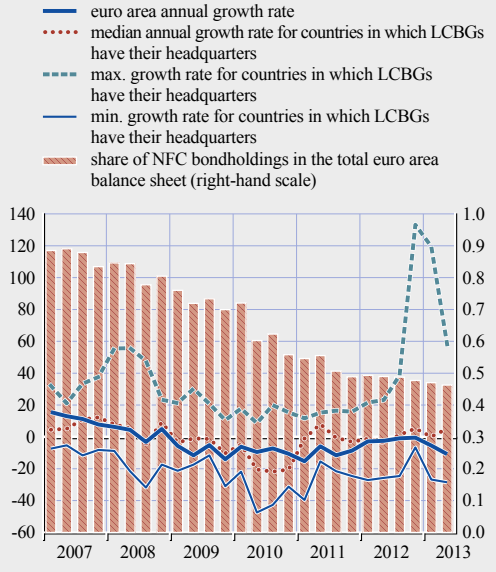
… while reducing their holdings of corporate bonds

At the same time, euro area banks have, on average, reduced their **holdings of euro area non-financial corporate debt** – albeit with considerable country-level heterogeneity (see Chart 3.33). However, even in countries where banks increased their corporate bond holdings, the share of these securities in banks' balance sheets remains limited. This suggests that the direct impact of a sharp adjustment of risk premia would be contained at the aggregate level, although the indirect or second-round effects (e.g. increased corporate defaults, higher uncertainty, etc.) could be significant.

Looking at overall bond holdings by bank group, data for LCBGs and other SBGs also suggest that smaller SBGs, in particular, increased their exposure to fixed income debt instruments between end-2011 and the first half of 2013, with the median share of debt instruments in total assets rising from 16% to 20%, which compares with a broadly stable median share for LCBGs (16%-17%) in the same period.

Chart 3.33 Annual growth rate of euro area MFIs' holdings of debt incurred by non-financial corporations and the share of such holdings in their total assets

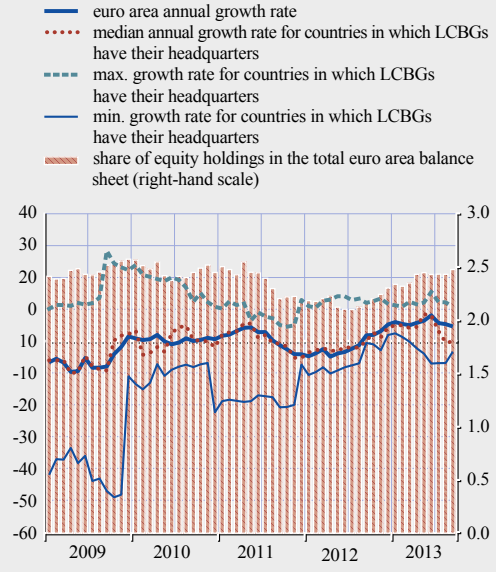
(Q1 2007 – Q2 2013; percentage change per annum; share of total balance sheet)



Source: ECB.

Chart 3.34 MFIs' holdings of shares and other equity

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



Source: ECB.

In stark contrast to the relatively elevated bond market volatility, volatility in equity markets was relatively moderate in the third quarter of 2013 (see Chart S.2.11). MFI statistics on share holdings indicate that euro area banks have, on average, continued to increase their exposure to this asset class, albeit at a slowing pace, and that it remained limited at only 2.5% of euro area MFIs' total assets in September 2013 (see Chart 3.34).

3.2 THE EURO AREA INSURANCE SECTOR: ADJUSTING TO THE CHALLENGING AND HETEROGENEOUS ECONOMIC ENVIRONMENT

FINANCIAL CONDITION OF LARGE INSURERS[5]

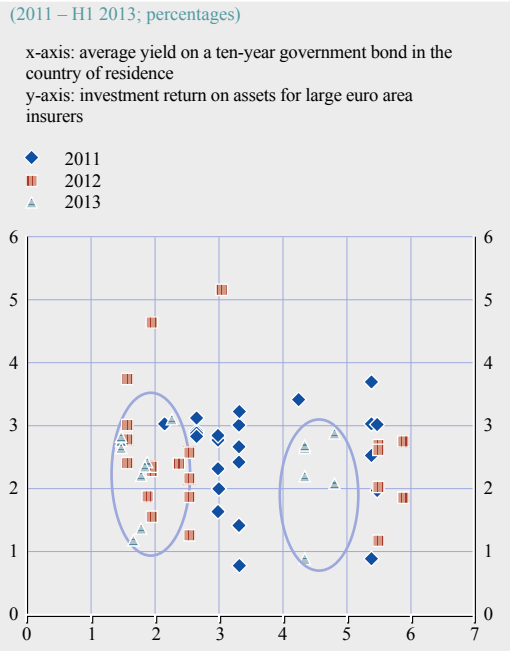
Insurers' performance remained modest but stable despite low yields

Reported profitability of large euro area insurers has so far been little affected by the financial and economic crisis or the prevailing low-yield environment. On average, it was roughly double that of the large and complex banking groups (LCBGs). Solid investment income and underwriting performance have supported returns on equity (see Chart S.3.21 in the Statistical Annex). Investment income has continued to be resilient to the low yields on highly rated government bonds, which constitute the lion's share of many euro area insurers' investment portfolios. More broadly, the performance of large euro area insurers so far appears to retain a limited relationship with the present yield on domestic sovereign bonds (see Chart 3.35). The observed resilience of these insurers appears linked to the extent of diversification that large insurers display, on the one hand, and to the long-term nature of insurance business, where assets are generally held to maturity and investment income is therefore less vulnerable to market volatility, on the other.

Profitability was somewhat impacted by insured losses over the last months. These stemmed primarily from floods and hailstorms in central and eastern Europe, which dented the second and third-quarter underwriting results of a few euro area primary insurers and reinsurers. Although this resulted in an increase in the average combined ratio (incurred losses and expenses as a proportion of premiums earned), the overall underwriting activity remained profitable as the indicator remained below 100% for most of the insurers in the sample for the second and third quarters of 2013 (see Chart S.3.23). Premium growth remained muted and in some cases clearly negative on account of weak economic activity, increases in taxes on premiums and competition in both life and non-life insurance. The diverse factors, and therefore the final impacts, varied greatly across euro area countries (see Chart S.3.22).

Chart 3.35 Investment income and domestic government bond yields

(2011 – H1 2013; percentages)

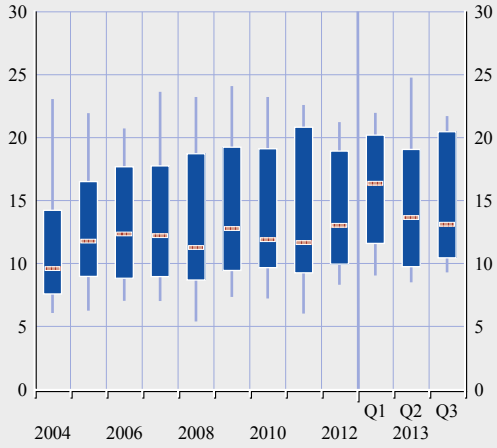


Sources: Bloomberg, individual institutions' financial reports and ECB calculations.
Notes: Data for 2013 refer to an average of first and second-quarter returns for those companies for which data are available. The government bond yield refers to the average during the first half of 2013. Investment income excludes unrealised gains and losses.

5 The analysis is based on a sample of 22 listed insurers and reinsurers with total combined assets of about €4.8 trillion in 2011, which represent around 63% of the gross premiums written in the euro area insurance sector. Quarterly data were only available for a sub-sample of these insurers.

Chart 3.36 Capital positions of large euro area insurers

(2004 – Q3 2013; percentage of total assets; 10th and 90th percentiles, interquartile distribution and median)



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

(Q1 2002 – Q4 2014)

Sources: European Commission, Thomson Reuters and ECB calculations.

Increase in yields of highly rated countries impacted capital buffers

Volatility in global debt markets through the summer had a stronger impact on reported capital positions than profitability of large euro area insurers. The recent rises in the long-term yields of highly rated euro area, UK and US government bonds decreased the capital positions of large, and particularly internationally active, euro area insurers in the second and third quarters of 2013 (see Chart 3.36). The dip demonstrates the vulnerability of some insurers to the risk of a sudden increase in yields through its impact on asset valuations and therefore reported solvency.[6] Capital buffers, however, remained comfortable in historical terms.

INSURANCE SECTOR OUTLOOK

Overall outlook stable

Market-based indicators suggest a relatively stable outlook for the euro area insurance sector over the next year. Volatility in market indicators in June, largely linked to global bond market turbulence, has given way to a gradual improvement in the market pricing of insurers (see Chart S.3.30). The decreasing trend in the dispersion of perceived credit risk across large insurers has also continued (see Chart S.3.28).

Analysts balance improved investment prospects against muted growth

Analysts expect insurance earnings to remain at comfortable levels in 2013 and 2014 (see Chart 3.37). Although the low-yield environment continues to weigh on the profitability of the sector, the recent corrections are seen to enhance investment income prospects somewhat as reinvestments can be made at higher levels. Analysts also expect higher yields to improve both

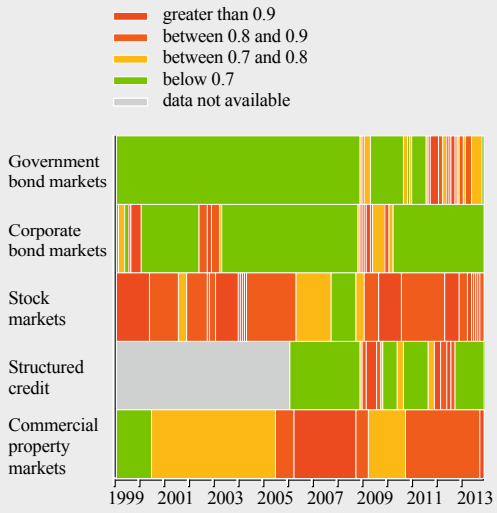
6 Large, listed euro area insurers generally follow International Financial Reporting Standards (IFRSs), which provide for a uniform treatment of financial assets (depending on their respective accounting classification), but (currently) not for like treatment of insurance liabilities. In most European jurisdictions, liabilities are currently not marked to market.

the economic solvency of all insurers through higher discount rates on liabilities and the prudential ratios in those jurisdictions where the valuation of liabilities is based on market rates.[7] Analysts also note that insurers have adjusted their business models and are now in a better position to face the current low-yield environment than during the past years.[8]

Improved expectations regarding investment income contrast with challenges for the insurance sector, in the form of muted economic growth and its impact on the ability of the sector to attract new business and retain existing clients. Weak economic growth currently translates into sluggish demand for primary insurance, and potentially increased credit risk in corporate bond markets. Low demand, together with ample capital in the sector, also gives rise to limited pricing opportunities. In the medium term, analysts are more positive about the growth prospects, and many even attach a positive outlook to the sector as a whole.

Chart 3.38 Investment uncertainty map for the euro area

(Jan. 1999 – Oct. 2013)



Sources: ECB, Bloomberg, JPMorgan Chase & Co., Moody's, Jones Lang LaSalle and ECB calculations.
Notes: Each indicator is compared with its "worst" level since January 1999. "Government bond markets" represent the ten-year government bond yield in the euro area and the option-implied volatility of German ten-year government bond yields; "Corporate bond markets" A-rated corporate bond spreads and speculative-grade corporate default rates; "Stock markets" the level and the price/earnings ratio of the Dow Jones EURO STOXX 50 index; "Structured credit" the spreads of residential and commercial mortgage-backed securities; and "Commercial property markets" commercial property values and value-to-rent ratios.

INVESTMENT RISK

Solvency risks for the insurance sector are closely tied to investment activity, which remains concentrated in government and corporate bond markets. Investments in structured credit, equity and commercial property, by contrast, have remained at low levels (see Chart S.3.25).

Despite the increase in yields of highly rated bonds...

A rise in the yields of **government bonds**, notably those of highly rated sovereigns, has contributed to the easing of the conditions shown in the investment uncertainty map (see Chart 3.38). On balance, the impact of an interest rate rise on the economic solvency of insurers is likely to be positive, owing to the effect of the higher discount rates on the liability side. Prudential solvency ratios of insurers, however, may be at risk from a sudden rise in yields in jurisdictions where liabilities are not treated in a market-consistent way.[9] Comfortable capital buffers help in this respect, as do hedging and hold-to-maturity strategies.

As regards profitability, increasing yields may bring reinvestment opportunities and potentially ease the squeeze that some small and mid-sized life insurers in particular have experienced in presence of high, albeit declining, minimum guarantees to policyholders. Insurance companies typically

7 Economic solvency is used throughout the text to refer to a market-consistent treatment of both assets and liabilities, versus prudential solvency which is dependent on the accounting and prudential rules in use.
8 Such adjustments could include geographical and business line diversification, a switch in product design towards unit-linked policies in which the policyholder bears the risk, and asset-liability management techniques.
9 In contrast to the effect on solvency in economic terms, which always considers the market impact on both sides of the balance sheet, the impact of a rate hike on prudential solvency is negative if liabilities are not marked to market but assets are. The differences in the accounting treatment of liabilities across jurisdictions imply that the short-term prudential 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.

hold most of their assets in the available-for-sale portfolio despite their intention to hold them to maturity. This policy enables the companies to take advantage of reinvestment opportunities that rising rates may offer, while keeping open the possibility to move assets to the held-to-maturity portfolio in case large valuation declines are anticipated.

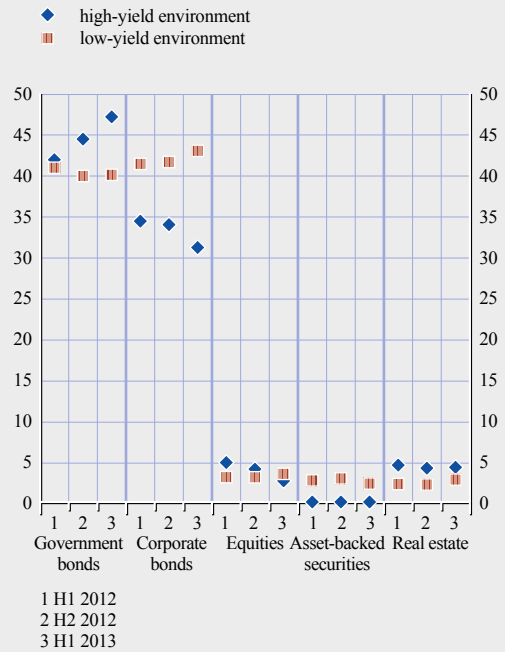
… low yields remain the key economic risk in the medium term

Notwithstanding their rise over the course of the year, the yields on highly rated government bonds still remain at very low levels and are expected to keep investment income of euro area insurers moderate for some time to come. Such low yields also continue to constitute the key underlying medium-term solvency risk in economic terms through liability valuation. More and more analysts and investors are focusing on the economic impact of low yields on the solvency of insurance companies, also as it is seen to approximate the position of the insurer under the forthcoming Solvency II framework. Insurers in those jurisdictions where liabilities are not yet marked to market are thus not insulated from the negative impact of low yields on their perceived solvency, despite the fact that it is not visible in the prudential ratios.

In an environment characterised by a fragmented and in some cases low-yielding government bond market, the appeal to insurers of increasing **corporate bond** portfolios is clear. A closer look reveals that this development is mainly evident for insurers residing in countries where government

Chart 3.39 Investment mix for selected large euro area insurers

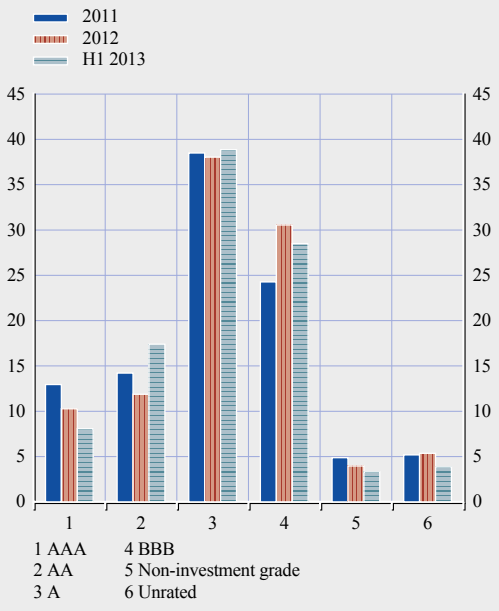
(H1 2012 – H1 2013; percentage of total investments; median)



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. Insurers are divided into high- and low-yield categories on the basis of the country of residence.

Chart 3.40 Corporate bond investments of selected large euro area insurers according to rating categories

(weighted average; percentage of total corporate bond investments)



Sources: Company reports, JPMorgan Cazenove and ECB calculations.
Notes: Based on 12 large euro area insurers for 2011 and 2012. For the first half of 2013, information was only available for ten insurers in the sample. For one insurer, the rating distribution for 2011 was used as a proxy for the year 2012, owing to a lack of data.

bond yields are low (see Chart 3.39). Investment in other asset classes such as equities and asset-backed securities has also increased for these insurers, albeit starting from a very low level.

Corporate rating migration towards the mid-range

At the same time, the average rating of the corporate bond portfolios of selected large euro area insurers has decreased somewhat (see Chart 3.40). Although part of the apparent migration towards BBB-rated bonds in particular may be attributable to recent downgrades, especially in the banking sector, it cannot be excluded that a part of the phenomenon is related to search-for-yield activities in the current low-yield environment. The recent movement towards A- and AA-rated securities may, however, also signal deliberate action to upgrade the investment portfolio and would as such argue against intentional risk-taking by the insurers in the sample.

Insurers adjust investment strategy

In summary, evidence points towards an ongoing adjustment of investment strategies by large euro area insurers in an environment of low and uncertain returns on investments. The developments in terms of asset allocation and rating migration may contribute to the apparent insensitivity of investment income to domestic government bond yields, as shown in Chart 3.35. On the one hand, this process is likely to translate into decent returns on equity also in the near future and to add further benefits that arise from diversification. On the other hand, the developments, together with the weak macroeconomic outlook, may imply an increased market and credit risk in the future and therefore merit close monitoring.

UNDERWRITING RISK

Underwriting risks are key for insurers. In the short term, the actual occurrence of natural catastrophes can have a significant impact, as losses can be substantial. Inadequate pricing of policies constitutes a major source of risk in the medium-to-long term, as premiums collected may not suffice to pay liabilities.

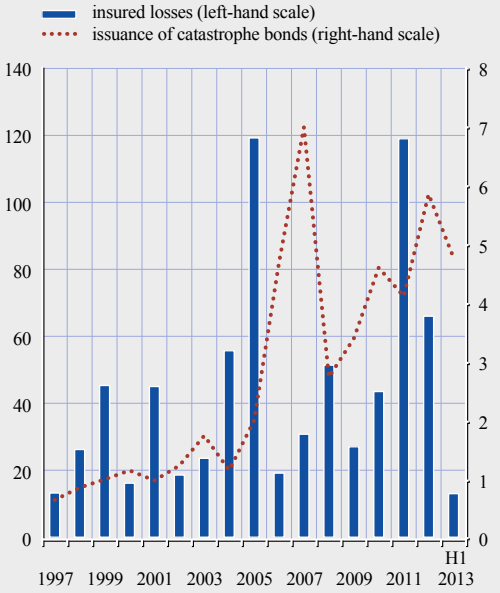
Insured catastrophe losses remained below average in the first half of 2013, the major single event having been the floods in central and eastern Europe, with an estimated impact of USD 4 billion (see Chart 3.41). Atlantic hurricane activity has so far remained low, despite the forecasts for an above-average season. As a consequence, insurance capital, and therefore capacity, has remained strong.

Strong capital impacts non-life pricing

The comfortable level of capitalisation, together with the few catastrophe losses over the last year, have contributed to the modest overall developments in the pricing of non-life insurance policies, and in particular to the decline in US catastrophe reinsurance. In addition, the inflow of capital into (and therefore the competition in) the reinsurance market has increased through the pick-up in the issuance of insurance-linked securities such as catastrophe bonds (see Chart 3.41 and the section on institutional investors below). The overall impact on the

Chart 3.41 Insured catastrophe losses and catastrophe bond issuance

(1997 – H1 2013; USD billions)



Sources: EQECAT, Munich Re, Swiss Re, Guy Carpenter and ECB calculations.
Note: For catastrophe bond issuance, H1 2013 refers to the first seven months of the year.

European insurance sector, however, is expected to be subdued. First, large euro area (re)insurers are generally well diversified across business lines and their income is therefore not likely to be significantly affected by the decrease in US catastrophe insurance pricing. The pricing of motor insurance, for example, is continuing on its upward trend in many core European markets. Second, the risk-based Solvency II framework is likely to increase the demand for reinsurance in Europe in the medium term. Third, despite the surge in issuance of insurance-linked securities as complementary products that are particularly suitable for financial investors, traditional reinsurance has some distinctive benefits for insurers in terms of product design and is therefore likely to prevail.[10]

Higher yields may lower reform pressure on life insurers

For life insurers, the increasing yields on highly rated government bonds and the ensuing impact on profitability and economic (and in some cases prudential) solvency could alleviate pressure for the necessary and ongoing adjustment of business models. Combined with competitive or even shrinking markets (see Chart S.3.22), they could in particular induce the granting of unsustainably high product guarantees on new life insurance policies. By contrast, the improved funding conditions of banks have reduced competition between banks and life insurers, and therefore also the risk of a liquidity squeeze and consequent forced asset sales. Liquidity risk could, however, re-emerge on account of renewed difficulties in attracting new business and retaining existing clients in the present economic situation. While not constituting a major current risk, the liquidity situation should be monitored as its pace of change can be significantly faster than that of other risks to the insurance sector.

Risks from credit risk protection remain small

Finally, exposures related to credit risk protection selling have remained modest, in line with the overall development of the market. Such non-traditional activities may, however, become an interesting source of income should the low-yield environment continue to prevail. As in the case of potential forced asset sales, non-traditional activities bear a significant liquidity risk in the form of margin calls. The proposed policy measures applicable to global systemically important insurers (G-SIIs) are targeted at containing this risk, among others.[11]

INSURANCE COMPANIES, PENSION FUNDS AND BANK FUNDING

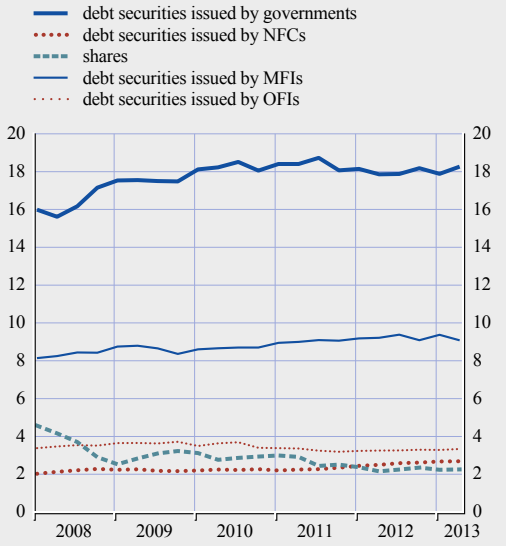
Insurance companies and pension funds, also referred to as institutional investors, are major buyers of bank bonds. Monitoring the investment behaviour of this broader class of investors to detect potential trends that could impact bank funding is therefore important for broader financial market stability.

Institutional investors remain important for bank funding…

Chart 3.42 shows that investment in bank bonds by insurers and pension funds has remained robust during the crisis. The low-yield environment is likely to continue to spur investment in bank bonds by institutional

Chart 3.42 Financial assets of euro area insurance companies and pension funds

(Q1 2008 – Q2 2013; percentage of total financial assets)



Source: ECB.
Note: MFIs refer to monetary financial institutions, NFCs to non-financial corporations and OFIs to other financial intermediaries.

10 For example, a reinsurance policy can be better tailored to cover specific risks and can have renewable features.
11 See Section 3.4 on regulatory developments.

investors. In this regard, it is notable that, while the landscape of pension funds is currently highly heterogeneous across the euro area, the overwhelming majority of the private pension funds in the euro area reside in low-yield countries. Interest of these funds in investment alternatives to government bonds is expected to continue to be high.

… but are also seeking new sources of income

Bank bonds are, however, not the only available investment alternative to government bonds. Institutional investors have notably been major contributors to the recent surge in the catastrophe bond markets (see Chart 3.41). From the investor's point of view, catastrophe bonds bear relatively high returns, which are moreover not correlated with financial market cycles owing to the nature of the underlying risk. They may therefore offer some welcome diversification away from financial risks related to bank bonds, especially for those pension funds and life insurers that are not directly involved in underwriting natural catastrophe policies. The final impact of the various factors on bank funding by institutional investors remains an empirical question.

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

A quantitative assessment of macro-financial scenarios that map 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):

(i) *economic and financial shocks that affect asset valuations and bank profitability, eroding confidence in the euro area financial sector* – materialising through negative shocks to aggregate supply and demand in a number of euro area countries;

(ii) *the risk of renewed tensions in sovereign debt markets as a result of delayed national reforms, unforeseen bank recapitalisation needs or a rise in global bond yields* – materialising through an increase in long-term interest rates and declining stock prices;

(iii) *the risk of global financial market turbulence, with asset mispricing and low market liquidity* – reflected by a sharp increase in investor risk aversion worldwide, leading to falling stock and corporate bond prices and to lower euro area external demand;

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

Risk	Scenario	Key assumptions driving impact on GDP
Economic and financial shocks that affect asset valuations and bank profitability, eroding confidence in the euro area financial sector	Adverse economic growth scenario	Shocks to investment and consumption as well as user cost of capital and nominal wages
Renewed tensions in sovereign debt markets as a result of delayed national reforms, unforeseen bank recapitalisation needs or a rise in global bond yields	Sovereign debt crisis scenario	An aggravation of the sovereign debt crisis fuelling increases in interest rates and stock price declines
Global financial market turbulence, with asset mispricing and low market liquidity	Global risk aversion scenario	A shock to confidence and rise in risk aversion world-wide fuelling stock price declines, corporate bond yield increases and eventually affecting euro area external demand
Bank funding challenges in stressed countries that force banks to deleverage excessively	Funding stress scenario	Shocks to money market interest rates and credit costs for the private sector

Source: ECB.

(iv) *bank funding challenges in stressed countries that force banks to deleverage excessively* – reflected by reduced access to wholesale debt financing and deposit outflows in distressed countries, with detrimental effects on the supply of loans.

… the results are not comparable with those of micro-prudential stress tests

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.[12]

MACRO-FINANCIAL SCENARIOS AND THEIR 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 respective scenario's 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 as from the third quarter of 2013.

Adverse euro area growth

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

A clear thread throughout this FSR is the detrimental impact of weak 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 supply, via increases in both the user cost of capital and nominal wages, and to aggregate demand, via a slowdown in both fixed investment and private consumption. The calibration of the country-specific shocks was based on a quantitative and qualitative ranking of the most pertinent risks at the country level.[13] The effect on GDP is derived using "stress-test elasticities".[14]

These assumptions result in an overall impact on euro area real GDP growth, expressed in deviations from baseline growth rates, of -1.1, -1.9, and -0.6 percentage points in 2013, 2014 and 2015 respectively. The simulations serve illustrative purposes, covering a generic three-year

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

(2013 – 2015; percentages; percentage point deviations from baseline growth rates)

	2012	2013	2014	2015
Baseline (annual growth rates given in the European Commission's autumn forecast)	-0.7	-0.4	1.1	1.7
Percentage point deviations from baseline growth				
Adverse economic growth scenario		-1.1	-1.9	-0.6
Sovereign debt crisis scenario		-0.1	-0.5	-0.6
Global risk aversion scenario		-0.1	-0.8	-0.5
Funding stress scenario		0.0	-0.4	-0.7

Sources: European Commission, ECB and ECB calculations.

12 The tools employed are: (i) a forward-looking solvency analysis, similar to a top-down stress test, for euro area banks; and (ii) a forward-looking analysis of the assets and liabilities side of the euro area insurance sector. For a more detailed description of the tools, see J. Henry and C. Kok (eds.), "A macro stress testing framework for systemic risk analysis", *Occasional Paper Series*, No 152, ECB, October 2013, as well as ECB, "A macro stress testing framework for bank solvency analysis", *Monthly Bulletin*, August 2013. The results are based on publicly available data up to the second quarter of 2013 (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 coordinated by the European Banking Authority (EBA).

13 The aggregate supply and demand shocks are calibrated on the basis of statistical criteria, where the probabilities of the shocks are measured in relation to the historical volatilities of the economic variables in each country.

14 Stress-test elasticities are a simulation tool that is based on impulse response functions (taken from ESCB central banks' models) of endogenous variables to predefined exogenous shocks. They incorporate intra-euro area trade spillovers.

horizon – hence the strong deviation from baseline also in the current year. The real economic impact varies considerably across euro area countries, with countries under sovereign stress affected most negatively.

Aggravation of the sovereign debt crisis

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

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 co-movements with other asset prices (in particular, stock prices). The shocks are assumed to emanate from euro area countries that are particularly vulnerable to possible further contagion from euro area EU/IMF programme countries.[15]

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

The design of this shock is predicated on the following assumptions. First, a permanent shock to long-term government bond yields on 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 344 basis points. Second, the slope of national yield curves on 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 -37% 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.[16] Lastly, the calibrated shocks to ten-year government bond yields determine country-specific shocks to sovereign credit default swap (CDS) spreads.[17]

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

Depending on the country, these factors lead to varying increases in sovereign bond yields that result in marking-to-market valuation losses on euro area banks' sovereign exposures in the trading book,[18] 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 impact on euro area real GDP – assuming an unchanged monetary policy stance – amounts to -0.1, -0.5, and -0.6 percentage point deviations in 2013, 2014 and 2015 respectively.[19]

Increased risk aversion

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

The third adverse scenario concerns the potential for a mispricing of risk across various market segments around the world and is modelled as an abrupt decrease in investor confidence and an 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

15 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 response when themselves affected by a shock. 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 the 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 dependent, in principle, on the selected sample period. However, sensitivity analyses show that the shocks do not change materially if, for instance, the sample size is reduced by using a cut-off date in mid-2011.

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

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

18 By contrast, securities held in the available-for-sale portfolio and in the banking book are assumed not to be affected by the asset price shock, in line with the treatment in the EBA's 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's 2011 stress-test exercise.

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

United States and would have negative implications – via trade and confidence spillovers – 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's exchange rate against the US dollar. The impact on euro area foreign demand is derived with the National institute Global Economic Model (NiGEM). Lastly, the increase in risk aversion is assumed to cause corporate bond spreads to rise markedly from their current low levels.[20]

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

On the basis of these assumptions, the US stock price shock amounts to 16% in the third quarter of 2013, with US stock prices assumed to gradually recover but to remain 8% below the baseline at the end of 2015. 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 overall impact on euro area real GDP, expressed in deviations from baseline growth rates, is -0.1, -0.8 and -0.5 percentage point in 2013, 2014 and 2015 respectively. The real economic impact differs considerably across the euro area countries, depending in particular on their export orientation and exchange rate sensitivity.

Renewed funding stress

Increased funding difficulties in some countries...

A fourth key risk relates to the potential for banks experiencing pronounced funding difficulties in countries where the sovereign is under stress, which could seriously hamper credit intermediation, for example by inducing banks to cut back their lending. To account for the diverse stress factors that affect bank funding markets in some euro area countries, a number of shocks are considered. First, a shock to the three-month EURIBOR captures the risk of worsening funding conditions in money markets. It kicks in gradually, starting in the third quarter of 2013. The gradual increase mirrors the assumed increasing uncertainty about the quality of bank credit portfolios. Second, banks affected by funding constraints are assumed to increase the cost of extending credit to the private sector and to limit the supply thereof. To account for this effect, a set of country-specific shocks to the cost of corporate credit (via the user costs of capital) and to the interest margins on loans to households (via the financial wealth of households) is considered. The magnitude of the country-specific shocks is derived on the basis of markets' and experts' assessments of the severity of country-specific macroeconomic risks.

... with a shock to money market rates and credit costs for the private sector

Overall, the impact of the funding stress scenario on real GDP growth in the euro area remains muted in the second half of 2013. In 2014 and 2015, the deviations from baseline GDP growth rates amount to -0.4 and -0.7 percentage point respectively. Significant differences in responses can again be observed across countries.

SOLVENCY RESULTS FOR EURO AREA LARGE AND COMPLEX BANKING GROUPS

The impact on bank solvency is broken down into that on *individual* profit and loss results, on the one hand, and that stemming from cross-institutional *contagion*, on the other.

Scenario-implied changes in credit risk and profits impact banks' solvency positions

The impact of the four scenarios on euro area LCBGs' profit and loss accounts (and solvency positions) is obtained from a projection of the main variables determining banks' solvency, such as

20 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. An increase in risk aversion could also affect sovereign yields, but this is treated separately under "Aggravation of the sovereign debt crisis".

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

Credit risk	Changes to probabilities of default and loss-given-default estimated by exposure types (i.e. loans to non-financial corporations, retail and commercial real estate 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 probabilities of default, 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-March 2013.
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 formulæ for banks following the "Internal Ratings Based Approach" and assuming fixed losses given default.[5]

Source: ECB.
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 probabilities of default and the loss given default to the maximum of actual 2011 provisioning rates for the non-financial corporate, retail and commercial real estate sectors were calibrated conservatively.
3) See EBA, "2011 EU-wide Stress Test: Methodological Note – Additional Guidance", 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.

the credit risk parameters, profits and risk-weighted assets.[21] 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, the average core Tier 1 capital ratio is projected to decrease from 11.9% to 11.8% at the end of 2015

Under the **baseline scenario**, euro area LCBGs' core Tier 1 capitalisation is projected to decrease, on average, from 11.9% in the third quarter of 2013 to 11.8% by the end of 2015 (see Chart 3.43). The overall unchanged average solvency position under the baseline mainly reflects that the projected accumulation of pre-provision profits is offset by negative influences, predominantly from projected loan losses. The average development of euro area LCBGs' solvency positions, however, masks substantial variations across the individual institutions and euro area countries.

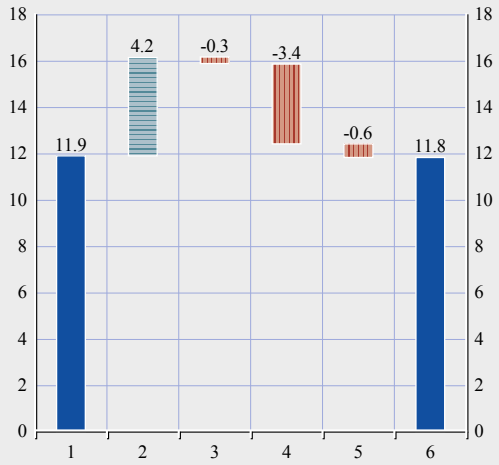
The adverse growth scenario leads to an average core Tier 1 capital ratio of 9.5% at the end of 2015

All four distinct **adverse scenarios** discussed above would have a notable adverse impact on euro area LCBGs' solvency, with average core Tier 1 capital ratios declining by 0.5 percentage point or more relative to the baseline scenario by the end of 2015 (see Chart 3.44). Under the sovereign debt crisis scenario and under the global risk aversion scenario, euro area LCBGs' core Tier 1 capital ratios would decline to 11.1% and 10.2% respectively by the end of 2015. A somewhat milder adverse impact is found under the funding stress scenario (11.3%). The adverse economic growth scenario would produce the most negative results: the euro area LCBGs' average core Tier 1 capital ratio would decline to 9.5% by the end of 2015.

21 The balance sheet and the profit and loss data are based on banks' published financial reports, while also taking into account the supervisory information that was disclosed in the context of the EBA's 2011 EU-wide stress test and the EBA's 2011 EU capital exercise (in particular, regarding the granular geographical breakdowns of exposures at default). To the extent possible, the data have been updated to cover the period up to the third quarter of 2013. The sample includes 17 euro area large and complex banking groups. Data consolidated at the banking group level are used. Bank balance sheets are assumed to remain unchanged over the simulated horizon, except when it is explicitly assumed otherwise, as in the funding stress scenario.

Chart 3.43 Average contribution of changes in profits, loan losses and risk-weighted assets to the core Tier 1 capital ratios of euro area LCBGs under the baseline scenario

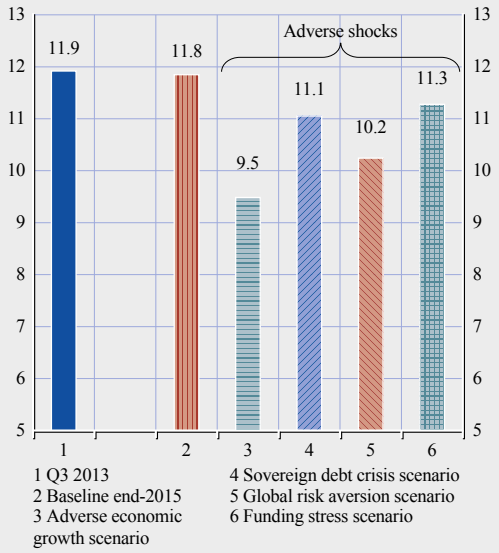
(percentage of the core Tier 1 capital ratio and percentage point contribution)



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

Chart 3.44 Average core Tier 1 capital ratios of euro area LCBGs under the baseline and adverse scenarios

(2013 – 2015; percentages; average of euro area LCBGs)



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

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 losses. Under the adverse economic growth scenario, the adverse impact largely originates from high loan losses.

Cross-checking results with a reverse stress test

The likelihood of capital shortfalls under the adverse scenarios is low by design, as it is based on low-probability events and scenarios.[22] In this respect, it is useful to consider a **reverse stress test** whereby the size of the shock needed to drive the core Tier 1 capital ratio of, for example, one-third of the euro area banks in the sample down to a pre-specified threshold is derived for each of the scenarios.[23] Under mild scenarios, it is necessary to scale up the intensity of the scenario in the reverse stress test in order to lower the banks' core Tier 1 ratio below a reference threshold (e.g. 6% or 8%). Under more adverse scenarios, such scaling-up is not necessary as the core Tier 1 capital ratio already falls short of the 6% threshold for more than one-third of the banks.

Considering a threshold core Tier 1 capital ratio of 6%, the weak euro area growth scenario is found to be the most severe among the four scenarios as it would only need to be multiplied by a factor of around 2 to bring the ratio of more than one-third of the banks to below 6% (see Table 3.4). The global risk aversion scenario requires a reverse stress test multiplier of 6.3 before the core Tier 1

22 In order to rank the systemic risks considered in the various scenarios, it is not sufficient to focus solely on the solvency-implied results derived under each scenario. The probability of occurrence attached to each of the scenarios should also be considered in order to make the results fully comparable.

23 To derive the factor ("multiplier") that is needed for each scenario to reach a median core Tier 1 capital ratio equal to 6% by the end of 2015, the amplified macro model output is fed through the credit risk and profit satellite models, which in turn are linked to the balance sheets of individual institutions to derive the solvency positions of banks.

Table 3.4 Reverse stress test results

(multipliers)

Scenario	Multiplier necessary to bring the core Tier 1 capital ratio of one-third of the banks to below 6%	Multiplier necessary to bring the core Tier 1 capital ratio of one-third of the banks to below 8%
Adverse economic growth scenario	2.1	1.5
Sovereign debt crisis scenario	9.5	7.3
Global risk aversion scenario	6.3	6.3
Funding stress scenario	10.4	7.4

Sources: ECB and ECB calculations.

capital ratio of one-third of the banks fall below 6%. The multipliers needed for the sovereign crisis and funding stress shocks are somewhat larger, standing at 9.5 and 10.4 respectively, thereby reflecting that the initial impacts of these shock scenarios are less severe than that the global risk aversion scenario.

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 would imply losses for interbank creditors – resulting in additional system-wide losses.

Interbank contagion effects could be amplified further if, in response to distressed interbank loans, banks were to sell their securities holdings to fill the gap in their balance sheets. This may give rise to fire-sale losses, which could adversely 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.[24] The interbank contagion results, derived by applying such a methodology to the four adverse scenarios considered above, are illustrated in Chart 3.45. The results for the contagion effects incorporate the restrictions on large exposures that EU rules impose on banks.[25]

For the simulated networks with the most severe effects, the system-wide core Tier 1 capital ratio falls by about 36 basis points in some countries (see Chart 3.45). Contagion effects are therefore confined mainly to less than 0.36 percentage point additional core Tier 1 capital ratio reductions.

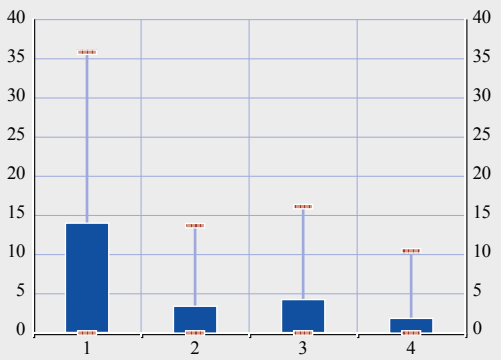
24 The exercise is based on a sample of 65 European banks that were also covered in the 2011 EU-wide stress-testing exercise conducted by the EBA. An interbank network is generated randomly on the basis of banks' interbank placements and deposits, taking into account the geographical breakdown of banks' activities. Once the distribution of interbank networks has been calibrated, the system can be subjected to a shock in order 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. Hałaj and C. Kok, "Assessing interbank contagion using simulated networks", *Working Paper Series*, No 1506, ECB, 2013, and Computational Management Science (10.1007/s10287-013-0168-4).

25 Two limitations on the maximum exposure that is allowed vis-à-vis an individual counterparty are embedded into the network simulators, following the prescriptions in Article 111 of Directive 2006/48/EC. First, an interbank exposure of each bank cannot exceed 25% of its regulatory capital. Second, the sum total of the interbank exposures of a bank, individually exceeding 10% of its capital, cannot be higher than 800% of its capital.

However, should the banks respond to capital pressure by shedding assets at fire-sale prices, the capital shortfalls would be larger.

Chart 3.45 "Worst case" reduction in the core Tier 1 capital ratio of euro area banks due to interbank contagion: dispersion across simulations

(basis points; 90th, 10th percentile and interquartile range)



1 Adverse economic growth scenario
2 Sovereign debt crisis scenario
3 Global risk aversion scenario
4 Funding stress scenario

Sources: Individual institutions' financial reports, EBA, ECB and ECB calculations.
Note: Interquartile range represents the 25th to 75th percentiles of the cross-country contagion effects under the most severe (upper 10th percentiles) of 20,000 simulated interbank networks.

ASSESSING THE RESILIENCE OF EURO AREA INSURERS

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

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 across 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.[26]

The following market, credit and underwriting risks are assessed: (i) an increase in interest rates; (ii) a fall in equity and property prices; (iii) a deterioration of the creditworthiness of borrowers through a widening of credit spreads for marketable instruments; (iv) lapse rate[27] increases; and (v) an increase in loss rates on loan portfolios.

… under the macro-financial scenarios set out earlier

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.

Simplifying assumptions necessary

A number of simplifying assumptions had to be made for this exercise. First, decreases in the market value 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 3.5 for an overview across scenarios). This implies that no hedging or other risk-mitigation measures[28] were taken into account; consequently, losses may 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

26 The exercise is not related to the EU-wide stress test for the insurance sector coordinated by the European Insurance and Occupational Pensions Authority (EIOPA).
27 The lapse rate is defined as the fraction of contracts prematurely terminated by policyholders.
28 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).

Table 3.5 Parameters for the assessment of euro area insurers

	Baseline	Adverse economic growth scenario	Sovereign debt crisis scenario	Risk aversion scenario	Funding stress scenario
Average euro area increase in long-term government bond yields (basis points)	0	0	182	0	0
Average add-on in credit yields of corporate bonds (basis points)	0	0	117	126	0
Shock to equity prices	0%	0%	-22%	-10%	0%
Shock to property prices	0%	-0.3%	-0.9%	0%	-1%
Cumulative loss rates over two years	0.4%	0.5%	0.8%	0.4%	0.4%
Average add-on in lapse rates	1%	1.7%	0.4%	0.4%	0.4%

Source: ECB calculations.

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 3.6.

Table 3.6 Technical assumptions regarding the individual risk drivers of insurers' balance sheets

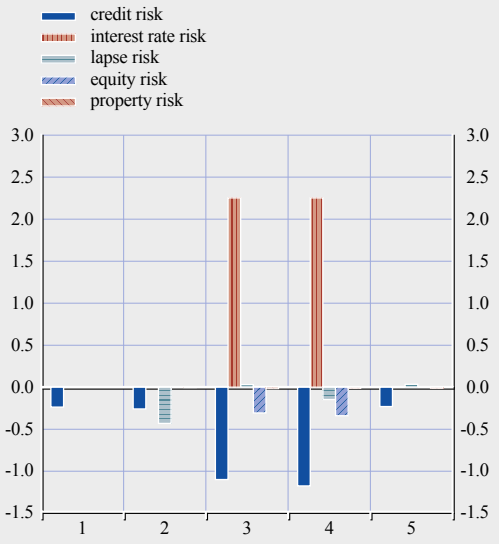
Credit risk	Credit risk assessment carried out using (i) breakdowns by rating or region, depending on data availability, and (ii) loss rate starting levels, which are stressed using the same methodology as applied for assessing the resilience of euro area banks.
Interest rate risk transmission	Sensitivities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

Source: ECB calculations.
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 (see 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; and S. Smith, "Stopping short? Evidence on contributions to long-term savings from aggregate and micro data", *Discussion Paper*, Financial Markets Group, London School of Economics, 2004) and from ECB calculations.
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).

The results confirm the importance of credit risk, although vulnerability to the materialisation of macro-financial risk is very heterogeneous across individual insurance groups (see Chart 3.46).

Chart 3.46 Changes in asset values for large euro area insurers under different scenarios

(Q4 2012 – Q4 2015; percentage of total assets)



1 Baseline
2 Adverse economic growth scenario
3 Sovereign debt crisis scenario
4 Global risk aversion scenario
5 Funding stress scenario

Sources: Individual institutions' financial reports and ECB calculations.

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

The sovereign debt crisis and risk aversion scenarios result in the most significant changes in assets for insurance companies – where losses amounting to, on average, 1.2% of their assets originate mainly from (primarily corporate) credit risk.[29]

Rising yields have no adverse impact on insurers' solvency

By contrast, the rising yields under the adverse scenarios do not have a negative impact on the economic solvency of the insurers in the sample. An increase of 2.3% in their net assets is explained by the longer duration of liabilities and, consequently, their greater sensitivity to the applied discount rate. Clearly, prudential solvency ratios would probably decrease on average, as most insurers in the sample belong to jurisdictions in which liabilities are not marked to market.[30] 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.[31] In addition, lapse risk-related losses, amounting to 0.4% of assets, would be higher in the case of the weak economic growth scenario, due to adverse macroeconomic developments.[32] The materialisation of risks under the remaining scenarios has milder effects on insurers' balance sheets.

Halving the income on newly invested assets leads to a reduction of 78 basis points in total investment income

Another risk faced by insurers is a continuation of the current low-yield environment or a further weakening of their investment income. Chart 3.47 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 three-year horizon. If, for instance, the income earned on newly invested assets is halved, the total investment income would be lowered by, on average, 78 basis points.

29 Expressed as a percentage of net assets (assets minus liabilities), the effect would be equal to 16.4%.

30 Regarding interest rate risk, the forthcoming Solvency II regime is expected to replace current practices with a uniform approach in which the swap curve is used for the discount rate. To gauge the rough impact of such a regime, a projected swap curve, calculated on the basis of a model linking swap rates to sovereign yields, was used to discount liabilities. Under the euro area domestic shock scenario, the application of Solvency II valuation would lead to a lower increase of, on average, 0.5% in net assets, compared with the case whereby sovereign yield is used as the discount rate, as the adverse valuation effects in insurers' fixed income portfolio would not be offset to the same extent 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.

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

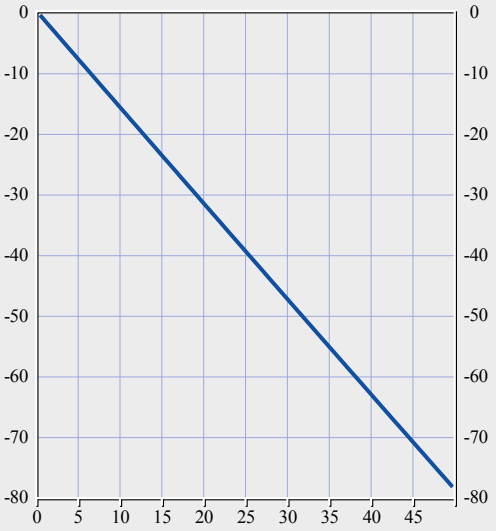
32 A sensitivity analysis of the impact of a property price shock is also conducted. An additional house price shock is calibrated with reference to a simulated forward distribution, using the same non-parametric simulation technique that is employed to calibrate financial market shocks. A shortfall measure conditional on a 1% percentile is computed on the basis of 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, on average, to represent 0.2% of insurers' assets.

A comparison with the current average investment income of euro area insurers (see the previous section) suggests, however, that such a scenario in itself does not imply a key challenge for the solvency of the sector, especially given that no strategic responses of insurers have been taken into account in this exercise.[33]

Chart 3.47 Sensitivity of large euro area insurers' total investment income to shocks to the yields on newly invested assets

(Q4 2012 – Q4 2015)

x-axis: size of the stock to income earned on re-invested assets, expressed as a percentage of initial total investment income
y-axis: basis points



Sources: Individual institutions' financial reports and ECB calculations.

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

The May 2013 issue of the FSR provided a concise overview of the implementation of certain key elements of the regulatory reform agenda in the European Union (EU). Since then, several important steps have been taken at international[34] and EU level to further revise the regulatory and supervisory framework for financial institutions, markets and infrastructures. This section elaborates on a number of initiatives that are considered to be of primary importance for enhancing financial stability in the EU.

The CRR/CRD IV aims to strengthen the resilience of the EU banking sector, restore market confidence and provide a level playing field for the banking industry

A major achievement at the European level has been the adoption of the **Capital Requirements Regulation and Directive** (CRR/CRD IV), which implements the Basel Committee's new global standards for capital and liquidity (Basel III) in the EU. The overarching goal of the CRR/CRD IV is to strengthen the resilience of the EU banking sector, restore market confidence and provide a level playing field for the banking industry, while ensuring that banks continue to finance economic activity and contribute to growth.

The CRR/CRD IV package was published on 27 June 2013. The Regulation (CRR), which sets out a "single rulebook" for credit institutions and investment firms, shall apply directly in all Member States from 1 January 2014 (with some limited exceptions). Different from the Regulation, Member States shall implement the rules set by the Directive (CRD IV) in their national legislation by end-2013. It should be noted, however, that certain elements of the CRR/CRD IV package are still subject to finalisation and recalibration, including (i) the leverage ratio, (ii) the liquidity coverage ratio (LCR) and (iii) the net stable funding ratio (NSFR). In order to ensure a harmonised application of the rules in all EU Member States, the European Banking Authority has been working on a number of regulatory and implementing technical standards to be published within the time frame set by the CRR/CRD IV.

33 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). On the other hand, the impact of the low-yield environment on investment income would become more pronounced if a longer projection horizon is assumed.

34 See *Overview of Progress in the Implementation of the G20 Recommendations for Strengthening Financial Stability*, Financial Stability Board, September 2013, and *Report to G20 Leaders on monitoring implementation of Basel III regulatory reforms*, Basel Committee on Banking Supervision, August 2013.

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

Initiative	Description	Current status
Single Supervisory Mechanism (SSM) Regulation	The Regulation establishes 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 countries and non-euro area Member States which join the SSM).	The SSM Regulation was adopted by the European Council on 15 October.
Bank Recovery and Resolution Directive (BRRD)	The BRRD sets out a resolution framework for credit institutions and investment firms, with harmonised tools and powers relating to "prevention", "early intervention" and "resolution".	The European Commission's proposal was published in June 2012. Currently, "trialogue" negotiations between the Commission, the Parliament and the Council are ongoing, with the aim to adopt the Directive by the end of 2013.
Deposit Guarantee Scheme (DGS) Directive	The DGS Directive 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. Currently, trialogue negotiations between the Commission, the Parliament and the Council are ongoing, with the aim to adopt the Directive in parallel with the BRRD by the end of 2013.
Single Resolution Mechanism (SRM) Regulation	The SRM Regulation establishes a single system, with a single resolution board and single bank resolution fund, for efficient and harmonised resolution of banks within the SSM.	The European Commission's proposal was published in July 2013. The proposal is currently being discussed in the Council with the aim to reach a general approach.

With regard to ongoing regulatory initiatives, Tables 3.7-3.9 provide an update of the major strands of work in the EU, followed by a short overview of selected policy measures from the perspective of financial stability and macro-prudential policy.

Significant progress towards a banking union

Following up on the June 2012 report by European Council President Herman Van Rompuy on the envisaged **banking union**,[35] significant progress has been made in two areas identified as central elements of an integrated financial framework in Europe, namely the establishment of single banking supervision and a common resolution framework. The third element of the banking union, namely the setting-up of a common deposit guarantee fund in Europe, is considered as a medium-term objective.

The first pillar of the banking union is the establishment of a single supervisory mechanism

As a first pillar of the banking union, a **single supervisory mechanism** (SSM) is being set up by a Regulation for participating Member States, including euro area countries and non-euro area Member States which enter into a close cooperation agreement with the ECB.[36] The Regulation confers specific micro- and macro-prudential tasks upon the ECB with strong systemic aspects in both areas.

From a micro-prudential (i.e. institution-specific) angle, the ECB will, in the initial stage, exercise direct supervisory power over "significant" credit institutions which, either because of their overall size or their importance for the economy of the EU or any participating Member State or their

35 See "Towards a Genuine Economic and Monetary Union", report prepared by the President of the European Council Herman Van Rompuy, in close cooperation with the Presidents of the Commission, the Eurogroup and the European Central Bank. Available at: http://ec.europa.eu/economy_finance/crisis/documents/131201_en.pdf

36 See Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions.

significance in cross-border activities, may pose risks to the financial system in the EU, either directly or through cross-border contagion channels.

At the same time, the ECB will also be entrusted with the power to implement certain macro-prudential measures that are applicable in a uniform way to all credit institutions, or to a subset of them, with the aim to address systemic risks of a structural or cyclical nature (see Box 8).

Box 8

MACRO-PRUDENTIAL ASPECTS OF THE SSM REGULATION

Macro-prudential policy is a relatively new and evolving concept, with the Financial Stability Board (FSB), the International Monetary Fund (IMF) and the European Systemic Risk Board (ESRB) playing a key role in developing its organising framework, defining its main objectives and policy tools at the international and European levels, respectively.

In the EU context, the ultimate objective of macro-prudential policy is defined by the ESRB as "contributing to the safeguard of the stability of the financial system as a whole, including by strengthening the resilience of the financial system and decreasing the build-up of systemic risks, thereby ensuring a sustainable contribution of the financial sector to economic growth".[1] This general objective can then be translated into intermediate policy objectives which, in turn, are to be linked to concrete policy instruments that can be implemented either at the national or at the EU level. The ESRB identifies the following intermediate objectives of macro-prudential policy: (a) mitigating and preventing excessive credit growth and leverage; (b) mitigating and preventing excessive maturity mismatch and market illiquidity; (c) limiting direct and indirect exposure concentrations; (d) limiting the systemic impact of misaligned incentives with a view to reducing moral hazard; and (e) strengthening the resilience of financial infrastructures.[2]

According to the 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.[3] However, any national supervisory or macro-prudential 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 additional feature of the SSM Regulation is that the ECB may, if deemed necessary, also apply higher 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 CRR/CRD IV package incorporates several provisions that are of particular relevance for systemic risk management and macro-prudential policy-making. In particular, despite setting out a "single rulebook" for Europe, the Regulation provides national macro-prudential authorities with the right to apply, in certain areas, stricter prudential requirements on domestically

1 See Recommendation of the European Systemic Risk Board of 22 December 2011 on the macro-prudential mandate of national authorities (ESRB/2011/3).
2 See Recommendation of the European Systemic Risk Board of 4 April 2013 on intermediate objectives and instruments of macro-prudential policy (ESRB/2013/1).
3 See Article 5 of Council Regulation (EU) No 1024/2013.

authorised institutions in order to address risks to financial stability. The set of instruments that are available for macro-prudential authorities is, however, limited and subject to a strict notification and coordination mechanism.

Key macro-prudential instruments in the EU legal texts

Instrument	Description[1)]	Legal reference	Available from
CRD IV			
Counter-cyclical capital buffer	Builds up capital buffers in good times that can be drawn down in periods of stress. It strengthens the resilience of the banking system in periods of excessive credit growth.	Articles 130 and 135-140	2016*
Systemic risk buffer	Sets capital buffer requirements for financial institutions if the structural features of the financial system justify. It strengthens the resilience of the banking system.	Articles 133-134	2014**
Global systemically important institutions (G-SII) and other systemically important institutions (O-SII) capital buffer	Sets capital requirements for those financial institutions that might be more systemic. It enhances the resilience of SIIs and discourages a further increase in their systemic importance.	Article 131	2016*
CRR			
Level of own funds (minimum capital requirements)	Sets higher minimum capital requirements for financial institutions if risks to the financial system justify. It strengthens the resilience of the banking system.	Article 458	2014
Large exposure requirements	Set limits on overall large exposures towards one or more counterparties or particular economic sectors. These limit the sensitivity of the financial institutions to common shocks and prevent an excessive concentration of risks.	Article 458	2014
Public disclosure requirements	Impose market discipline in addition to regulatory and supervisory requirements. These mitigate the underlying market failure of informational asymmetries to reduce the probability of bank runs and liquidity spirals.	Article 458	2014
Level of capital conservation buffer	Sets capital buffer requirements for financial institutions if risks to the financial system justify. It strengthens the resilience of the banking system.	Article 458	2016*
Liquidity requirements [liquidity coverage ratio (LCR) and net stable funding ratio (NSFR)]	The LCR sets minimum liquidity requirements to ensure that banks hold a sufficient amount of liquid assets to withstand a stress period of 30 days. It enhances short-term resilience of the liquidity risk profile of banks. The NSFR limits the gap between the maturity of banks' assets and liabilities. It improves resilience over a longer (one-year) time horizon.	Article 458	2015 (LCR) 2019 (NSFR)***
Risk weights in the residential and commercial property sectors****	Set higher risk weights vis-à-vis real estate exposures in order to target asset bubbles. These strengthen the resilience of the banking system and, at the same time, mitigate and prevent excessive credit growth and leverage.	Article 458	2014
Intra-financial sector exposures	Set higher risk weights vis-à-vis financial sector exposures. These strengthen the resilience of the banking system.	Article 458	2014

1) The description of the instruments is based on the Recommendation of the European Systemic Risk Board on intermediate objectives and instruments of macro-prudential policy (ESRB/2013/1). For a more detailed description, please refer to the Recommendation.
* The capital conservation buffer, the counter-cyclical capital buffer as well as the capital buffer for global and other systemically important institutions will be phased in gradually between 1 January 2016 and 31 December 2018. However, for the capital conservation buffer and the counter-cyclical capital buffer, Member States may impose a shorter transitional period. The recognition of the shorter transitional period would remain voluntary for the authorities of other Member States.
** The systemic risk buffer will only be available for the ECB if it is implemented in national legislation, which is only a possibility and not a mandatory requirement. Depending on its calibration (i.e. below 3%, between 3% and 5% and above 5%), different coordination mechanisms are prescribed.
*** The expected implementation date of the NSFR is 2019, subject to a report and a legislative proposal by the Commission to the European Parliament and the Council by 31 December 2016.
**** As of 2014, competent authorities (i.e. micro-prudential supervisors) may also set a higher risk weight or stricter criteria for real estate exposures under Articles 124 and 164 of the CRR on the basis of financial stability considerations.

In its opinion on the CRR/CRD IV,[4] the ECB highlighted that such a flexible arrangement is justified, inter alia, by the fact that economic and financial cycles are not completely harmonised across Member States, and Member States may face different types of systemic risk at a given point in time. Furthermore, there are also significant differences in the structural features of the financial sectors across Member States.

The ECB is of the view that the application of more stringent prudential measures at the level of specific Member States may enhance both financial stability and financial integration in the EU. Concretely, by mitigating systemic risks and protecting the Single Market from the build-up of excessive systemic risks in a coordinated way, macro-prudential authorities (including the ECB within the SSM) may effectively contribute to the smooth functioning of the financial system and promote the sustainable provision of financial services in the Single Market in the medium-to-long term.

The table below provides an overview of macro-prudential instruments that are covered by the CRR and the CRD IV. These instruments will be available for national authorities as well as the ECB when acting in its capacity as a macro-prudential authority within the SSM. The instruments not covered by EU law, such as loan-to-value (LTV), loan-to-income (LTI) or loan-to-deposit (LTD) ratios, will only be available for national authorities. In order to ensure their consistent application and avoid potential unintended cross-border effects, the coordination of policy actions among national authorities, the ECB and the ESRB is essential.

It should be noted that the instruments covered by the CRD IV will be available for the ECB only after the relevant provisions of the Directive have been implemented at the national level.

In addition to the application of the above-listed macro-prudential instruments, the ECB may, as a micro-prudential authority, use its supervisory powers to address systemic risks posed by a group of credit institutions collectively if such institutions are falling under its direct supervision. Concretely, if the ECB determines that institutions with similar risk profiles (such as similar business models or geographical location of exposures) are or might be exposed to similar risks or pose similar risks to the financial system, it may apply the supervisory review and evaluation process (SREP, or Pillar II in Basel III terminology) to those institutions in a similar or identical manner.[5] The supervisory powers of the ECB under the SREP include, inter alia, requiring credit institutions to hold additional capital, restricting or prohibiting distributions, imposing specific liquidity requirements or requiring additional disclosures.[6] Importantly, when the SREP is used by national supervisory authorities to address systemic risks in a specific Member State, close coordination with macro-prudential authorities has to be ensured.

4 See Opinion of the European Central Bank of 25 January 2012 on a proposal for a Directive on the access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms and a proposal for a Regulation on prudential requirements for credit institutions and investment firms (CON/2012/5).
5 See Article 103 of the CRD IV (on the application of supervisory measures to institutions with similar risk profiles).
6 See Article 104 of the CRD IV.

The BRRD will provide common and efficient tools and powers for addressing a banking crisis

Essential for the second pillar of the banking union is the establishment of an EU framework for **bank recovery and resolution**. The proposed directive (the BRRD) will, once it has been finalised and adopted, provide common and efficient tools and powers for addressing a banking crisis pre-emptively and managing failures of credit institutions and investment firms in an orderly way throughout the EU. 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 resolve the bank in an orderly fashion while preserving its critical functions and limiting the impact on taxpayers. As stated in the ECB opinion on the proposed directive,[37] the ECB fully supports the development of a recovery and resolution framework and calls for its prompt adoption.

The SRM aims to set up a single system for resolution, with a Single Resolution Board and a Single Bank Resolution Fund

The Commission's proposal for a **Single Resolution Mechanism (SRM)** aims to set up a single system for resolution, with a Single Resolution Board and a Single Bank Resolution Fund, for the resolution of banks in SSM-participating Member States. As stated in the ECB opinion on the SRM proposal,[38] the ECB fully supports the establishment of an SRM, which will contribute to strengthening the architecture and stability of Economic and Monetary Union. Such a mechanism must therefore be established by the time the ECB assumes its supervisory responsibility in full. The proposed SRM regulation contains three essential elements for effective resolution, namely (a) a single system, (b) a single authority and (c) a single fund.

Both the SSM and the SRM are essential parts of the integrated financial framework of the banking union, which will help break the link between banks and sovereigns in the Member States concerned and reverse the current process of financial market fragmentation. Therefore, the ECB strongly supports the envisaged timeline for the SRM. According to this timeline, the SRM would enter into force by the middle of 2014 and would become fully operational by 1 January 2015. This timeline takes into account that the SRM is a key element of banking union.

As a related policy initiative, the European Commission issued in July 2013 its "Banking Communication", providing guidance on the application of state aid rules to support measures in favour of banks in the context of the financial crisis, applicable as of 1 August 2013. The overarching objective for the Commission when assessing state aid in this context is financial stability, while minimising distortions to competition. To maintain a level playing field across the Single Market, the minimum requirements for burden-sharing with the aid beneficiary, i.e. capital holders and investors, have been raised. Following the Banking Communication, all capital-generating measures, including the writing-down or conversion into equity of subordinated debt, should be exhausted before any kind of state aid can be granted to a bank, provided that fundamental rights are protected and it does not lead to disproportionate results or endanger financial stability.

The third pillar of the banking union is the establishment, in the medium term, of a common deposit guarantee fund in Europe

The third pillar of the banking union is the establishment, in the medium term, of a common deposit guarantee fund in Europe. As a first step in this direction, the **Deposit Guarantee Scheme (DGS) Directive** is currently being revised, with trialogue negotiations ongoing in parallel with the BRRD. The overarching objectives of the revision 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 DGS Directive sets a uniform level of €100,000 for deposit protection in the EU. Both the DGS Directive and the BRRD are important to achieve clear and harmonised frameworks in the EU and to make further progress towards the banking union.

37 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), http://www.ecb.int/ecb/legal/pdf/en_con_2012_99_f_sign.pdf

38 Opinion of the European Central Bank of 6 November 2013 on a proposal for a Regulation of the European Parliament and of the Council establishing uniform rules and a uniform procedure for the resolution of credit institutions and certain investment firms in the framework of a Single Resolution Mechanism and a Single Bank Resolution Fund and amending Regulation (EU) No 1093/2010 of the European Parliament and of the Council (CON/2013/76), http://www.ecb.europa.eu/ecb/legal/pdf/en_con_2013_76_f_sign.pdf

Strengthening the resilience of financial infrastructures

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

Concerning **recovery and resolution for financial market infrastructures** (FMIs), the European Commission launched in October 2012 a consultation on a possible recovery and resolution framework for financial institutions other than banks. Work at the global level has progressed and three consultations were published in August 2013. The Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO) published a consultative report which provides guidance to FMIs on how to develop plans to enable them to recover from threats to their viability and financial strength. The CPSS-IOSCO report is consistent with the FSB's October 2011 "Key attributes of effective resolution regimes for financial institutions" ("Key Attributes"). The FSB also published a consultative document on the application of these Key Attributes to non-bank financial institutions in August 2013. In the same month it published a consultation on the assessment methodology for the Key Attributes, which also includes sector-specific guidance for FMIs.

The Governing Council adopted the PFMIs as Eurosystem oversight standards

On 3 June 2013 the Governing Council adopted the "**Principles for financial market infrastructures**" (PFMIs), introduced in April 2012 by the CPSS and IOSCO, for the conduct of Eurosystem oversight in relation to all types of financial market infrastructures. In practice, the PFMIs are implemented in the EU and/or euro area through various legal acts for the different financial market infrastructures. The provisions follow and are consistent with the PFMIs.

In the area of systemically important payment systems (SIPS), the ECB published in June 2013 a consultation on a draft **ECB regulation on oversight requirements for systemically important payment systems**. The draft regulation, which implements the CPSS-IOSCO principles in a legally binding way, covers both large-value and retail payment systems of systemic importance, whether operated by Eurosystem national central banks or private entities. It defines the criteria for qualifying a payment system as systemically important. The requirements defined in the draft regulation are aimed at ensuring efficient management of legal, credit, liquidity, operational, general business, custody, investment and other risks as well as sound governance arrangements, objective and open access and the efficiency and effectiveness of systemically important payment systems. These requirements are proportionate to the specific risks to which such systems are exposed. It is expected that the final ECB regulation will be adopted by early 2014. It is further envisaged to subject compliance with the oversight requirements to a transitional period of eighteen months after the entry into force of the regulation, allowing for the SIPS operators to familiarise themselves with and to implement the requirements.

The **European Market Infrastructure Regulation** (EMIR) aims to bring more safety and transparency to OTC derivatives markets and sets out rules, inter alia, for central counterparties (CCPs) and trade repositories (TRs). Implementation of EMIR is ongoing.

On 15 September 2013 the deadline by which CCPs in Europe had to apply for authorisation expired. Within six months after submitting a complete application, the national competent authorities will have to inform applicants whether the authorisation has been granted, after which the mandatory clearing obligation will be determined, or refused. Furthermore, it has to be decided which products will have to be cleared by CCPs. Hence, the clearing obligation may only take effect in the third quarter of 2014.

Table 3.8 Selected legislative proposals in the EU for financial markets

Initiative	Description	Current status
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. Implementation is ongoing.
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 CSDR entered into the trialogue negotiations among the Commission, the Parliament and the Council in autumn 2013.
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 European Commission's proposals were published in October 2011. The proposals are currently being negotiated by the Council, the Commission and the Parliament.
Money Market Fund (MMF) Regulation	The proposal addresses the systemic risks posed by this type of investment entity by introducing new rules aimed at strengthening MMFs' liquidity profile and stability. It also sets out provisions that seek, inter alia, to enhance their management and transparency, as well as to standardise supervisory reporting obligations.	The European Commission's draft proposal was published in September 2013.

On 7 November 2013 the European Securities and Markets Authority, which is responsible for the authorisation of trade repositories, approved the registration of four TRs for the EU that cover all derivative asset classes. The reporting start date for new contracts in each asset class will be 12 February 2014, with different phase-in periods for contracts that were outstanding on or entered into on or after 16 August 2012.

In the area of **central securities depositories** (CSDs), the European Commission published a legislative proposal on improving the safety and efficiency of securities settlement in the EU and on central securities depositories (the CSD Regulation or CSDR) in March 2012. The CSD Regulation introduces, inter alia, an obligation of dematerialisation for most securities, harmonised settlement periods for most transactions in such securities, settlement discipline measures and common rules for CSDs. The CSDR will enhance the legal and operational conditions for cross-border settlement in the EU. The ECB therefore strongly recommended in its opinion that the proposed regulation and corresponding technical standards are adopted prior to the launch of TARGET2-Securities, planned for June 2015. In the interim period until the CSDR and technical standards have been finalised and enter into force, the Eurosystem will use the PFMIs as oversight standards. The CSDR entered into the "trialogue" negotiations among the Commission, Parliament and Council in autumn 2013.

A proposal for a regulation on money market funds in the EU has been made

In the field of **shadow banking**, the European Commission issued a communication along with a legislative proposal on money market funds (MMFs) on 4 September 2013.[39] The communication outlined several priority areas where other Commission initiatives are expected to follow. These include: (i) transparency of the shadow banking sector (to monitor risks more effectively); (ii) the provision of securities law (to better identify property rights); (iii) securities financing transactions

39 "Shadow Banking – Addressing New Sources of Risk in the Financial Sector", Communication from the Commission to the Council and the European Parliament (available at http://ec.europa.eu/internal_market/finances/shadow-banking/index_en.htm#maincontentSec1).

(to tackle pro-cyclicality and leveraging risks); and (iv) the interactions of shadow banking entities with the rest of the financial system (to address interconnectedness and contagion risk).

The Commission's proposal for a **regulation on money market funds**[40] puts forward a range of requirements intended to improve the resilience of funds operating in the EU. Consistent with internationally promoted standards in this area, permissible investment policies and stricter liquidity rules are set with the aim to place MMFs in a better position to repay investors that withdraw funds at short notice. Those MMFs that advertise a constant net asset value share price (C-NAV) would be subject to additional prudential requirements in the form of a cash NAV buffer amounting to at least 3% of assets under management. Other provisions in the regulation relate to the enhancement of transparency and the standardisation of supervisory reporting requirements.

At the international level, the Financial Stability Board (FSB) issued revised recommendations to strengthen oversight and regulation of shadow banking on 29 August 2013,[41] including two high-level policy frameworks dealing with financial stability risks posed by (i) shadow banking entities (other than MMFs) and (ii) securities financing transactions. The FSB aims to finalise its proposed recommendations in 2014.

Trialogue agreement on the Omnibus II Directive

The process of achieving a more harmonised **insurance regulation** in Europe continued in the second half of 2013. As expected, the European Insurance and Occupational Pensions Authority (EIOPA) published in June the results of its impact assessment of various measures which aim to reduce excessive volatility in the balance sheets of insurers under Solvency II. This "long-term guarantee assessment" forms the basis for the discussions of the trialogue parties on the Omnibus II Directive, which enables the Solvency II framework to become operational. In November, the trialogue reached a provisional political agreement on the Omnibus II Directive, which still needs to be endorsed by EU Member States before being finalised. In order to avoid legal uncertainty, the Commission has proposed to put back the transposition date of Solvency II from 30 June 2013 to 31 March 2015 and the application date from 1 January 2014 to 1 January 2016.

G-SIIs have been identified

In July the FSB published the International Association of Insurance Supervisors' methodology for identifying **global systemically important insurers (G-SIIs)**, an initial list of nine G-SIIs and a set of policy measures that will apply to them.[42] Further work will focus on the development of higher loss absorption capacity requirements for non-traditional and non-insurance activities of G-SIIs, built upon straightforward, backstop capital requirements for all group activities.

A proposal for implementing a financial transaction tax is under negotiation

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 eleven euro area Member States[43] via enhanced cooperation. The European Parliament adopted its legislative resolution on the proposal on 3 July in which it supports the Commission's approach but calls for several amendments. In the Council the negotiations among Member States are meanwhile continuing. So far, no clear tendencies have emerged as regards the tax design preferred by the participating Member States.

40 Proposal for a Regulation of the European Parliament and of the Council on Money Market Funds (available at http://ec.europa.eu/internal_market/investment/money-market-funds/index_en.htm).
41 The full documentation is available at http://www.financialstabilityboard.org/press/pr_130829a.pdf
42 The full documentation is available at http://www.financialstabilityboard.org/publications/r_130718.pdf
43 Austria, Belgium, Estonia, France, Germany, Greece, Italy, Portugal, Slovakia, Slovenia and Spain.

Table 3.9 Selected legislative proposals in the EU for the insurance sector

Initiative	Description	Current status
Solvency II Directive/Omnibus II Directive	The Solvency II Directive is the framework directive that aims to harmonise the different regulatory regimes for insurance corporations in the European Economic Area. Solvency II includes capital requirements, supervision principles and disclosure requirements. The Omnibus II Directive aligns the Solvency II Directive with the legislative working methods introduced by the Lisbon Treaty, incorporates new supervision measures given to EIOPA and makes technical modifications.	The Solvency II Directive was adopted in November 2009. The Commission put forward a draft directive postponing the application date of the Solvency II Directive from 1 January 2014 to 1 January 2016. A provisional political agreement on the Omnibus II Directive was reached by the trialogue in mid-November.

While legislative proposals on tax policies do not fall within the scope of ECB activities, the ECB is closely observing the developments concerning the FTT. The ECB shares some of the objectives of the FTT proposal, but it also considers that, with the parameters which were published in February 2013, the proposal may have negative implications for the implementation of monetary policy, for the functioning of securities settlement systems and for financial stability.

Legislative proposal on reforming the structure of the EU banking sector is expected in 2013

In the field of **banking structures**, the High-level Expert Group (HLEG) on reforming the structure of the EU banking sector, chaired by Erkki Liikanen, presented its report to the European Commission on 2 October 2012. After a public consultation in May 2013, the European Commission will make an impact assessment including legislative proposals in 2013 with the focus on the proposals for mandatory separation set out in the Liikanen Report.

In its position published in January 2013,[44] the Eurosystem welcomed the recommendations of the HLEG, which are considered to be important directional steps towards strengthening the resilience of the financial system and enhancing the resolvability of financial institutions in Europe. The implementation of consistent rules on banking structures is all the more important given that some Member States are already moving unilaterally ahead with national legislative proposals which may lead to regulatory arbitrage and to the fragmentation of the single market for financial services.

44 *Bank structural reform – Position of the Eurosystem on the Commission's consultation document*, available at: http://www.ecb.europa.eu/pub/pdf/other/120128_eurosystem_contributionen.pdf

Box 9

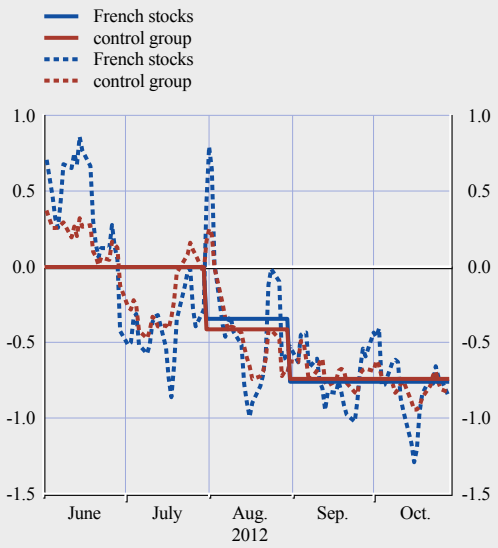
RECENT EVIDENCE ON TAXING FINANCIAL TRANSACTIONS

With the financial crisis, there has been renewed political interest in financial transaction taxes (FTTs) – a notion with origins dating back to a proposal by James Tobin some 35 years ago.[1] Indeed, within the European Union, 11 countries have expressed a commitment to introducing such a tax in some form. Notwithstanding any prospective benefits, notably for government revenues, the imposition of such taxes also entails costs. In particular, FTTs might have

1 See Tobin, J., "A Proposal for International Monetary Reform", *Eastern Economic Journal (Eastern Economic Association)*, 1978.

Chart A Bid-ask spreads for comparable French and Dutch stocks

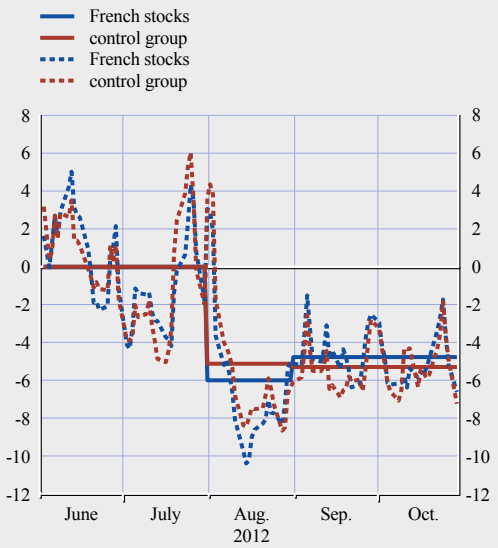
(basis points)



Sources: Thomson Reuters and ECB calculations.
Notes: The charts plot the cross-sectional averages (dashed lines) for the treated group (in blue) and the control group (in red) minus their respective pre-event averages over time. Three-day moving averages. The bold lines indicate the sub-period averages for June/July, August and September/October.

Chart B Intraday volatility for comparable French and Dutch stocks

(percentages; annualised volatility)



Sources: Thomson Reuters and ECB calculations.
Notes: The charts plot the cross-sectional averages (dashed lines) for the treated group (in blue) and the control group (in red) minus their respective pre-event averages over time. Three-day moving averages. The bold lines indicate the sub-period averages for June/July, August and September/October.

implications for the activity and functioning of affected financial market segments. Whilst in principle the existing literature could shed some light on the potential costs and benefits of such taxes, in practice most empirical evidence is more than a decade old, or relates to rather illiquid emerging markets, thereby limiting its applicability to the current European setting.

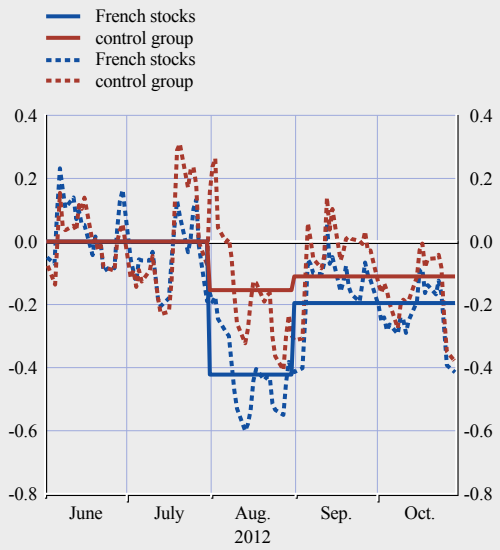
Recent evidence is available from an FTT introduced for French equities on 1 August 2012. The French FTT consists of a levy of 20 basis points on the purchase of shares of French companies with a market capitalisation of €1 billion or more. Importantly, the tax only applies to outright transfers of ownership (implicitly exempting intraday trading activity) and includes exemptions for trading related to market-making. While both the scope and the implementation of this FTT are quite different from draft proposals for a European-level equivalent, this specific example can nonetheless provide illustrative insights into prospective impacts.

Comparing outcomes for the group of affected French stocks with those for similar Dutch stocks that are traded on the same market but not subject to the FTT yields some interesting insights.[2] Evidence suggests that the FTT had no significant permanent impact on either intraday return volatility or the bid-ask spread, given that both lines do not diverge notably after the 1 August implementation (see Charts A and B).[3] The absence of any decrease in market liquidity is most likely a consequence of the exemption of market-making activities.

2 For a more detailed exposition of methodology, see Colliard, J-E. and Hoffmann, P., "Sand in the chips? Evidence on taxing transactions in modern markets", *ECB Working Paper Series*, forthcoming.
3 Due to seasonality in trading activity in August, the permanent impact is judged as the difference between September/October and June/July.

Chart C On-exchange trading volumes for comparable French and Dutch stocks

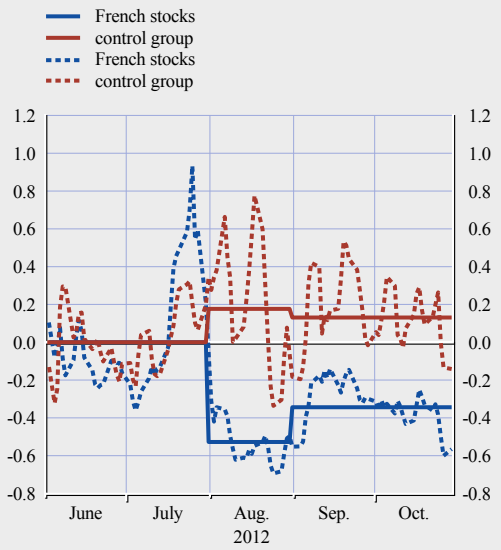
(as a percentage of the average for June-July 2012)



Sources: Thomson Reuters and ECB calculations.
Notes: The charts plot the cross-sectional averages (dashed lines) for the treated group (in blue) and the control group (in red) as percentage of their respective pre-event averages over time. Three-day moving averages. The bold lines indicate the sub-period averages for June/July, August and September/October.

Chart D Over-the-counter trading volumes for comparable French and Dutch stocks

(as a percentage of the average for June-July 2012)



Sources: Thomson Reuters and ECB calculations.
Notes: The charts plot the cross-sectional averages (dashed lines) for the treated group (in blue) and the control group (in red) as percentage of their respective pre-event averages over time. Three-day moving averages. The bold lines indicate the sub-period averages for June/July, August and September/October.

The FTT's impact on trading volume nonetheless differed considerably across different market segments (see Charts C and D, where the causal impact of the FTT is given by the difference between French stocks and the control group). While the volume on Euronext, the main listing exchange for the stocks considered, displayed a slight decline of about 10%, off-exchange trading – including over-the-counter (OTC) trades and volume executed in dark pools, which account for a significant proportion of the overall reported trading volume – dropped by around 40%. Interestingly, much of this decline was driven by a decrease in very large transactions.

This striking difference across market segments suggests that the adopted liquidity safeguards were significantly less effective in protecting off-exchange activity. While also being subject to the market-making exemption, the less formal nature of liquidity provision in the OTC market implies that an occasional liquidity provider may have been crowded out by the tax.

Overall, these findings highlight how such taxes might have differing liquidity and market functioning impacts across market segments. The evidence suggests that an FTT introduced in France last year led to a significant decline in transactions in the OTC market, with a concomitant reduction in liquidity provision in this market segment. Clearly, such taxes entail the prospect of budgetary benefits.[4] At the same time, impacts of a more widespread application of such taxes on market activity in the absence of adequate safeguards for liquidity provision might embed prospective financial stability risks.

4 European Commission estimates suggest that budgetary benefits of €4.5-6.5 billion in revenues could accrue from taxing all transactions in EU27 equities without any exemptions (see http://ec.europa.eu/taxation_customs/taxation/other_taxes/financial_sector/).