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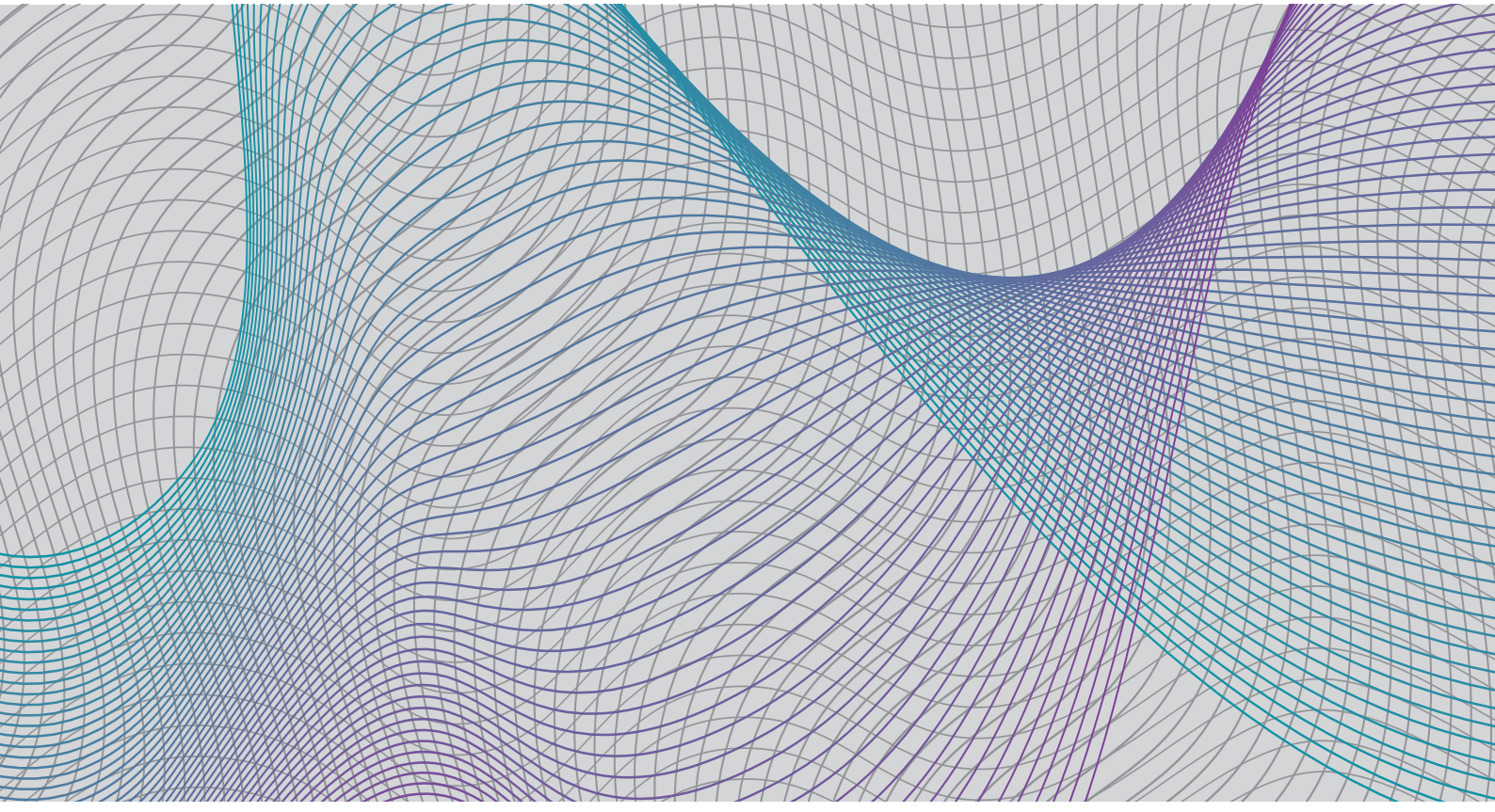
Financial Stability Review 2013



Deutsche Bundesbank
Wilhelm-Epstein-Strasse 14
60431 Frankfurt am Main, Germany

Postfach 10 06 02
60006 Frankfurt am Main, Germany

Tel +49 69 9566-0
Fax +49 69 9566-3077

http://www.bundesbank.de

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Financial Stability Review 2013

Boxes

Abbreviations and symbols

p Provisional
e Estimated
. Data unknown, not to be published or not meaningful
– Nil

Discrepancies in the totals are due to rounding.

Introduction

As Germany's central bank and guardian of price stability, the Bundesbank has an inherent interest in ensuring a stable financial system. As an integral part of the European System of Central Banks, it also has an explicit mandate to contribute to financial stability without prejudice to the objective of price stability.

The Bundesbank's shared responsibility for safeguarding financial stability stems, above all, from its involvement in macroprudential oversight. The President of the Bundesbank is a member of the European Systemic Risk Board (ESRB), which is responsible for macroprudential oversight and coordination at European level. In Germany, the Financial Stability Committee (*Ausschuss für Finanzstabilität*), which consists of representatives from the Federal Ministry of Finance, the Federal Financial Supervisory Authority (BaFin), the Bundesbank and the Federal Agency for Financial Market Stabilisation (FMSA), became operational at the beginning of 2013. Within the Financial Stability Committee, the Bundesbank is responsible for monitoring and analysing developments that are key to financial stability. It can also make proposals regarding the issuing of warnings and recommendations. Moreover, the Bundesbank helps to maintain financial stability through its involvement in banking supervision and its role in operating and overseeing payment systems.

The Bundesbank defines financial stability as the financial system's ability to perform its key macroeconomic functions at all times, especially in periods of stress and upheaval. These functions include, in particular, the capacity to allocate financial resources and risks efficiently and provide a sound financial infrastructure.

The ongoing analysis of the stability situation aims to identify systemically important changes and emerging risks in Germany's bank-based financial system as early as possible. This includes taking account of interactions within the national and global financial systems, interdependencies between the financial sector and the real economy, and the effects of the regulatory framework on the efficiency and smooth functioning of the financial sector. This stability analysis adopts a risk-oriented approach, which is often based on looking at stress scenarios. Unlike forecasts, which outline the most likely developments, stress scenarios depict potential events and repercussions which, while they may seem unlikely, could cause major harm to the economy as a whole.

This report reflects the Bundesbank's assessment of risks and resilience in the German financial system. The resulting suggestions for market participants and public authorities are summarised in the box entitled "Stability situation in the German financial system in 2013" on page 9. This guidance aims to prompt those involved to implement the measures and adjustments that are needed to strengthen the stability and efficiency of the financial system. This includes looking beyond the short-term horizon and current crisis management needs.

Account has been taken of ongoing developments up to the cut-off date of 12 November 2013.

Financial stability in 2013 – an overview

In the year to date, financial stability in Germany has benefited from the easing of tensions on the international financial markets. Low interest rates and an ample supply of liquidity have contributed to this lowering of tension. The exceptional financial conditions have bought time for sovereigns and banks that have been particularly hard hit by the financial and debt crisis. The longer the low-interest-rate environment lasts, the more the balance of costs and benefits shifts. The persistently low interest rates are posing a growing risk to financial stability.

On the international financial markets, there is an increasing danger that the search for yield involving higher investment risks will result in exaggerations. The longer the markets' risk perception is determined by the currently exceptional financial conditions, the greater the costs are likely to be when interest rates and funding conditions revert to a normal level. German credit institutions will, like their foreign peers, have to revise their business models further and consolidate their balance sheets to prepare for the expiry of the exceptional financial conditions. Moreover, persistently low interest rates are eroding life insurers' buffers, as they make it more difficult to earn guaranteed returns and they entail high valuation reserves, which must be paid out to policyholders.

The European debt crisis is not yet over. Sovereign debt continues to grow. In some countries the "doom loop" between the sovereign and domestic banks has tightened. To contain this risk, the preferential regulatory treatment afforded to banks' sovereign exposures needs to be abolished in the medium term. A single supervisor and a corresponding recovery and resolution mechanism are to be set up with a view to protecting public coffers from misguided developments at banks in the future. However, that can neither resolve today's debt crisis nor act as a substitute for the reform and consolidation path that all member states need to follow.

Low-interest-rate setting increasingly determining risk situation

The low-interest-rate setting, coupled with an ample supply of liquidity by the world's major central banks, has for some time been a pivotal factor underpinning the stability of both the German and the international financial system. It is helping national banking systems, which were weakened during the financial and debt crisis, to continue providing credit to the economy. It has bought the banks time to overhaul their business models and consolidate their balance sheets. In this manner, the low-interest-rate environment has made an important contribution to the immediate stabilisation of the financial system in the context of critical developments. However, the longer interest rates remain low, the more the balance of costs and benefits shifts. Persistently low interest rates increase the risks and undesired side-effects for financial stability.

Persistently low interest rates increase the risks and undesired side-effects for financial stability.

Among German financial intermediaries, life insurers are especially disadvantaged by the low-interest-rate environment. With capital market rates low, they can only earn a small return on their investment. Yet they must meet commitments from longstanding policies, which in Germany usually guarantee a minimum return. A considerable volume of older contracts guarantees interest rates that are well above current capital market rates. Pension funds face a similar problem.

In the German banking system, interest income is traditionally the most important source of earnings. Low interest rates further squeeze banks' interest margin. In actual fact, interest margins have been eroding ever since the 1980s, which points to a structural profitability problem. This is mainly the result of intense competition, in part owing to excess capacity in the German banking industry. It is problematical that this heightened downward pressure on earnings appears to be only very slowly bringing about the necessary market consolidation.

In the European banking system, the abundant supply of liquidity in the low-interest-rate environment is making it more difficult to disentangle the financial interconnectedness between sovereigns and their domestic banking systems. In fact, in some European countries, this "doom loop" has tightened further recently. This increases systemic risk, as doubts about the sustainability of public finances spill over to the domestic banking sector and impair credit supply, which has a particularly severe impact on the real economy. The nexus between banks and sovereigns is fostered by preferential regulatory treatment of banks' holdings of government bonds. This privilege should be abolished in the medium term. Concentration risk needs to be limited also in the case of claims on governments. Moreover, such exposures ought to be backed with capital commensurate with their risk.

Preferential regulatory treatment of banks' holdings of government bonds should be abolished in the medium term.

Furthermore, the ample supply of liquidity is propping up the business models of those banks that are not based on stable, private sources of funding. This is impeding the necessary structural change in the European banking system or even channeling it in the wrong direction. This problem is compounded by potential moral hazard in the field of fiscal policy, as the low-interest-rate environment temporarily eases the pressure on the governments concerned to implement reforms. This entails a risk that policymakers will not use the respite thus afforded to them in order to place public finances on a sound long-term footing and implement necessary structural reforms.

Stability situation in the German financial system in 2013

Factors that …

… strain the stability situation

- Euro-area sovereign debt levels continuing to rise; high levels of debt in the non-financial private sector in some countries
- "Doom loop" between the sovereign and the domestic banking sector tightening in some countries
- Banks in crisis countries saddled with high levels of non-performing loans
- German banks' structural profitability problems being amplified by low interest rate level
- Accumulation of sectoral risks (especially from shipping loans and foreign commercial real estate loans) at some German banks
- Low interest rates and policyholders' participation in valuation reserves eroding insurers' buffers
- Emerging market economies with current account deficits are experiencing funding pressures
- Implementation of regulation on over-the-counter (OTC) derivatives markets delayed; cross-border effects creating problems

… alleviate the stability situation

- Reforms in the programme countries and in Italy and Spain showing first fundamental adjustment gains; capital withdrawals slowed
- European rescue mechanisms almost completely up and running; preparations underway for single supervisory mechanism (SSM)
- Banking sectors in Greece and Spain restructured and recapitalised, rescue shield for Cyprus
- No signs yet of excessive risk-taking by German banks and insurers
- German banks' resilience further improved, leverage reduced
- Life insurers have reduced policyholders' profit participation share and expanded additional interest provision; average guaranteed return gradually falling
- Proportion of OTC derivatives contracts cleared via central counterparties increasing
- Institutional framework for macroprudential policy in Germany and Europe developed further; new macroprudential instruments available

Necessary measures …

… for market participants

- Risk perceptions must factor in eventual reversion of interest rates and refinancing terms to a normal level and possibility of rising volatility on financial markets
- Banks: adopt conservative credit standards for mortgage lending
- Banks: set up provisions for portfolios with higher default risk before the review of risky portfolios ahead of banking union
- Investment via exchange-traded funds: monitor liquidity risk, particularly in the case of illiquid investments of the fund
- Life insurers: strengthen own funds; review payout amounts

… for public authorities

- Euro-area policy: continue consolidation and reform process
- Refocus monetary policy on its core task of safeguarding price stability
- Reduce preferential regulatory treatment of government bonds in banks' balance sheets in the medium term
- Before transition to SSM: carry out comprehensive and strict quality assessment of banks' balance sheets and perform stress test; ensure funding for any recapitalisation requirements
- Ensure stability-oriented transition to Solvency II
- Aim for a sound and sustainable regulatory framework for policyholders' participation in life insurers' valuation reserves
- Press ahead with mutual recognition of derivatives market regulation; establish suitable recovery and resolution regimes for central counterparties

Poor profitability and delayed structural change are frequently the reasons behind an intensified quest for higher yield at the cost of greater risk. On the financial markets, the low-interest-rate setting may therefore lead to price exaggerations in individual market segments. Such exaggerations channel capital to uses that are not sufficiently productive in the longer term. They sow the seeds of subsequent abrupt asset price corrections, which can lead to solvency or liquidity problems for highly indebted households, enterprises or financial intermediaries. Financial stability is jeopardised at the latest when such solvency problems reach the domestic banking system. It is crucial that market players do not blindly trust in particular market developments when pricing risk. The more the markets grow accustomed to the current exceptional financial conditions in terms of their risk perception, the greater the costs are likely to be once interest rates and funding conditions revert to a normal level.

The more the markets grow accustomed to the exceptional financial conditions, the greater the costs are likely to be once interest rates and funding conditions revert to a normal level.

The financial markets of emerging market economies have, in recent years, emerged as a preferred goal for short-term portfolio investment, which has magnified asset price inflation there. Countries with current account deficits and hence foreign debt are particularly vulnerable to outflows of short-term capital and the price adjustments that these cause. At the same time, the importance of major emerging markets for the world economy and the global financial system has grown markedly, which means that any stress there could increasingly spill over to other countries and regions.

Tension in the German financial system has eased noticeably

The German financial system is benefiting from the fact that tensions on the international financial markets eased noticeably in the second half of 2012 and the first half of 2013. This was due primarily to the successful containment of the systemic disruptions that ensued from the European sovereign debt crisis. Additional contributory factors were clear progress towards reform in the countries affected by the crisis, the institutionalisation of rescue mechanisms and the Eurosystem's non-standard monetary policy measures. However, this does not herald the return of a calm, virtually stress-free situation, which was the prevailing perception of many market participants immediately prior to the financial crisis and which, with the benefit of hindsight, must probably be attributed *inter alia* to deficient market discipline (see Chart 1.1 and the box entitled "Stress indicator for the German financial system" on pages 12 and 13).

In terms of the portfolio risk on German banks' and insurers' books, three asset classes stand out. First, there are the risks arising from claims on creditors in countries that are particularly affected by the European sovereign debt crisis. In 2011 and 2012, the sovereign debt crisis was a key consideration for the stability of the German financial system. And it still has enormous potential to cause default and contagion risks. Second, new risks may arise from certain asset types subject to price rises, and thus to subsequent potentially abrupt price corrections, in the search for yield. Such corrections could be triggered by a normalisation of financing conditions following a reversal of the downward interest rate trend. German banks have comparatively small holdings in investment segments in which the search for yield is already fairly evident. But if the search for yield spreads to segments in which banks have a larger exposure, the risks will likewise rise. Third, sectoral credit risks exist in connection with exposures subject to heightened credit default risk such as ship-

ping loans, foreign commercial real estate loans or securitisations. In this situation, it is important that no other problem sectors emerge, such as the residential real estate loan segment. From a financial stability perspective, there is a risk that a spiralling dynamic of rising prices on the German housing market combined with an unsustainable lending policy on the part of banks may arise.

European debt crisis not yet over

The European debt crisis is not yet over.[1] Some of the fundamental weaknesses that caused the crisis persist, notwithstanding the advances made. Thus sovereign debt levels are still rising although deficits are on the decline. Most of the countries affected face high foreign liabilities despite improvements in their current account balances. Corrections are also ongoing with regard to the high levels of private debt and the exaggerations on the real estate markets.

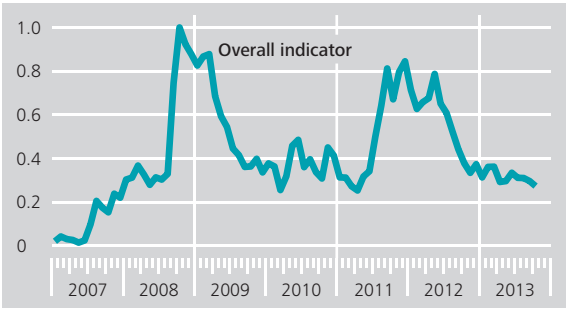
The countries in question must press ahead with their correction and reform process. Neither the low-interest-rate environment nor the banking union can act as a substitute for further efforts. A single European supervisor and a corresponding recovery and resolution mechanism are to be set up with a view to protecting public coffers from future misguided developments at banks. However, that can neither resolve today's debt crisis nor act as a substitute for the reform and consolidation path that all member states need to follow.

Neither the low-interest-rate environment nor the banking union can act as a substitute for the correction and reform process in the countries concerned.

German banks are, after French banks, the second-largest creditor group for debtors in the four programme countries[2] as well as in Italy and Spain.

Stress indicator for the German financial system Chart 1.1

Data scaled based on historical low (0) and high (1)



Sources: Bloomberg, Ifo Institute, Markit, Thomson Reuters Datastream, Centre for European Economic Research and Bundesbank calculations.

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They have significantly reduced their exposure levels without generally turning their back on international business. Between the end of 2009 and mid-2013, German banks trimmed their balance sheet lending to these countries by €198 billion to €234 billion. They notably reduced their exposure to the Italian government and Spanish banks. Nonetheless, claims on debtors in Italy, at €96 billion, and in Spain, at €82 billion, are still their largest outstanding credit positions. The four programme countries together account for €56 billion of German banks' exposures.

Unlike German banks, German insurers have recently slightly upped their investments in the six countries under observation. As at mid-2013, they totalled €137 billion. As with banks, investments in Italy and Spain dominate with a combined value of €112 billion.

1 The chapter entitled "European debt crisis remains a threat to financial stability" examines the remaining vulnerabilities of the crisis countries, contagion channels and the risks that the sovereign debt crisis poses for the German financial system.
2 This refers to those euro-area countries that received international financial aid under the condition that they implement an adjustment programme, ie Cyprus, Greece, Ireland and Portugal. The programme agreed with Spain relates exclusively to restructuring its domestic banking sector.

Stress indicator for the German financial system

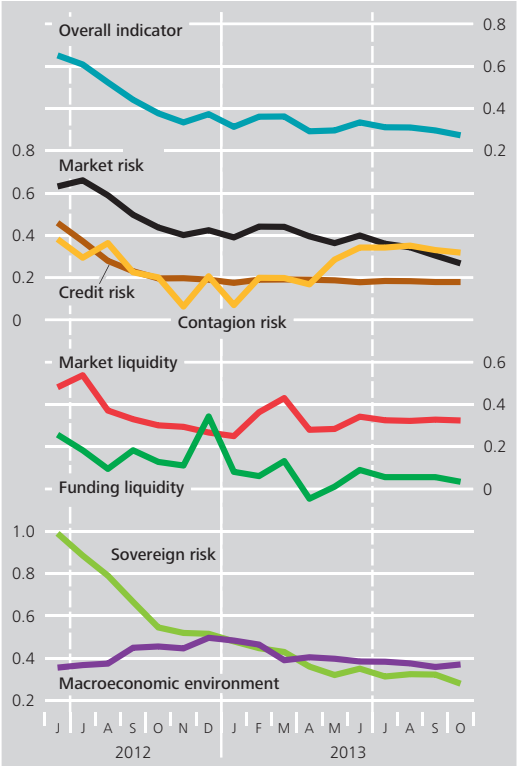
To assess financial stability, the Bundesbank monitors and analyses a large number of data. It has bundled a range of indicators relating to financial markets and the overall economy into a single stress indicator for the German financial system in order to underpin its assessment of the current situation. One aim is to at least approximately quantify financial stability, which is difficult to measure.

The Bundesbank's stress indicator is made up of seven subindicators. The subindicator for sovereign risk is based on credit default swap spreads on government bonds of selected European countries and therefore describes country risks in Europe. The subindicator for contagion risk is determined using banks', insurers' and other financial intermediaries' average contributions to systemic risk, derived using the CoVaR methodology.[1] The subindicator for credit risk relates mainly to the interbank market and is calculated using interest rate spreads. Two subindicators are used to describe the liquidity situation. One of them measures funding liquidity and, for this purpose, maps balance sheet data on individual financial intermediaries' maturity transformation. The other depicts market liquidity based on market data measuring liquidity premiums. The subindicator for market risk is derived from data on developments in various market segments (eg stock market volatility). The macroeconomic environment is captured mainly with the aid of key economic variables.

The subindicators are aggregated using principal component analysis.[2] Applying this method allows extensive datasets to be structured, simplified and depicted graphically. Linear combi-

Stress indicator for the German financial system and subindicators

Data scaled based on the overall indicator's historical low (0) and high (1)



Sources: Bloomberg, Ifo Institute, Markit, Thomson Reuters Datastream, Centre for European Economic Research and Bundesbank calculations.

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1 The conditional value at risk (CoVaR) in the financial system represents the system-wide value at risk depending on the individual credit institutions' health. A credit institution's contribution to systemic risk is defined as the difference between the CoVaR where the institution is in a normal state and the CoVaR assuming that the institution in question is in distress. See T Adrian and M K Brunnermeier, CoVaR, Federal Reserve Bank of New York Staff Report No 348, September 2011.

2 Principal component analysis is also used inter alia to create the Federal Reserve Bank of Kansas City's stress indicator. See C S Hakkio and W R Keeton, Financial Stress: What Is It, How Can It Be Measured, and Why Does It Matter?, Federal Reserve Bank of Kansas City Economic Review, pp 5-50, Second Quarter 2009.

nations (principal components), which capture the co-movement of the underlying indicators, are calculated. The principal component which exhibits the greatest explanatory power in terms of correlation between the individual indicators is used as an indicator of the stress level in the relevant risk category. Finally, the same procedure is used to determine the overall indicator on the basis of the subindicators.

A high indicator value suggests considerable stress in the financial system while a low value points to a relatively relaxed situation. To facilitate interpretation, the stress indicator is scaled between 0 (historical low) and 1 (historical high). The overall indicator peaked in autumn 2008, following the collapse of the US investment bank Lehman Brothers. In the course of the sovereign debt crisis, the indicator picked up again and – driven by sovereign risk – reached another high in mid-2012. In the year to date, the stress indicator has moved at a new, considerably raised level compared to the pre-crisis period. Contagion risk has increased of late but has not surpassed moderate levels. High volatility in the equity market caused the subindicator for market risk to go up temporarily at the beginning of the year. The subindicator for market liquidity, too, rose briefly as a result of higher interest rate spreads in the interbank market. The subindicator for the macroeconomic environment has fallen slightly since the beginning of 2013, reflecting the improved economic situation in Germany and a somewhat more optimistic assessment of economic developments in the euro area. The indicator nonetheless remains at an elevated level compared with preceding years given ongoing uncertainty about the economic recovery in the euro area.

The debt crisis therefore continues to entail high default and contagion risks for the German financial system. It should, moreover, be noted that there has been a considerable transfer of risk from the private to the public sector. Although the acute systemic disruptions have subsided and reforms have been successfully implemented in the countries concerned, the debt crisis continues to pose a high risk to financial stability.

The debt crisis continues to entail high default and contagion risks for the German financial system.

Search for yield driving corporate credit markets

In the low-interest-rate environment, stability risks may result from a heightened search for yield, especially if individual financial market segments favoured by German financial intermediaries are overvalued.[3]

The search for yield is clearly evident on the corporate credit markets. These are characterised by high issuance volumes, easy access, even for enterprises with a lower credit rating, low risk premiums and favourable non-price terms and conditions. For example, the percentage of newly issued corporate bonds with a non-investment-grade credit rating has risen since just before the crisis from just over 20% on a multi-year average to more than 30% in the United States and from around 14% to over 20% in the euro area. The share of syndicated loans

3 The chapter entitled "Global liquidity: vulnerabilities emerging from increased risk-taking" considers the risks to the German financial system arising from activities in selected financial market segments in which there are already signs of a search for higher yields at the cost of incurring greater risks.

rated BBB or lower has gone up noticeably both in the United States and in the euro area.

The pricing of corporate credit shows conspicuously low risk premiums. Lower risk premiums for bonds issued by enterprises with access to the capital markets in the United States, France and Germany reflect optimistic expectations that default rates will remain below their long-term averages. In addition, non-price terms and conditions are favourable. In the United States, for instance, the volume of loans with less stringent investor protection clauses (known as covenant-lite loans) has risen to a record level. In the euro area, too, this credit class has grown noticeably.

The volume of bonds issued by non-financial corporations held by banks in Germany has changed little overall in recent years; at the end of the third quarter of 2013, it stood at €45 billion. The amount of such bonds that German banks hold via their foreign affiliates has probably even dropped over the last few years.

German insurers, by contrast, have considerably raised the weight of corporate bonds, which already have fairly high market valuations, in their portfolios. From end-2009 to mid-2013, they doubled their holdings of corporate bonds from €41 billion to €83 billion. Their share in insurers' total investment consequently rose from 3.4% to 6.0%. Most of the increase was attributable to corporate bonds held indirectly through specialised funds, which meanwhile represent a larger investment volume than directly held bonds.

Emerging markets caught between search for yield and risk of a sudden stop

Gross capital flows to emerging market economies reached new highs in the first quarter of 2013 in some countries. The relatively volatile category of portfolio investment, in particular, and more recently all other capital flows expanded sharply.

The risk that the phase of strong capital inflows into emerging markets might come to an abrupt halt (sudden stop) has risen over the course of the year. Growth prospects in major emerging market economies have deteriorated. Expected changes to the international interest rate landscape are another key factor. In the summer of 2013, losses on stock and foreign exchange markets in emerging market economies as well as outflows from emerging market funds offered a foretaste of the market movements that could occur in the event of a reversal in the US monetary policy stance. In mid-2013, German banks that report to the Bank for International Settlements (BIS) held credit claims worth US$155 billion on debtors in the G20 emerging market economies. If individual large emerging market economies that traditionally maintain relatively close economic ties to Germany were to encounter funding problems, the German banking system could be affected.

Current risks from search for yield and interest rate reversal limited

Overall, the direct risks to financial stability in Germany arising from the search for yield and a potential abrupt interest rate reversal, which could trigger corrections on overvalued markets, are currently limited.

German insurers have significantly expanded their corporate bond holdings. This development was, however, driven not only by a search for yield to improve their returns but probably also by the wish to diversify their investment portfolio and, in particular, to reduce their ties to the banking system. Nonetheless, Ger-

German insurers have significantly expanded their holdings of corporate bonds, which are already fairly highly priced.

man insurers should bear in mind that market valuations for corporate bonds are already fairly high.

There are few signs to date of any pronounced search for yield among German banks. This is probably in part because a lot of institutions remain under pressure to lower their leverage and expand their capital buffers.

An interest-rate reversal can cause abrupt and sharp movements on the financial markets. The various categories of banks differ significantly in terms of their susceptibility to interest rate risk: the business model of savings banks and credit cooperatives, in particular, traditionally involves interest rate risk. A 150 basis point parallel upward shift in the yield curve, for instance, would, in the short term, cause market value losses amounting on average to 14% of the own funds of the surveyed savings banks and credit cooperatives.

Sectoral risks weighing on German banks

Financial stability could be jeopardised by sectoral credit risks if several risk portfolios simultaneously suffered defaults concentrated at individual systemically important institutions.[4] The default risks for German banks are especially high for shipping loans, foreign commercial real estate loans and securitisations. Losses could occur, in particular, if economic growth worldwide and in the larger European countries and in the United States were to falter.

The seven most important German banks in terms of ship financing lowered their combined exposure from €97 billion in mid-2012 to €86 billion in mid-2013. Of that total, some €23 billion is included in a public partial loss guarantee, which is, however, also intended to cover losses in other exposure classes. Nonetheless, ship financing claims represent a significant proportion of the overall portfolio at several of the banks in question.

Foreign commercial real estate exposures at eight major German banks with an international focus totalled €105 billion at the end of the first quarter of 2013. This is €16 billion less than at the end of 2011. Of the foreign markets involved, the United Kingdom makes up the largest share, at 22%, followed by the United States at 21%, France at 12%, Spain, Italy and Portugal with a combined share of 14% and the Netherlands with 7%. German banks face a potential risk mainly in respect of commercial real estate exposures to EU partner countries. The domestic commercial real estate market, by contrast, does not currently pose an elevated default risk.

German banks have also further trimmed their holdings of securitisations. Their book value at the group of 12 major German banks with an international focus[5] fell by €21 billion to €94 billion from mid-2012 to mid-2013. Residential mortgage-backed securities (RMBS) make up the largest portfolio share at 52%, followed by collateralised debt obligations (CDOs) at 19%, commercial mortgage-backed securities (CMBS) at 10% and securitised student loans at just over 8%.

Banks further reduced their problem assets in the three risk sectors ship financing, foreign commercial real estate and securitisations last year. Nonetheless, taking into account a public partial loss guarantee, the combined exposure of the 12 major German banks with an international focus still represented 5.4% of their total assets at the end of the first quarter of 2013. Individual banks have a significantly higher ratio. Loans to US municipalities could develop into another risk sector for German banks

4 The chapter entitled "German banks face increased pressure on profitability" discusses the structurally low earnings and the increased sectoral risks in the German banking system. In addition, it contains an update of developments on the German housing market.
5 This Financial Stability Review frequently refers to the group of 12 major German banks with an international focus. See p 50, footnote 1.

should their financial situation deteriorate further. However, the aggregate credit exposure of the 12 major German banks with an international focus at the end of the first quarter of 2013 was comparatively small, at €21 billion.

Banks' leverage cut further

In recent years, the profitability of the German banking system has benefited from unusually low write-downs on the credit portfolio. The German banking system has, moreover, been greatly bolstered by the robust domestic economy. A glance at a stress scenario, which assumes a sharp recession, demonstrates just how positive the current situation is.

A simulation shows that a renewed sharp recession, such as the one Germany experienced in the wake of the financial crisis,[6] would particularly affect the 12 major German banks with an international focus. Their operating income for 2014 would be some €15 billion lower than under the baseline scenario, which assumes the level of economic growth that currently appears likely. This shortfall would exceed the group's operating result in 2012, which was €11 billion. Assuming unchanged staff costs and general administrative spending, these banks would, in aggregate, even post a negative operating result after valuation. In the simulation, there are €6½ billion in additional value impairments and write-downs in credit business and a €11½ billion deterioration in net trading income between 2013 and 2015 under the stress scenario as compared to the baseline scenario. Savings banks and credit cooperatives are less affected by an economic downturn in this simulation, as for them proprietary trading plays a lesser role and value impairments are less dependent on economic activity.

Although the likelihood of the German economy slipping into a sharp recession in the near future is very small, the results of such a scenario suggest that the conditions for the German banking system are currently rather favourable. Banks should make use of this to increase their resilience.

The trend towards improved resilience among major German banks has indeed continued during 2013. By mid-2013, the tier 1 capital of the group of 12 major German banks with an international focus had increased from 13.2% a year earlier to 15.3% of risk-weighted assets. The banks under observation therefore further reduced their leverage – measured as the ratio of total assets pursuant to the German Commercial Code (*Handelsgesetzbuch*) to tier 1 capital. By mid-2013, this ratio had dropped to 28 compared with 33 a year earlier.

The European Central Bank (ECB) will carry out a comprehensive assessment of 124 banking groups before the single supervisory mechanism enters into force. As part of this assessment, it will conduct a stress test in close cooperation with the European Banking Authority (EBA). To be credible, the comprehensive assessment including stress test should be stringent. At the same time, banks, supervisory authorities and governments must be prepared for the assessment to uncover the need for recapitalisation at some banks. Against this backdrop, too, banks should continue to review all options for reducing certain risk assets and bolstering capital levels, including internal funding using retained profits.

Banks should review all options for reducing certain risk assets and bolstering capital levels, including internal funding using retained profits.

6 The stress scenario assumes a 5.1% slump in economic activity in 2014 and another slight decline of 1.0% in 2015. A baseline scenario, which is based on the Bundesbank's forecasts for this period, is used for comparison. See also the section entitled "Stress tests used to identify risks", pp 57-58.

German house price inflation broadening

Experience in other countries has shown that a debt-financed real estate boom represents one of the most serious risks to financial stability.

The upsurge in German house prices continued in 2012. Prices for freehold apartments in the seven largest German cities (Berlin, Cologne, Düsseldorf, Frankfurt am Main, Hamburg, Munich and Stuttgart) rose by an average of 8.6%. Based on the first three quarters, the seven cities look likely to experience a similar price increase of around 9% in 2013.[7] In 125 German towns and cities, prices for freehold apartments and houses went up by 5.5% in 2012. There is now some evidence to suggest that house price inflation is spreading from towns and cities to the surrounding areas. Measured against longer-term demographic and economic factors, residential property could currently be up to 20% overvalued in attractive cities.[8]

German banks have registered a clear increase in household demand for loans for house purchase since spring 2010. But at an annual rate of 2.2% in the third quarter of 2013, credit growth remains moderate. Nonetheless, preliminary analyses suggest that there is above-average credit growth in regions with particularly high rates of price increase. Moreover, low-deposit mortgages are quite common in some large cities. Nationwide, however, there is no evidence of looser credit standards.

For the longer-term trend in financial stability in Germany, it is vital that the current price surge on the German housing market does not lead to banks taking on excessive risk. German banks should ensure that they apply conservative standards when issuing mortgage loans.

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German life insurers forced to use reserves

Life insurers are directly confronted with the effects of the low-interest-rate environment.[9] In 2011, Bund yields fell below the maximum technical interest rate applicable to new business for the first time. At the same time, life insurers' obligations to service outstanding policies remain high, as the maximum technical interest rate in the industry's portfolio averages 3.2%. Although life insurers were able to increase their net return on investment from 4.1% in 2011 to 4.6% in 2012, this was only a temporary phenomenon. The increase in the net return on investment was due partly to write-ups and partly to life insurers realising valuation reserves to be able to make the required allocations to the additional interest provision.

Life insurers may find themselves in a position in which they are forced to tap into own funds. This is the case where the current income generated is no longer sufficient to cover policyholders' profit participation share as defined by the enterprises or even guaranteed benefits. Since 2009, the aggregate ratio of eligible to required regulatory own funds (known as the coverage ratio) has, in aggregate, dropped from 186% to stand at 169% at last count.

Assessing the risks of low interest rates is associated with considerable uncertainty as assumptions must be made across a lengthy period.[10] In a baseline scenario, which uses today's Bund yields to forecast future net returns, the impact remains man-

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7 Bundesbank calculations based on data provided by Bulwien-Gesa AG. Intra-year data on price developments on the real estate markets are generally subject to fairly strong fluctuations and are therefore associated with a large degree of uncertainty.
8 See Deutsche Bundesbank (2013), Monthly Report, October 2013, pp 13-29.
9 The chapter entitled "Insurance companies: bridging low interest rates and higher capital requirements" discusses the low-interest-rate environment and the changes brought about by Solvency II. It also deals with the risks relating to occupational pension schemes and the sources of systemic risk.
10 For details, see the section "Stress scenarios on the impact of the low-interest-rate environment", pp 71-74.

ageable. However, even in a mild stress scenario, in which low yields – such as those that prevailed in Japan for an extended period – are simulated, several life insurers, with a combined market share of some 14%, could no longer fulfil the Solvency I capital requirements by 2023. Under aggravated stress conditions, especially if yields on investments other than Bunds were also to come under pressure, many more enterprises would no longer meet the Solvency I capital requirements. That points to a potential solvency risk in the life insurance industry.

Another reason why the low-interest-rate environment is beginning to erode life insurers' reserves is that, following the reform of the Insurance Contract Act (*Versicherungsvertragsgesetz*) in 2008, German life insurers are now obliged to distribute half of the accrued valuation reserves to policyholders when their policies expire. This applies to all asset classes. Declining interest rates on the capital markets have caused the valuation reserves of fixed-income securities to grow substantially. Whereas they amounted to only €2.7 billion at the end of the first quarter of 2011, they had swollen to €87.8 billion at the end of 2012. The current rules therefore mean that, in times of falling interest rates, life insurers must make increasing payouts to clients whose policies expire. The objective should therefore be to achieve a sound and sustainable regulatory framework for policyholders' participation in the valuation reserves.

It should be noted that many German life insurers would currently still have problems meeting the future capital requirements under Solvency II. The aim of Solvency II is to better capture long-term risks by valuing assets and liabilities transparently, and in a market-consistent and risk-appropriate manner. However, this is also likely to paint a significantly more volatile picture of insurers' solvency situation.

In Germany, insurers traditionally have close ties to the banking system. In mid-2013, Germany's largest insurers had invested 36% of their total funds with banks. Almost one-third of these investments with banks was unsecured (unsecured debt securities, subordinated bonds, profit-sharing certificates, shares and deposits). Of the remainder, the lion's share were investments in Pfandbriefe and other covered bank bonds.

Occupational pension schemes facing demographic challenge

Occupational pension schemes face a challenge in the medium to long term principally from demographic change. It will result in rising pension benefits in the future, while the working population will simultaneously decline. Companies with large uncovered direct pension commitments especially face a funding risk.

The ongoing low-interest-rate environment also poses a challenge to companies which, in response to demographic change, have funded their pension commitments off the balance sheet. The low interest rates make it difficult for them or their pension schemes (Pensionskassen, pension funds and support funds) to generate the promised benefits from their plan assets. Firms need to identify the risks that demographic change and the low-interest-rate environment pose to themselves and their external pension providers and make appropriate timely provisions.

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Derivatives market regulation starting to take effect

In the run-up to the financial crisis, the international derivatives markets were a key factor in the interconnectedness of the financial system and the lack of transparency regarding possible risk concentrations. An extensive overhaul of the over-the-counter (OTC) derivatives markets is thus rightly a core objective in reforming the international financial system. The aim is to reduce systemic risk mainly by involving central counterparties (CCPs).[11] CCPs act as a contractual counterparty for derivatives buyers and sellers. They thus assume default risk in the derivatives market, which will, it is hoped, allow them to dampen the shock waves sent out by the default of a large market participant by acting as a "breakwater". In addition, trade repositories are to ensure greater transparency with a view to facilitating the timely identification of risk concentrations.

However, regulation of the OTC derivatives markets is advancing only slowly. While international standard-setting, national implementation and the application of these rules are making definite progress, the aim of having the new rules fully in place by the end of 2012 has not been achieved. It would have been desirable for the international agreements to have been implemented close to simultaneously in all countries. There are marked differences in the national implementation to date. Requirements for central counterparties in the various jurisdictions should not be contradictory, however, and must not trigger regulatory competition to lower standards. As central counterparties are assigned a systemically important role, their risk management should be subject to strict rules at the global level.

Requirements for central counterparties in the various jurisdictions must not trigger regulatory competition to lower standards.

Nonetheless, progress is being made in the field of central clearing. The entry into force of various obligations to use CCPs in Japan in November 2012 and in the United States in March 2013 provided a catalyst. In the second quarter of 2013, CCPs were involved in 57% of new index credit default swaps; this was the case for just 28% of new transactions in the fourth quarter of 2012. Clearing via CCPs should progressively be made mandatory for other market participants and products.

New instruments for national macroprudential oversight

The institutional framework for macroprudential oversight underwent improvement in 2013.[12] In Germany, the Act on Monitoring Financial Stability (*Gesetz zur Überwachung der Finanzstabilität*) entered into force at the beginning of the year. The act centres around the Financial Stability Committee, which is now operational.

The European Capital Requirements Directive and Regulation establish the legal basis for a series of new macroprudential instruments for the banking sector, which will be available in the years to come. These include the countercyclical capital buffer, the systemic risk buffer and the macroprudential increase in sector risk weights. It is hoped that these instruments will allow dangers to financial stability to be countered at the national level. However, there is little experience with the application of these new instruments. The Bundesbank – like other central banks and supervisory authorities in

11 The chapter entitled "Over-the-counter derivatives markets: mitigating systemic risk" describes the progress made by regulation, as well as outlining new challenges.
12 The chapter entitled "Macroprudential policy in Germany takes shape" presents the new macroprudential instruments and reports on changes to the institutional framework and the cooperation between the national and European levels in macroprudential oversight.

Europe – is working on establishing the foundations for the practical application of these instruments.

The implementation of the national macroprudential mandate requires an appropriate strategy. With this aim in mind, the European Systemic Risk Board (ESRB) has issued a recommendation to EU member states and their macroprudential authorities on intermediate objectives and instruments of macroprudential policy. In Germany, the Financial Stability Committee has a key role to play in implementing this recommendation.

European debt crisis remains a threat to financial stability

High levels of public and private sector debt in a number of euro-area countries continue to pose a high risk to financial stability. Close financial interlinkages across Europe mean that the German financial system remains exposed to substantial default and contagion risk.

Reforms in the countries most affected by the crisis, the deployment of international rescue mechanisms and their institutionalisation, as well as the non-standard measures taken by the Eurosystem have curbed acute systemic risk, and there have been some early signs of success. Debt is gradually on the wane in the non-financial private sector, exports are on the increase, and banks have been restructured and recapitalised. The easing of tensions on the European financial markets has already anticipated further fundamental economic adjustments, however. There is still a pressing need for consolidation, and government debt ratios remain on an upward trajectory. Added to this, there is a danger of a growing mismatch between liability and control in the fiscal framework of monetary union. Public finances remain a key area of weakness.

The "doom loop", meaning the interconnectedness between governments and domestic banks, has tightened again in some countries. To mitigate the associated risks, the preferential regulatory treatment afforded to banks' sovereign exposures needs to be phased out over a medium-term horizon. A single supervisory mechanism and a common regime for the recovery and resolution of banks are designed to help shield public finances from adverse developments at banks in the future. But they cannot resolve the ongoing debt crisis, nor can they take the place of the reform and consolidation course that needs to be followed by all the participating countries.

European debt crisis still not overcome

The European debt crisis has held sway over financial system stability in Germany for more than four years now. It remains a major threat on account of the close interlinkages across the European financial system and between the government and banking sectors.

Tension on the European financial markets has been waning since summer 2012 (see Chart 2.1) on the back of discernible progress in reforming the countries affected by the debt crisis, the institutionalisation of rescue mechanisms and the non-standard measures on the part of the Eurosystem. However, the easing of tensions on the European financial markets has already anticipated further fundamental economic adjustments. The debt crisis is not yet over, which is why the course of reform and consolidation must be continued. Any delay might raise fresh doubts over the ability to keep systemic risk in check. Ties between the government and banking sectors also need to be loosened so that adverse developments afflicting one sector are less likely to spill over into the other in the future.

The easing of tensions on the European financial markets has already anticipated further fundamental economic adjustments.

From direct stabilisation to mitigating contagion channels

The process of combating the debt crisis can be broken down into three distinct phases. The first centred around directly stabilising the countries affected by the crisis by providing them with external public sector financial assistance. In the second phase, the objective of having the private sector contribute to the stabilisation efforts was more clearly apparent. And the third phase, which is now under way, is designed to enhance the structural resilience of financial stability to offer a hedge against the risk posed by excessive public and private sector indebtedness.

When the crisis broke out, it came to light that the institutional architecture of the Maastricht Treaty contained no specific rules for cases of systemic financial crisis. Yet it was non-compliance with key Maastricht Treaty rules – on the part of a number of countries, at least – which ignited the debt crisis in the first place.

In the absence of Community provisions, the first Greek adjustment programme in May 2010 was supported by bilateral loans from euro-area partner countries. The loans granted in support of the programmes for Ireland and Portugal and the second adjustment programme for Greece, by contrast, were funded by the European Financial Stability Facility (EFSF), a temporary rescue mechanism created by the euro-area countries in June 2010. At the EU level, another facility established in 2010, the European Financial Stabilisation Mechanism (EFSM), contributed to funding the programmes for Ireland and Portugal. The European Stability Mechanism (ESM) has been operating as the euro area's permanent rescue mechanism since October 2012. Equipped with a total lending capacity of €500 billion, the ESM funds the financial sector reform programme agreed with Spain as well as the Cypriot adjustment programme. With the exception of the Spanish financial sector reform package, programmes are co-financed by the International Monetary Fund (IMF).

The international rescue measures have seen market and credit risk shifted from the private to the public sector on a scale that differs from one country to the next but is nonetheless considerable. This shift was particularly substantial in the case of Greece,

where privately held debt instruments were restructured. In mid-2013, euro-area member countries, the EFSF, the IMF and the Eurosystem central banks held just over 80% of Greek sovereign debt. As far as the Eurosystem is concerned, purchasing government bonds and increasingly blurring the boundaries between monetary and fiscal policy tasks are matters which should be viewed in a critical light.[1]

Bailing private creditors into the cost of restoring financial stability is crucial for maintaining the connection between earnings potential and the risk of loss, in accordance with key market economy principles. The haircut taken by Greece's private creditors in early 2012, the debt buyback operation at the end of that year and the extensive participation of large depositors in the restructuring of two large Cypriot banks in mid-2013 were qualitative milestones on this path.

Bailing private creditors into the cost of restoring financial stability is crucial for maintaining the connection between earnings potential and the risk of loss.

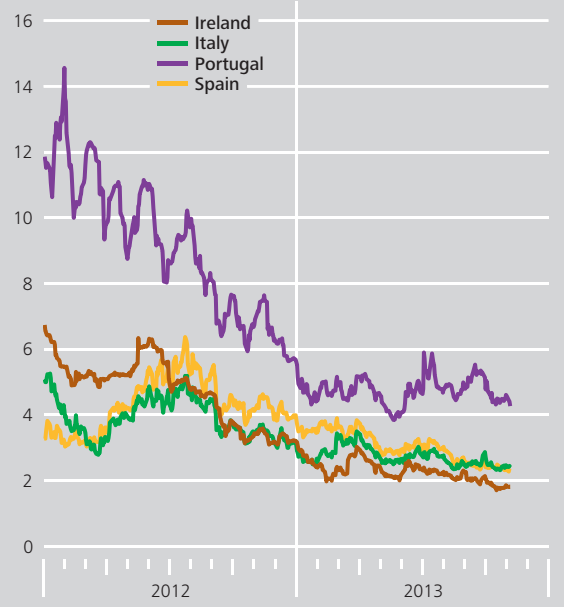
At the present time, acute measures aimed at resolving the crisis are being flanked by key adjustments to the institutional framework of European Monetary Union.[2] In November 2014, the European Central Bank (ECB) is scheduled to assume responsibility for directly supervising "significant" banks in the euro area.[3] One of the ideas behind this single supervisory mechanism (SSM) is to reduce the threat of problems facing banks spilling over into public finances. The SSM will need to tackle inappropriate build-ups of risk at major individual banks or in national banking sectors early on if it is to prevent critical situations from placing substantial pressure on the public sector.

In much the same way, the risk of unsustainable public finances impairing financial stability also needs to be curtailed. As things stand, this contagion risk is being amplified by the preferential regulatory treatment afforded to banks' sovereign exposures, a matter which needs to be phased out over a medium-term horizon. Claims on governments, too, need to be subject to limits on concentration risk. It would also make sense for sovereign exposures to be backed with capital in line with their riskiness. Besides enhancing financial stability, this could also boost the supply of credit to the private sector because this type of lending would become more attractive in relative terms.

Preferential regulatory treatment afforded to banks' sovereign exposures needs to be phased out over a medium-term horizon.

Yield spreads between selected government bonds and Federal bonds* Chart 2.1

Percentage points, daily data

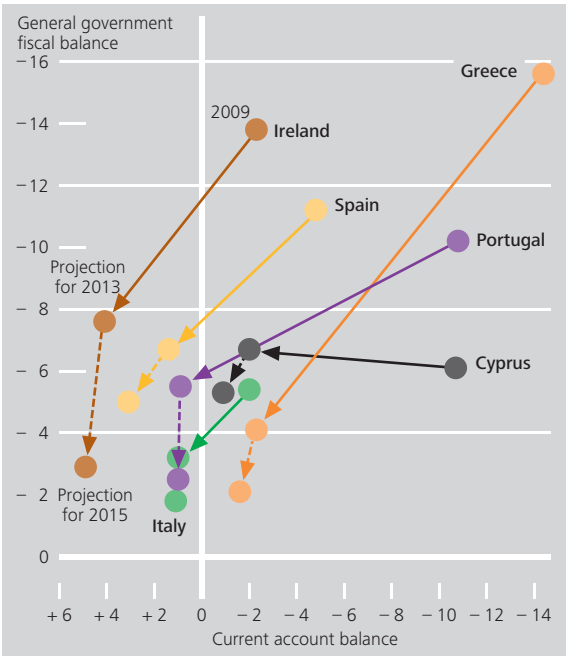


Source: Thomson Reuters. * With a ten-year residual maturity.
Deutsche Bundesbank

1 See J Weidmann (2013).
2 See Deutsche Bundesbank (2013a), pp 13-31.
3 See Deutsche Bundesbank (2013a), p 17.

Adjusting the twin deficits Chart 2.2

As a percentage of GDP



Sources: European Commission and IMF.
Deutsche Bundesbank

Persistent macrofinancial weaknesses

High levels of public or private borrowing combined with current account deficits have driven net external debt levels markedly higher in a host of euro-area countries. The resulting burden on these countries' creditworthiness was inadequately captured by risk premiums on the international financial markets when monetary union was still in its infancy.

The onset of the debt crisis made it plain to see that macroeconomic imbalances needed to be diminished. While some success is evident, the rate of progress differs from country to country and in terms of the macrofinancial weaknesses in question.

Current accounts improving – external debt still high

Current account deficits in the four programme countries (Cyprus, Greece, Ireland and Portugal)[4] and in Italy and Spain have contracted sharply since 2009 (see Chart 2.2), shrinking their net external funding needs. Projections by the European Commission indicate that Ireland and Portugal, and Italy and Spain, will run current account surpluses in 2013. Conditions in these countries have improved largely on the back of stronger exports. In Ireland at least, this is probably already being driven by a sustainable adjustment process, which has boosted the country's price competitiveness.

Notwithstanding the improved current account position, these countries, with the exception of Italy, are still suffering from high levels of net external liabilities, however. In mid-2013 net external liabilities stood at roughly 94% of gross domestic product (GDP) in Spain and were even well above 100% of GDP in Cyprus, Greece, Ireland and Portugal (see Table 2.1). High levels of external liabilities make these countries susceptible to a loss of confidence among international investors.

High levels of external liabilities make countries susceptible to a loss of confidence among international investors.

Government debt: turnaround not assured

Greece, Ireland and Portugal, and Italy and Spain, too, have made impressive progress in reducing their general government deficits despite the unfavourable macroeconomic setting over the past four years.

4 The euro-area countries that were granted international financial assistance subject to implementation of an adjustment programme.

Macrofinancial indicators

Table 2.1

Projections for 2013 as a percentage of GDP and change compared with 2009 in percentage points

Country/ group of countries	General government budget balance	Change	General government primary balance	Change	Gross general government debt	Change	Net external liabilities[1]	Change	Interest payments on general government debt	Change	Current account balance	Change	*Memo item* (Real) GDP growth, year-on-year percentage change	Change
USA	− 5.8	+ 7.2	− 3.6	+ 7.6	106.0	+ 19.7	26.9	+ 11.1	3.9	+ 0.1	− 2.6	+ 0.0	1.6	+ 4.4
Japan	− 9.5	+ 0.9	− 8.8	+ 1.1	243.5	+ 33.3	− 63.0	− 6.3	2.0	+ 0.0	1.2	− 1.7	2.1	+ 7.6
Euro area	− 3.1	+ 3.3	− 0.4	+ 3.5	95.5	+ 15.6	13.7	− 3.0	3.0	+ 0.1	2.7	+ 2.6	− 0.4	+ 4.1
Greece	− 4.1	+ 11.5	.	.	176.2	+ 46.5	113.7	+ 24.1	4.1	− 1.1	− 2.3	+ 12.1	− 4.0	− 0.9
Ireland	− 7.6	+ 6.2	− 3.3	+ 9.0	124.4	+ 60.0	108.7	+ 16.3	4.6	+ 2.6	4.1	+ 6.4	0.3	+ 6.7
Italy	− 3.2	+ 2.2	2.0	+ 3.0	133.0	+ 16.6	27.8	+ 2.5	5.4	+ 0.7	1.0	+ 3.0	− 1.8	+ 3.7
Portugal	− 5.5	+ 4.7	− 1.4	+ 6.1	127.8	+ 44.1	118.2	+ 7.9	4.3	+ 1.5	0.9	+ 11.7	− 1.8	+ 1.1
Spain	− 6.7	+ 4.5	− 3.7	+ 6.2	94.8	+ 40.8	93.6	− 0.2	3.4	+ 1.6	1.4	+ 6.2	− 1.3	+ 2.5
Cyprus	− 6.7	− 0.5	.	.	116.0	+ 57.5	105.3	+ 74.9	4.1	+ 1.5	− 2.0	+ 8.7	− 8.7	− 6.8

Sources: Bank of Japan, European Commission, Eurostat, ECB, Haver Analytics, IMF, US Bureau of Economic Analysis and Bundesbank calculations.
1 Actual data as at 2013 Q2 and change compared with 2009 Q4.

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Yet none of these countries is projected to achieve a general government deficit of less than 3% in 2013 (see Table 2.1). All the countries in question, apart from Italy, are still undergoing excessive deficit procedures.

Although corrective measures have been rolled out, general government debt levels have spiked sharply higher in some cases, both in absolute terms and relative to GDP. Besides the current deficits, this owed something to the mammoth cost of restructuring some countries' national banking systems and weak nominal GDP growth.[5] In Greece, the haircut on privately held debt and the debt buyback operation ultimately only prevented government debt dynamics from escalating further.

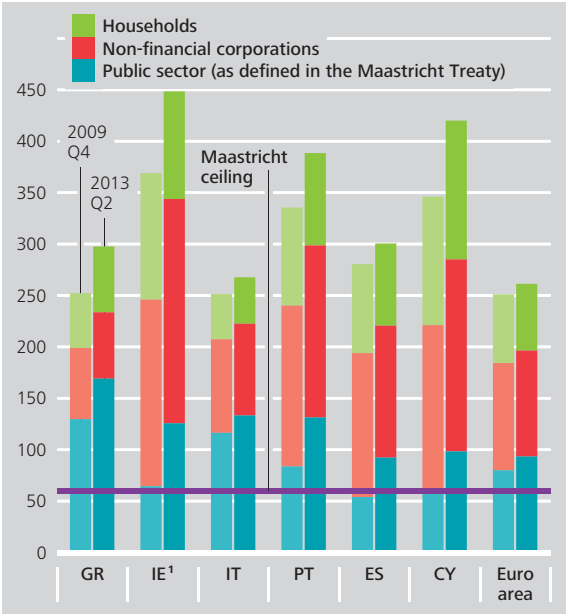
Government debt remains a key vulnerability as it gives rise to substantial refinancing needs. IMF estimates for 2014 suggest that Italy will tap the financial markets for roughly 28% of GDP, and Spain for just under 21%,[6] potentially exposing these countries to liquidity and interest rate risks. While it is true that the current financing conditions are by no means unfavourable,[7] higher interest rates would nonetheless tend to weigh on public finances and sway market opinions on debt sustainability. Besides factors specific to individual countries, cross-border spillovers also have an impact on yields. For instance, if one country's sovereign debt issues are poorly received by the markets, this tends to heighten general risk perceptions and feed through to the bond markets of other financially vulnerable countries. It

Government debt remains a key vulnerability.

5 See Eurostat (2013).
6 See International Monetary Fund (2013a), p 15.
7 See Deutsche Bundesbank (2013b), pp 59-64.

Public and private sector debt Chart 2.3

As a percentage of GDP



Sources: Eurostat and ECB. **1** The respective share for non-financial corporations is largely determined by the funding activities of large international enterprises.

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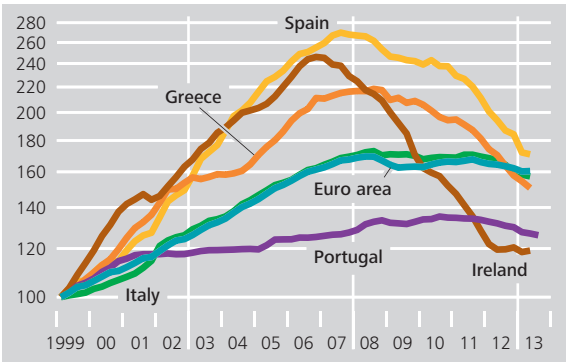
Residential property prices* Chart 2.4

1999 Q1 = 100, quarterly data, log scale



Sources: ECB and Bundesbank calculations. * Residential property price indices. Based on non-harmonised national data.

Deutsche Bundesbank

should be noted that Ireland and Portugal are planning to return to the capital markets for good when their adjustment programmes are completed (at the end of 2013 and in mid-2014 respectively).

Private sector beginning to scale back debt

Debt-related problems are also affecting some countries' non-financial private sectors (see Chart 2.3). Cyprus, Ireland and Portugal in particular are still facing high levels of household and corporate debt.[8] The same can be said for corporate indebtedness in Spain, although enterprises there have been deleveraging sharply since the end of 2010, probably on the back of the adjustment process in the construction industry.[9]

Households have scaled back their liabilities not just in Spain but also in Portugal and notably so in Ireland, thereby mitigating their financial vulnerabilities. The financial situation of households in these countries is being eased further still by the fact that interest rates on longer-term loans are often variable and linked to short-term rates. The prevailing low-interest-rate environment has reduced the cost of servicing debt accordingly. Viewed from the other perspective, however, this factor is one source of the earnings problems facing lending banks.

Progress in housing market corrections

The debt-related problems weighing on households and parts of the corporate sector, especially in Ireland and Spain, are closely linked to the excesses seen in the housing markets (see Chart 2.4). The adjustment process has progressed in both countries, albeit at a differing pace.

Ireland appears to be bottoming out or even emerging from a cyclical low, after housing prices contracted by around 50% between their peak in 2006 and 2012. In Spain, meanwhile, the downturn might well continue. On balance, countries in which

8 See Deutsche Bundesbank (2013a), pp 47-63.
9 See M Goretti and M Souto (2013) for the causes and effects of the debt overhang at non-financial corporations from a macroprudential perspective.

exaggerations were also evident in housing construction are experiencing particularly arduous and painful adjustment processes owing to an oversupply of housing. Residential construction investment as a proportion of GDP is an indicator that might point to possible exaggerations in the real economy. In the years running up to the crisis, Ireland and Spain, and Greece, too, saw a protracted housing construction boom which peaked in 2006 with residential construction investment accounting for 14.0% of GDP in Ireland and 12.5% in Spain, as compared with a euro-area average of 6.8%. The adjustment process in the real economy now appears to have been completed in Ireland at least, as residential construction investment now only accounts for a very small share of GDP.

Countries in which exaggerations were also evident in housing construction are experiencing particularly arduous and painful adjustment processes.

Banks undergoing restructuring

The "doom loop" has caused banking sector problems to feed through to the public sector, notably in Cyprus, Ireland and Spain. Putting an end to the debt crisis is conditional on cleaning up bank balance sheets.

Putting an end to the debt crisis is conditional on cleaning up bank balance sheets.

In Ireland and Spain, large quantities of property-related non-performing loans have now been offloaded to national resolution agencies, while banks have been restructured and recapitalised. The banking landscape in both countries is undergoing fundamental transformation.

Yet the consolidation of the banking sector remains unfinished business (see Table 2.2). It is a process which is still in its infancy in Cyprus, and no problem assets have been offloaded so far in Greece. The high volume of non-performing loans as a share of total lending (roughly 28%) indicates that action needs to be taken. Ireland's banks, too, are still facing major challenges, even though the restructuring measures have been painful and total banking sector assets have been scaled back by more than 40%. Non-performing loans account for almost 22% of total lending in Ireland.

Non-performing loans are still climbing in the four programme countries and in Spain and Italy, and have reached historical highs in some cases. The recession will continue to have an adverse effect on the quality of bank assets in these countries for the foreseeable future. Yet provisions have not been stepped up to take account of this outlook, driving up uncovered problem loans as a percentage of capital. Added to this, banking sectors have been running losses until recently in most of the countries hit by the crisis.

One generally positive aspect is that banks in Ireland, Italy and Portugal have been improving their capital ratios since 2009. Taken in isolation, this reduces the likelihood of further government support measures being needed. Capital quality has also improved, with tier 1 capital rising by a disproportionately large margin.

Trust not fully entrenched

Since the debt crisis unfolded, the countries affected have taken key steps towards consolidating their public finances. They have also tackled problems in the banking sector and got to grips with structural reforms in the labour, goods and services markets and in public administration. However, the positive impact of these measures will only have a

Solvency indicators for banks in selected euro-area countries*

Table 2.2

End-of-period data[1] and change compared with 2009 Q4 in percentage points

Country	Regulatory capital to risk-weighted assets	Change	Regulatory tier 1 capital to risk-weighted assets	Change	Non-performing loans net of provisions to capital	Change	Non-performing loans to total gross loans	Change	Interest margin to gross income	Change	Return on equity (% pa)	Change
Greece	10.7	– 1.0	10.5	– 0.7	156.0	+ 122.9	27.9	+ 21.0	73.1	– 0.2	.	.
Ireland	19.2	+ 6.5	16.7	+ 6.9	73.2	+ 0.6	21.7	+ 11.9	68.9	+ 8.8	– 12.4	+ 23.4
Italy	13.3	+ 1.7	10.4	+ 2.1	73.7	+ 18.8	12.9	+ 3.5	54.6	– 6.2	1.0	– 3.0
Portugal	13.0	+ 2.5	11.7	+ 3.8	40.1	+ 21.1	10.4	+ 5.6	41.7	– 12.1	– 3.7	– 11.0
Spain	11.4	– 0.8	9.8	+ 0.4	27.6	+ 9.9	7.6	+ 3.5	67.2	+ 1.9	– 22.2	– 31.3
Cyprus	7.8	– 4.4	6.8	– 2.8	181.6	+ 158.1	18.1	+ 13.6	82.5	+ 16.4	– 64.5	– 78.5

Sources: IMF and Bundesbank calculations. * IMF Financial Soundness Indicators. Comparability of some data is limited owing to differences in national definitions and rules and to statistical breaks within the countries' time series. 1 Greece and Portugal 2013 Q1; Ireland, Spain and Cyprus 2012 Q4; Italy 2012 Q2.

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bearing on the macroeconomic data with a time lag that is very difficult to gauge. International rescue measures can only buy time for reforms and serve as catalysts for the adjustments that each country affected by the crisis will need to make.

Only by pressing ahead with structural reforms and by establishing and shoring up sound public finances will it be possible to put an end to the debt crisis. Creating competitive economic structures and robust public finances is crucial for regaining the trust of market participants and the general public on a lasting basis. The current improvement in financial market confidence is still quite fragile, and crises of confidence can spread swiftly. The spike in Portuguese government bond yields in response to a government crisis in July 2013 amply demonstrates just how susceptible market confidence is to political risk in the countries affected by the debt crisis.

The current improvement in financial market confidence is still quite fragile, and crises of confidence can spread swiftly.

Financial contagion channels dictate systemic risk

Excessive debt can pose a threat to financial stability on account of the existence of a host of contagion channels which amplify and spread critical developments. The ties between governments on the one hand and domestic and foreign banks on the other play a special role in this respect.

Tighter "doom loop" between governments and banks in some cases

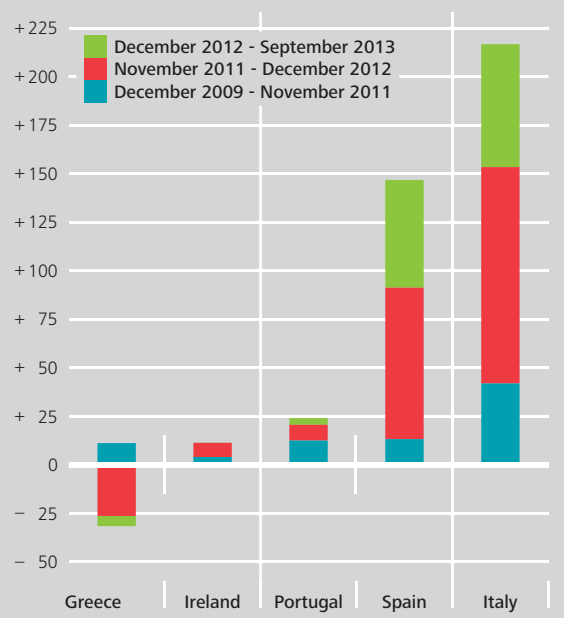
There are multiple balance sheet and off-balance-sheet contagion channels connecting governments and banks with one another. In the course of the crisis, these sometimes triggered severe feedback effects. Sovereign funding costs can feed through to the banks domiciled there through a host of channels. For instance, a sovereign downgrade can diminish the quality and value of banks' holdings of domestic government bonds and have a knock-on effect on their eligibility as collateral when it comes to obtaining funding. This situation can be compounded by possible valuation losses in banks' trading books. After all, institutions which are highly exposed to the government sector can come under pressure if the financial markets lose confidence. Nevertheless, financial institutions in Italy and Spain and in the programme countries of Ireland and Portugal have stepped up their holdings of bonds issued by domestic general government since the end of 2009 (see Chart 2.5). Four years into the debt crisis, ties between governments and banks thus remain firmly in place and, if anything, are now even stronger still.

Italy and Spain, for instance, saw substantial net government bond purchases by domestic banks, particularly after the Eurosystem conducted its two three-year tenders at the end of 2011 and in early 2012, and also in the first half of 2013. At the end of September 2013, bond exposures to general government stood at roughly 10% of the aggregate total assets of the domestic banking sector in Italy, and at roughly 9% in Spain, well up on the euro-area average of 5%. What is more, banks with a weaker capital base, which are more dependent than most on capital market funding, appear to have shown a keen interest in government bonds.[10]

These substantial net purchases may well have brought a brief spell of calm to the respective government bond markets, but these banks' destiny is now tied up, more than ever, with that of their domestic government.

Securities of domestic public issuers held by monetary financial institutions* Chart 2.5

Changes in € billion



Sources: ECB and Bundesbank calculations. * Excluding central banks.
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Bail-ins appear to have limited contagion effects

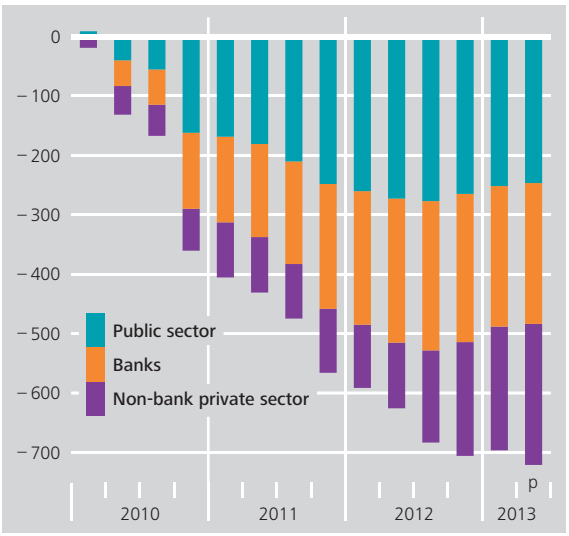
In the first phase of the debt crisis, government bail-outs were the predominant form of assistance for ailing banks. Bail-outs were thought to be necessary to curb the risk of problems spilling over to other credit institutions. However, they sometimes came at a considerable cost to the public sector. In addition, banks are also encouraged to take on more risk where it is detached from the attendant liability, meaning that earnings potential is not sufficiently connected to the risk of loss.

10 See V V Acharya and S Steffen (2013). For Germany, see also C Buch, M Koetter and J Ohls (2013).

Cross-border claims of euro-area banks on programme countries and on Italy and Spain*

Chart 2.6

Cumulative change against 2009 Q4 in € billion



Sources: BIS and Bundesbank calculations. * Programme countries: Cyprus, Greece, Ireland and Portugal. Based on the consolidated banking statistics (including foreign branches and subsidiaries) of the countries that report to the BIS.

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The fundamental market economy principle that liability and control need to be two sides of the same coin would speak in favour of easing the burden on the public sector by bailing private creditors into efforts to stabilise banks. As the crisis was being tackled, it also emerged that neither bailing in junior bond holders in Spain nor involving large depositors in substantial losses as part of the restructuring of Cyprus's two large banks had triggered significant contagion effects affecting other banking systems. Above all, there had been no notable deposit withdrawals from other countries' banking sectors. In the case of Cyprus, however, the restructuring is being flanked by capital controls.

Unique though the case of Cyprus may have been, past experience with such bail-ins suggests that the contagion risk for other banking sectors can be kept in check. Bearing this in mind, bailing in creditors is a viable and appropriate option for making bank rescues less costly for the taxpayer, thereby reducing the extent to which imbalances in the banking sector can feed through to the government sector.[11] The Directive establishing a framework for the recovery and resolution of financial institutions,[12] which is scheduled to be finalised at the end of 2013, includes and codifies a substantial degree of creditor involvement, marking a major step towards creating a robust legal framework within the EU.

Bailing in creditors is a viable and appropriate option for making bank rescues less costly for the taxpayer.

Financial interlinkages in the euro area diminished but remain substantial

Between the end of 2009 and the end of 2012, international banks shrank their cross-border exposures to the countries affected by the debt crisis by €834 billion.[13] The lion's share (€705 billion) was accounted for by euro-area banks (see Chart 2.6), whose claims on the public sector contracted by €265 billion, with €149 billion of this figure being exposures to the Italian public sector. Loans to banks in the four programme countries and in Italy and Spain tapered off by €249 billion, with exposures to Spanish institutions alone accounting for €130 billion of this figure. And claims on the non-financial private sector had diminished by €192 billion by the end of 2012, predominantly in Ireland (€65 billion) and Spain (€58 billion). In light of these significant capital movements, some argue that the European financial system is experiencing a process of renationalisation or fragmentation.[14] With inter-

11 See H-J Dübel (2013).
12 Bank Recovery and Resolution Directive (BRRD).
13 Based on the consolidated banking statistics (including foreign branches and subsidiaries) of the countries that report to the Bank for International Settlements (BIS); exposures to Cyprus, Greece, Ireland, Italy, Portugal and Spain.
14 See International Monetary Fund (2013b).

national banks scaling back their exposures, the ensuing gap was largely filled by funds provided by public sector creditors, including the non-standard measures taken by the Eurosystem as well as bilateral loans extended by European partner countries, the European rescue mechanisms (EFSF, EFSM and ESM) and by the IMF.

Capital withdrawals by the private sector were preceded, in the years leading up to the debt crisis, by a sharp upturn in capital interlinkages. While this was theoretically a welcome sign of closer financial market integration within the monetary union, the resulting harmonisation of risk premiums across the euro area hinted at exaggerations as part of this process. Added to this, the capital inflows may have obscured the need for structural reform. The unfolding debt crisis brought these issues back to the attention of market participants, so that the reduction of exposures is probably also indicative of a process of normalisation, regardless of any efforts to mitigate risk in the short term.

Financial sector interlinkages appear to be stabilising as a result of the easing tensions on the European financial markets, suggesting that a degree of confidence, albeit still fragile, has been restored. In mid-2013, euro-area bank exposures to debtors in the four programme countries and in Italy and Spain amounted to €933 billion (see Table 2.3), or two-thirds of the corresponding figure for international banks (roughly €1.4 trillion).

All in all, therefore, the degree of intra-financial sector integration in the euro area might have reached a new plateau. It is particularly noteworthy that claims on the non-financial private sector account for the majority of exposures. However, achieving a sustainable balance will be conditional on scaling back the non-standard measures taken by central banks sometime in the future.

Cross-border claims of euro-area banks on selected euro-area countries*

Table 2.3

€ billion, as at 2013 Q2 (provisional values)

	Borrowers			
Country	Public sector	Banks	Non-bank private sector	Total
Greece	0.7	4.4	7.4	12.6
Ireland	5.9	25.9	94.3	127.7
Italy	123.6	54.6	247.6	426.7
Portugal	14.7	10.3	62.6	87.6
Spain	40.7	72.0	145.8	259.9
Cyprus[1]	1.0	0.1	17.8	18.9
Total[1]	186.6	167.3	575.5	933.4

Sources: BIS and Bundesbank calculations. * Based on the consolidated banking statistics (including foreign branches and subsidiaries) of the countries that report to the BIS. **1** Owing to data gaps, sector data for Cyprus and total sector data have been estimated.

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German banks and insurers with substantial exposures

German banks, after their French counterparts, are the second-largest group of creditors to debtors in the four programme countries and in Spain and Italy. They have diminished their claims to a significant degree without generally turning their back on their internationally oriented business (see Table 2.4).[15] Between the end of 2009 and mid-2013, balance sheet loans receded by €198 billion to €234 billion. The reduction in exposures to the Italian government and Spanish banks is striking. Nonetheless, claims on debtors in Italy, at €96 billion, and in Spain, at €82 billion, still make up the bulk of the exposures. The four programme countries account for a total of €56 billion, meanwhile.

15 See Deutsche Bundesbank (2012), pp 31-40.

Balance sheet exposure of German banks* to selected euro-area countries Table 2.4

€ billion, as at 2013 Q2 and change compared with 2009 Q4

Country	Borrowers									
	Government sector		Banks and money market funds		Other financial sector		Households and (non-financial) corporations		Total	
		Change		Change		Change		Change		Change
Greece	0.0	– 20.1	0.2	– 1.2	0.1	– 0.9	9.0	– 1.8	9.3	– 24.0
Ireland	4.9	+ 2.7	1.3	– 15.8	15.8	– 24.7	5.3	– 0.7	27.3	– 38.5
Italy	36.6	– 30.9	40.1	– 18.4	5.1	– 3.8	14.6	– 1.7	96.3	– 54.8
Portugal	4.2	– 3.4	2.1	– 9.2	0.6	– 0.5	5.4	– 2.2	12.3	– 15.3
Spain	17.1	– 7.5	30.3	– 30.2	12.4	– 17.8	21.9	– 8.2	81.8	– 63.7
Cyprus	0.1	– 0.4	0.0	– 0.6	0.2	+ 0.0	6.7	– 0.3	7.1	– 1.3
Total	62.8	– 59.6	74.0	– 75.4	34.2	– 47.6	63.0	– 15.0	234.0	– 197.6

Source: Bundesbank's credit register of loans of €1.5 million or more. * Consolidated banking groups whose headquarters are domiciled in Germany; figures for Greece exclude KfW loans guaranteed by the German government.

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No comparable historical data are available for the investments of German insurance groups in the four programme countries and in Italy and Spain. Unlike banks, insurers have slightly stepped up their investments of late, with surveys suggesting an aggregate of €137 billion in mid-2013. Yet much like banks, insurers have invested predominantly in Italy and Spain, at a combined €112 billion.

As hitherto, an escalation of the debt crisis would expose the German financial system to substantial default and contagion risk.

As hitherto, an escalation of the debt crisis would thus expose the German financial system to substantial default and contagion risk. This makes it all the more important to swiftly press ahead with reforms aimed at mitigating these risks at both the national and European level.

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Global liquidity: vulnerabilities emerging from increased risk-taking

In the run-up to the financial crisis, the ample supply of liquidity contributed to excessive risk-taking in the international financial system. During the financial and debt crisis, the generous provision of liquidity by major central banks helped to stabilise the financial system. Five years on from the collapse of the US investment bank Lehman Brothers, analysts are increasingly asking to what extent the prolonged period of low interest rates and the ample supply of central bank liquidity are also amplifying financial stability risks. For instance, there is a danger of market participants taking the current exceptional financial conditions for granted in the future.

The search for yield is especially prevalent in the corporate bond and syndicated loan markets, which are characterised by high issuance volumes, easy access, even for enterprises with a lower credit rating, low risk premiums and favourable non-price conditions. German insurers' holdings of corporate bonds have increased sharply in recent years. Financial markets in emerging market economies are also affected by increased risk-taking. Countries that have large current account deficits and high levels of external debt are vulnerable to a reversal of capital flows. In spite of the incentives that exist, there has so far been virtually no sign of a pronounced search for yield among German banks.

With regard to interest rate risks, Germany's close ties to the capital market rates in the United States must be taken into account. When interest rates rise, there is a risk of significant market value losses, and banks in particular must be prepared for this eventuality. German insurers would benefit from higher capital market rates.

Increased signs of search for yield

The low interest rates and generous provision of liquidity are a calculated response to the financial crisis on the part of the major central banks, with the goal of countering the feared downside risks to price stability and supporting the functioning of the financial system. The expansion of central banks' balance sheets has resulted in a significant increase in central bank liquidity (see Chart 3.1). However, in contrast to the situation prior to the outbreak of the financial crisis in 2007, the supply of endogenous liquidity created by private market participants is developing at a subdued pace. Indicators such as cross-border lending or financial intermediaries' access to non-core liquidity – both important leading indicators in this financial crisis – are not yet pointing to new vulnerabilities (see Chart 3.2).[1] This is due not least to credit creation in the commercial banking sector still being sluggish. In particular, major banks with an international focus are, to a large extent, still adjusting their balance sheets. However, it is likely that many market participants' propensity for and ability to take on risk in the international financial system will gradually rise again. For example, there are first signs that hedge funds have increased their leverage via investment banks' prime brokerage activities.[2]

Growing danger of mispricing and imbalances

An expansionary monetary policy stance is currently appropriate in Europe given the subdued outlook for inflation and the fragile real economic environment. However, five years on from the collapse of the US investment bank Lehman Brothers, analysts are increasingly asking to what extent the prolonged period of low interest rates and the ample supply of central bank liquidity are also amplifying financial stability risks. In particular, there is a danger of market participants taking the current exceptional financial conditions for granted in the future. The longer the low-interest-rate environment persists, the more it can take root as the supposed new norm. This could result in risks being underestimated and capital being misallocated. Individual market segments might overheat. This increases the potential for a severe correction, once it becomes evident that valuation levels are not in line with the fundamentals. An exit from the prolonged period of historically low interest rates could trigger or intensify such corrections, particularly if it occurs abruptly and on a massive scale due to market-driven amplification mechanisms.

Prolonged period of low interest rates and an ample supply of central bank liquidity also give rise to growing risks.

Against this background, developments on the corporate credit markets and in portfolio investment in emerging market economies are of particular interest from a financial stability perspective.

Search for yield leads to high valuations on corporate credit markets

The consequences of a search for yield are much in evidence on the corporate credit markets, which are characterised by high issuance volumes, easy access, even for enterprises with a lower credit rating, low risk premiums and favourable non-price conditions.

The strong demand from yield-seeking investors has meant that enterprises in industrial countries have

1 For information on the different concepts regarding the analysis of global liquidity, see Committee on the Global Financial System (2011), and S Chen, P Liu, A Maechler, C Marsh, S Saksonovs and H S Shin (2012).
2 See Senior Credit Officer Opinion Survey on Dealer Financing Terms (SCOOS) of the Federal Reserve and Survey on Credit Terms and Conditions in Euro-denominated Securities Financing and OTC Derivatives Markets (SESFOD) of the Eurosystem.

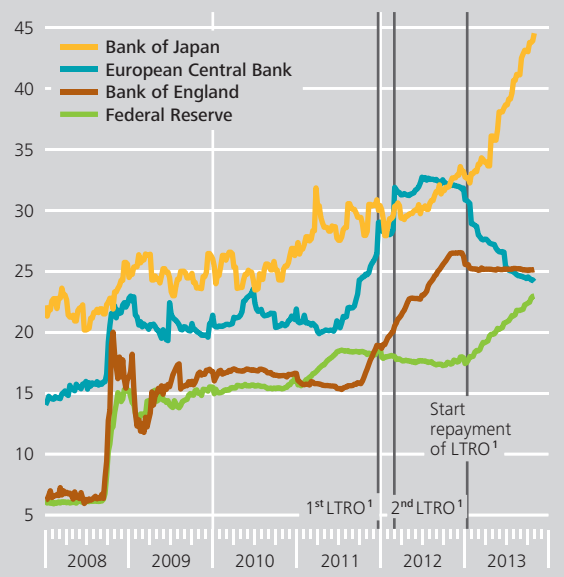
been able to issue bonds (see Chart 3.3) and receive syndicated loans on a large scale in recent years.[3] The boom is particularly pronounced in the United States, where the volumes of corporate bonds issued and syndicated loans granted reached new record highs last year and remain high this year, too. In the euro area as a whole, the figures for bond issuance and syndicated loans granted were also high in 2012. In Italy and Spain, enterprises were only able to issue higher volumes of bonds in the wake of a general easing in the markets during the second half of last year.

It is notable that enterprises with a low credit rating are also increasingly gaining access to the corporate credit markets. The percentage of newly issued non-investment-grade bonds has grown significantly. In the United States, it now stands at 30%, compared with a multi-year average of just over 20% prior to the financial crisis. In the euro area, it has risen from around 14% to over 20%. The share of syndicated loans with a BBB rating grade or below has expanded considerably both in the United States and in the euro area.[4]

Furthermore, above all in the United States, the volume of loans with looser investor protection clauses (known as covenant lite loans) has risen sharply.[5] While such loans were hardly ever granted during the crisis years 2008 and 2009, the volume for the first half of this year alone has already exceeded the record high posted for 2007. The euro area has also seen a significant rise in convenant lite loans, although overall growth has not been as strong as in the United States.

Central banks' balance sheets in relation to economic output Chart 3.1

Total assets as a percentage of GDP, weekly data



Sources: Bank of England, Bank of Japan, Eurostat, ECB, Federal Reserve and Bundesbank calculations. **1** Longer-term refinancing operations with a three-year maturity.

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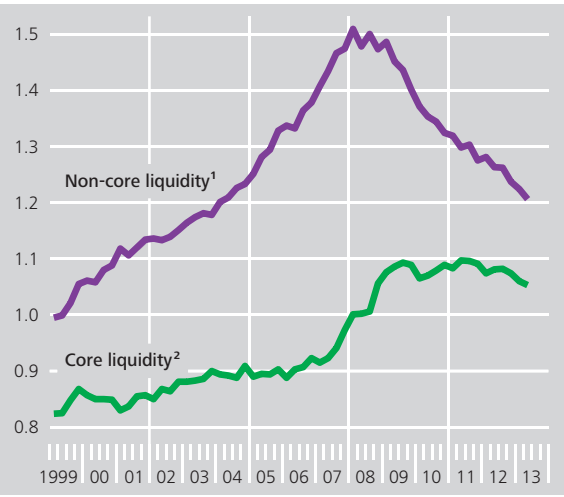
Components of funding liquidity* Chart 3.2

Liquidity categories as a percentage of aggregate GDP



Sources: Bloomberg, Haver Analytics and Bundesbank calculations based on S Chen et al, Exploring the Dynamics of Global Liquidity, IMF Working Paper WP/12/246, October 2012. * Aggregate funding liquidity of financial intermediaries in the euro area, Japan, the United States and the United Kingdom. **1** Includes forms of funding that are usually less stable during times of crisis, such as deposits of non-residents, interbank loans, debt securities and other funds borrowed in wholesale funding markets. **2** Primarily deposits of the domestic non-financial sector.

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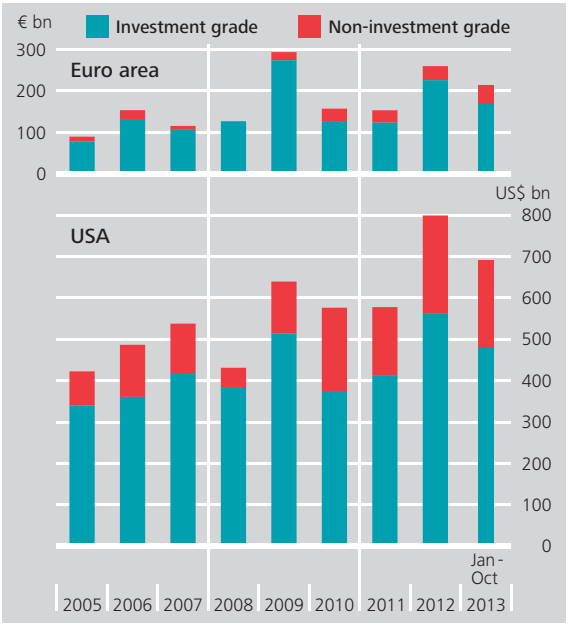
3 This is the case both in gross terms (as shown in Chart 3.3) and from a net perspective, ie after deducting bond repayments.
4 However, the decline in credit quality cannot be explained by the search for yield alone. Issuance volumes in the non-investment-grade segment have also increased because the credit ratings of many enterprises have been downgraded to below BBB in recent years (referred to as "fallen angels").
5 In response to this development, the supervisory authorities are calling for US financial institutions to improve risk management and reporting for syndicated loans with a low credit rating.

Gross bond issuance of non-financial corporations

Chart 3.3



Source: Dealogic.
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Investors' search for yield has in some cases caused valuations on the corporate bond markets to rise to a high level. In some market segments, risk premiums are significantly below the long-term average, but still above the level recorded between the end of 2003 and mid-2007, when there was an excessively sharp drop in premiums owing to an extremely high level of risk appetite (see Chart 3.4).

Valuations on the corporate bond markets have risen to a high level in some cases.

Measured in terms of key fundamental indicators, the risk premiums appear to be low in some cases. The implied default rates for the United States, Germany and France, which are derived from these premiums using a model,[6] are below the long-term average for default rates (see Chart 3.5). Although investors thus receive relatively little compensation for default risks, enterprises in the United States have been able to raise their leverage ratios in recent years. In some European countries, there has likewise been an increase in corporate leverage. In both Europe and the United States, bond investors also face higher risks as a result of enterprises' declining profitability and weaker sales growth. For example, the percentage of enterprises active on the capital market that recorded a loss grew last year. In a pessimistic scenario, rating agencies are forecasting a sharp rise in defaults for European enterprises (see Chart 3.5).

Tightening of external financing conditions in emerging market economies

The relatively strong growth in many emerging market economies has naturally drawn in international capital flows in recent years. The intensified search for yield due to historically low interest rates in industrial countries has reinforced this tendency. The search for yield has also promoted the trend of foreign capital being invested in locally issued emerging market bonds.[7]

Gross capital flows into G20 emerging market economies increased noticeably until the first quarter of

6 Implied default rates are calculated from the risk premiums using a model based on an average level of risk aversion for market participants and average liquidity risk premiums. According to the model assumptions, there is either a certain probability of the corporate bond defaulting during the residual maturity, in which case its value depends on the level of the assumed recovery rate, or there is the corresponding converse probability that it will not default and the coupons are paid to the investor in addition to the nominal value of the bond. Under the model assumptions, the implied default rates reflect the average default rates anticipated by market participants.

7 The volume of cross-border loans granted to borrowers in emerging market economies temporarily declined in some countries. It is likely that this is partly due to bank financing being replaced by bond financing. Overall, however, emerging market bonds still account for a small proportion of the global outstanding volume. According to the BIS debt securities statistics, the percentage of emerging market and developing country bonds among the bonds issued by banks and other financial corporations doubled to 2.8% in the second quarter of 2013 compared with the first quarter of 2005. For bonds issued by non-financial corporations, the figure rose from 9.8% to 17.4% during the same period.

2013 to a level above the peak recorded in the second quarter of 2007 (see Chart 3.6). In particular, portfolio investment, which is relatively volatile, and, lately, other investment increased sharply.

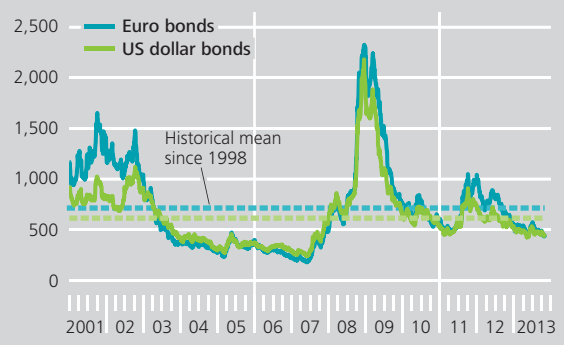
Capital flows are currently being influenced by possible changes in the international interest rate environment and a weakening of relative growth prospects in emerging market economies. In the summer of 2013, equity and foreign exchange market losses in emerging market economies provided a foretaste of the market movements that might occur in the event of a monetary policy reversal in the United States. Furthermore, between the end of May and mid-September 2013, withdrawals were made from emerging market equity and bond funds (see Chart 3.6).[8] These withdrawals correspond to 5.3% of the assets under management as at mid-September 2013. Attention must therefore be paid to the risk of a sudden stop of strong capital flows into emerging markets.

Countries that have large current account deficits and high levels of external debt are vulnerable to a reversal of capital flows.

Most emerging market economies could probably cope with a sudden stop. High foreign reserve assets – particularly compared with external liabilities – and current account surpluses mitigate the risks of short-term and volatile capital flows in many countries (see Table 3.1).[9] By contrast, countries that have large current account deficits and high levels of external debt are vulnerable to a reversal of capital flows.

Risk premiums on corporate bonds in the non-investment-grade segment Chart 3.4

Basis points, daily data



Source: Bloomberg (Bank of America/Merrill Lynch).
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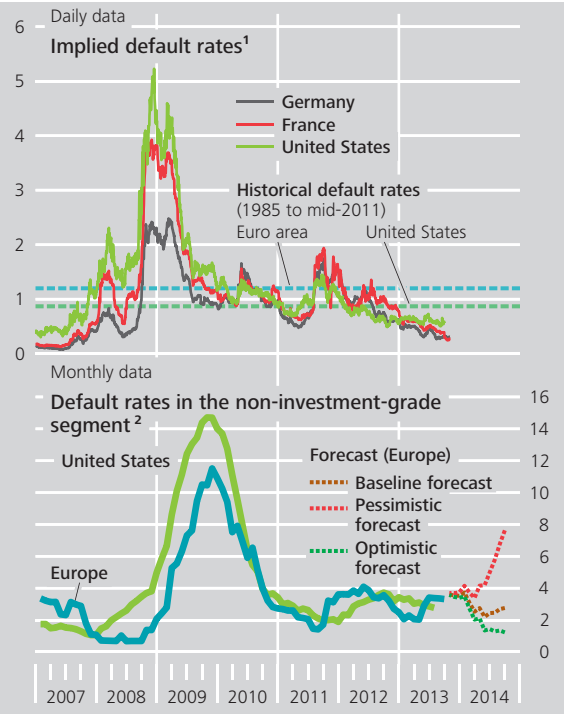
Default rates in the corporate sector Chart 3.5

%



Sources: Bloomberg, Moody's and Bundesbank calculations. **1** Derived from risk premiums. The calculations include assumptions for a recovery rate of 40% and for the degree of risk aversion of investors. The implied default rates of individual enterprises were weighted according to issuance volumes and aggregated at country level. Average rating of BBB+ for Germany, BBB for France and the euro area and A- for the United States. **2** Relates to bonds and loans and, in addition to insolvencies, encompasses inter alia delinquencies in connection with both interest and repayments. Moving average over the last 12 months.
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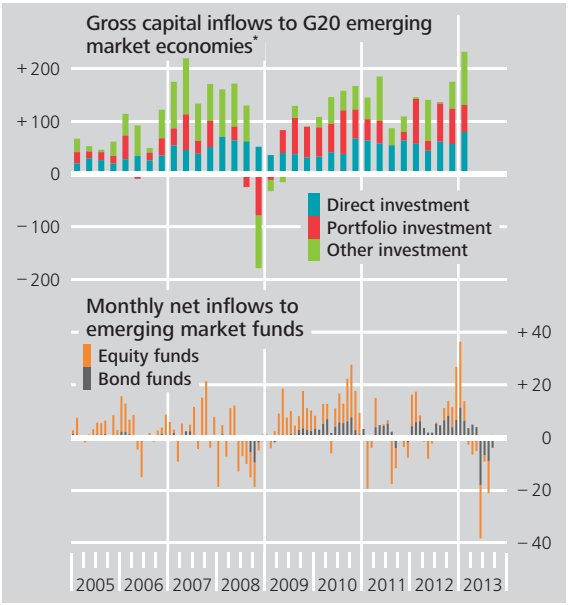
8 The official data on capital flows, based on the balance of payments statistics, are only available with a considerable time lag. Therefore, data collected from EPFR Global on net flows into emerging market equity and bond funds are included in the analyses as proxy data for the portfolio flows. See International Monetary Fund (2011), and J Miao and M Pant (2012).
9 In some countries, foreign exchange market interventions made in response to depreciations in recent months have since reduced the levels of foreign reserve assets.

Capital inflows to emerging market economies Chart 3.6

US$ billion



Sources: Haver Analytics (EPFR Global) and IMF. * Excluding China and Saudi Arabia.

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In particular, deficits financed with a high share of volatile portfolio investment make these countries vulnerable to swings in international investor sentiment. Economic policy shortcomings and political risks add to the vulnerability. Irrespective of this, even in emerging markets with sound fundamentals, the profitability of investments made in a low-interest-rate environment may be seen in a new light if external financing conditions worsen.

Be prepared for a rise in historically low interest rates

The recent rebound in capital market interest rates from a very low level, which began in the United States, has shown that greater attention needs to be paid to the risks of a possible abrupt rise in capital market interest rates. Indications in the second quarter of 2013 that a tapering of the Federal Reserve's quantitative easing programme might be more imminent led to a surge in interest rates. This rise, combined with increased volatility, also spread to markets outside the United States.

Interest rate dynamics depend not least on the institutional framework and structural features of the financial system. Although central banks take such factors into account in their response functions, endogenous market mechanisms can nevertheless amplify the dynamics of interest rate movements, at least on a short-term basis. It is known from previous interest rate cycles that many purchasers of US mortgage bonds compensate for losses due to rising interest rates by selling government bonds (convexity hedging). This in itself has the effect of pushing up interest rates. The same is true of foreign exchange market interventions by emerging market economies. These countries have invested their foreign reserve assets (which have risen in recent years) in US government bonds and used the latter to stabilise exchange rates.

Endogenous market mechanisms can amplify the dynamics of interest rate movements, at least on a short-term basis.

Another relevant factor is that increased volatility on the markets for government bonds (and also other asset classes) can go hand in hand with additional selling pressure. This matters for investors who use value-at-risk (VaR) based models to calculate their capital charge or their internal risk limits. In the event of higher volatility, these models indicate higher risks. Particularly if similar models, for example at banks, are widespread, "VaR shocks" can occur. This comes about if sharp market movements simultaneously produce selling signals in many models. Consequently, the bonds in question are shed on a large scale at more or less the same time.

In addition to this, there are structural changes in the financial system – such as more efficient secur-

Macrofinancial indicators in selected emerging market economies Table 3.1

As at 2012, partly based on estimates

Country	Year-on-year (real) GDP growth, percentage change	Year-on-year (real) credit growth,[1] percentage change	Current account balance as a percentage of GDP	Reserve assets as a percentage of short-term external debt[2]	General government fiscal balance as a percentage of GDP	Gross government debt as a percentage of GDP
Argentina	1.9	22.4	+ 0.0	277.6	– 4.3	47.7
Brazil	0.9	8.9	– 2.4	474.3	– 2.7	68.0
China	7.7	12.9	+ 2.3	621.2	– 2.2	26.1
India	3.2	0.6	– 4.8	204.5	– 8.0	66.7
Indonesia	6.2	13.0	– 2.7	225.7	– 1.7	24.5
Korea, Republic of	2.0	1.2	+ 3.8	167.4	+ 1.9	35.0
Mexico	3.6	5.4	– 1.2	190.9	– 3.7	43.5
Russian Federation	3.4	11.3	+ 3.7	337.6	+ 0.4	12.5
Saudi Arabia	5.1	12.1	+ 23.2	.	+ 15.0	3.7
South Africa	2.5	3.2	– 6.3	133.2	– 4.8	42.3
Turkey	2.2	20.8	– 6.1	68.8	– 1.6	36.2

Sources: Thomson Reuters Datastream, Haver Analytics, IMF, national central banks, World Bank and Bundesbank calculations. **1** As at 2013 Q2. The IMF defines a period of strong credit growth as one in which real credit growth exceeds 17% on average over three years; see also: International Monetary Fund, Are Credit Booms in Emerging Markets a Concern?, World Economic Outlook, April 2004. Argentina's real credit growth was calculated on the basis of the official inflation statistics and may therefore be overstated. **2** Short-term external debt according to residual maturity. For Argentina, according to original maturity, as at 2011. According to the so-called Greenspan-Guidotti rule, if the ratio of a country's reserve assets to short-term external debt is less than 100%, it should be closely monitored or is considered problematic.

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ities trading or increased costs of market making – which are associated with a decline in major dealer banks' bond inventories. This could have a negative impact on market liquidity in periods of stress. Sharper market movements may also be triggered by exchange-traded funds (ETFs), which give broad investor groups access even to less liquid asset classes (see the box entitled "Liquidity risk in exchange-traded funds" on pages 42 and 43).

If there is a – possibly abrupt – rise in interest rates, the interest rate risks built up at financial intermediaries can come to bear. Although there are institutional-level means of hedging such risks, the latter must be absorbed by the financial system as a whole, for example by (net) protection sellers in derivatives contracts. Furthermore, even at the level of individual institutions, hedging strategies can fail if counterparty risks occur during times of stress on the financial markets.

European countries, including Germany, are closely tied to the United States in terms of interest rates and volatility. When a change in the monetary policy stance in the United States becomes more imminent, it is expected that medium to long-term European interest rates will not be able to detach themselves from a (further) sharp rise in capital market rates in the United States (see Chart 3.7).[10] There could thus be an increase at the long end of the yield curve, which would not necessarily be in line

10 Starting out from their current low for the year of 1.63% on 2 May 2013, the yields on US government bonds with a ten-year residual maturity had risen 136 bp by 5 September. One of the main drivers was a statement by the Federal Reserve which was interpreted as indicating that it might start to taper its non-standard monetary policy measures sooner than expected. The yields on German Federal bonds (Bunds) with a ten-year residual maturity partially reproduced this movement and increased by 87 bp during the same period. Analogously, the yields at the current end have fallen as a result of the tapering of the Federal Reserve's bond purchases being unexpectedly deferred. As at 6 November 2013, the yields on US government bonds had dropped by 35 bp, while those on Bunds had fallen by 30 bp.

Liquidity risk in exchange-traded funds

Assets under management in exchange-traded funds (ETFs) have grown rapidly in the past few years.[1] At the end of 2012, global assets managed by ETFs stood at US$1,944 billion – with Europe-based funds accounting for around US$367 billion of this total. This represents an increase of around 30% for 2012 alone. Particularly ETFs which use physical replication to track the yield path of illiquid assets are becoming increasingly popular.[2] In normal times, these ETFs often enjoy higher trading volumes and narrower spreads than the underlying securities and are thus especially attractive for investors.[3]

However, it is doubtful whether the liquidity of these ETFs can decouple from the liquidity of the reference assets, particularly so in times of increased withdrawals, without exposing the financial institutions involved in this redemption process to higher risks. ETF intermediaries which promise a constant redemption of unit shares against cash run the risk of recording liquidity outflows and at the same time accumulating illiquid assets. This might jeopardise the stability of these ETF intermediaries, which are also often systemically important financial intermediaries. However, it is also conceivable that these institutions may pass on liquidity or price risks to the investor. This means that in times of increased withdrawals, ETFs might prove less liquid for the investor than initially assumed.

In order to address the question of liquidity risk, an understanding of the ETF market's microstructure is needed. As a rule, trading in ETF shares takes place in the primary and secondary market, where authorised participants (APs) act as a link between the ETF provider and the end-investors.

In the primary market, trading takes place through the exchange of ETF shares for a defined basket of securities ("in kind") or for cash. In a cash trade the ETF provider initially assumes the price risks associated with the purchase and sale of the securities, for which it charges the AP a fee. Moreover, providers often ask the AP to provide cash collateral, for example if trading in the underlying securities markets has closed due to time zone differences. Lastly, in order to mitigate the risk further still, some providers reserve the right to switch from payment in cash to payment in kind.[4] In this arrangement, the securities, and thus the price risk associated with the sale, pass completely from the ETF provider to the AP.

In the secondary market, investors trade shares either directly with an AP or on a stock exchange in which APs and other market makers operate. The secondary market can thus be used by the authorised participant to relay to investors the price risks resulting from the primary market. In

1 ETFs can generally model a target index physically or synthetically. With physical replication, the funds try to model index movements based on its basket of securities, ie the performance of the ETF is equivalent to that of the basket of securities. By contrast, synthetic ETFs use a swap contract to exchange the performance of the basket of securities for that of the reference index. Synthetic ETFs are particularly prevalent in Europe, with a market share of 36% at the end of 2012.
2 The two market segments developing countries (21%) and high-yield bonds (4%) alone accounted for around 25% of all inflows into ETFs in 2012 and the first quarter of 2013.
3 This is mainly due to the fact that market makers can net sales and purchases of ETF shares in the secondary market without having to trade the underlying securities. The resulting cost advantage is dictated by the volumes traded in the secondary market.
4 Furthermore, some ETF providers can limit the daily redemption volume per AP or overall, or extend the payment deadline. This means that the provider has a longer period to sell securities, but leads to a delayed inflow of liquidity for the AP.

particular, it is conceivable that the AP may substantially widen the bid-ask spreads and/or may only accept ETF shares at a significant discount to the net asset value (NAV).

In June 2013, the discussion about the Federal Reserve tapering off its bond purchases triggered significant outflows in some ETFs with partly illiquid investments.[5] This episode gives some indication of how ETF intermediaries respond to increased withdrawals in practice.

In two cases in particular, ETF intermediaries limited the liquidity of ETF shares. In one case, faced with large redemption volumes, an ETF provider temporarily switched from payment in cash to payment in kind. The APs affected passed on the resulting liquidity risks to the end-investors in part by only accepting the unit shares at a significant discount to the NAV. In another case, increased redemptions of ETF shares caused one AP to reach internal risk limits owing to the cash collateral requested by the ETF providers. The AP was subsequently forced to accept share redemptions from end-investors only after intensively reviewing its own risk positions. The impact on the end-investors was manageable, however, as other intermediaries stepped in and provided liquidity.

From a financial stability perspective, the fact that the ETF intermediaries in the cases cited above succeeded in limiting their risks in the face of increased redemptions is to be welcomed *per se*. However, this was detrimental for investors, who, in some cases, had to accept high discounts to the NAV. Investors should therefore be aware that in times of market tension the liquidity of an ETF can indeed be lower than that of the underlyings.

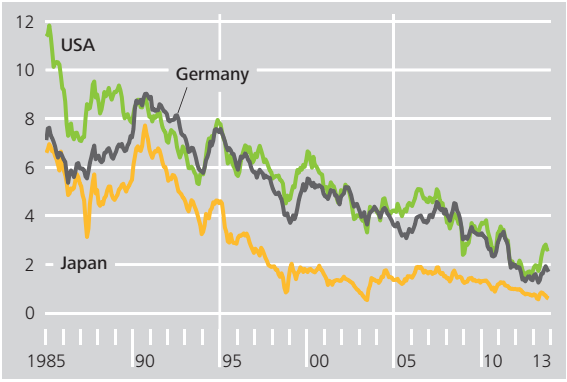
It is also worth noting that the protection mechanisms used by the ETF intermediaries can increase the likelihood of contagion effects in the ETF segment. On the one hand, it is conceivable that investors, anticipating possible liquidity limitations in the future, decide to offload their ETF shares today (ETF run). This might impact the liquidity of the reference markets and bring about the very scenario that investors had feared. On the other hand, an AP exiting the market may drive redemption volumes higher for those intermediaries remaining in the market. This would tie up growing amounts of collateral in the redemption process and possibly push these APs out of the market. As APs often act as market makers for a range of ETFs, liquidity problems arising in one market segment might ultimately spill over to other parts of the ETF market.

A watchful eye must be kept on the development of the market microstructure – particularly ETFs with illiquid reference assets. Having a multiplicity of APs or market makers appears particularly crucial for mitigating the effect of a market participant exiting the market (multi-dealer model). Furthermore, ETF providers should ensure that investors are sufficiently informed about the risks involved in an ETF investment, in particular in those with illiquid reference assets.

5 This resulted, for example, in outflows in the following ETF segments: emerging markets (equities and bonds) US$8.5 billion, US high-yield bonds US$2.2 billion, US municipal bonds US$0.5 billion.

Government bond yields* Chart 3.7

% pa, monthly averages



Source: Thomson Reuters. * With a ten-year residual maturity.
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with the economic conditions in all European countries. An interest rate rise could cause refinancing problems for non-banks and growth in debt servicing ratios, which are already high in some countries. This would place a burden on the respective countries' economies and increase financial institutions' credit default risks. A linkage of this kind between interest rate risk and credit risk would be particularly detrimental to the stability of the banking systems concerned.

A linkage between interest rate risk and credit risk would be particularly detrimental to the stability of the banking systems concerned.

German banks and insurers in differing situations

There are substantial differences between banks and insurance companies with regard to their balance sheet structure and their investment behaviour, which means that changes in interest rates would affect them differently. For example, an abrupt interest rate rise could pose problems for banks, at least in the short term. By contrast, insurers would be harder hit by a prolonged period of low interest rates.

Banks: so far hardly any signs of a search for yield

In spite of the current incentives, there has so far been virtually no sign of a pronounced search for yield among German banks. One reason for this is the fact that banks remain under pressure to reduce debt levels and expand their capital buffers.

In the corporate bond investment segment, in which the search for yield is already much in evidence, holdings of banks in Germany at the end of the third quarter of 2013 were comparatively small, relative to their own funds (totalling €437 billion) and their total assets (€7.8 trillion). Data on German banks' investment in corporate bonds are available for bonds held in Germany and for holdings of foreign affiliates. In recent years, there has been little change in the volume of holdings in Germany. At the end of the third quarter of 2013, it stood at €45 billion. Moreover, German banks increasingly hold corporate bonds indirectly via domestic specialised funds (see Chart 3.8).

Data on securities held by foreign affiliates of German banks indicate that holdings of bonds issued by non-financial corporations have fallen (see Chart 3.9). The volume of directly held bonds of a broad foreign corporate sector[11] recently decreased to €68 billion. Bonds issued by non-financial corporations held via foreign specialised funds are a component of the aggregate "foreign shares and other securities", the value of which has fluctuated within a virtually constant band over the last few years and most recently came to €67 billion.

11 In addition to bonds issued by non-financial corporations, this also includes bonds issued by insurance companies and other financial institutions.

German banks that report to the Bank for International Settlements (BIS) held credit claims worth US$155 billion against debtors in G20 emerging market economies as at mid-2013.[12] Holdings of bonds issued by enterprises based in emerging market economies[13] were low, amounting to €0.6 billion at the end of the third quarter of 2013. Despite having increased in recent years, they were still below pre-crisis levels.

It is likely that even a significant rise in defaults and higher risk premiums on corporate bonds or on claims against debtors in emerging market economies would have only a limited impact on German banks' own funds. However, a protracted period of low interest rates could intensify the search for yield. If the latter spreads to investment segments in which banks are more active, this could give rise to higher risks.

Vulnerability to an interest rate shock varies between categories of banks

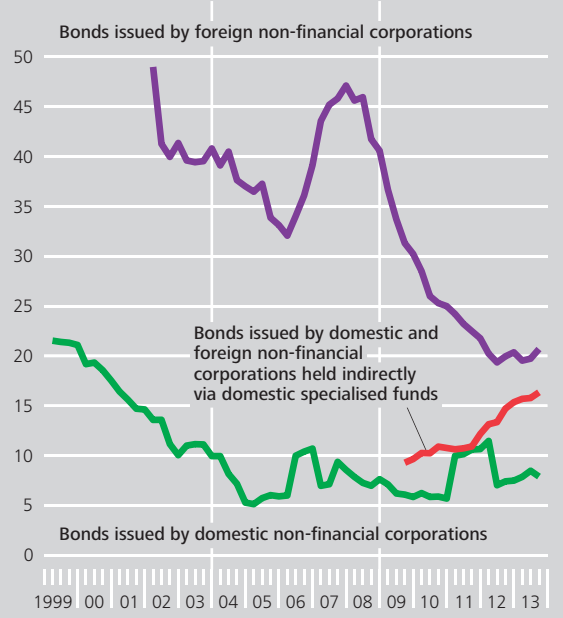
Interest rate risk and credit spread risk are the most important market risks for German banks.

The Bundesbank's most recent market risk stress test survey[14] shows that interest rate risk and credit spread risk are the most important market risks for German banks. By contrast, exchange rate, stock price and volatility risks currently play a more minor role (see Chart 3.10).

However, there are significant differences between the categories of banks regarding their vulnerability to interest rate risk. A 150 bp upward parallel

Bonds issued by non-financial corporations held by banks in Germany — Chart 3.8

€ billion



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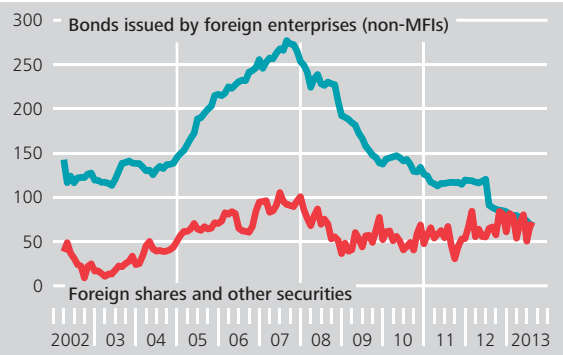
Securities held by foreign affiliates of German banks — Chart 3.9

€ billion, monthly data



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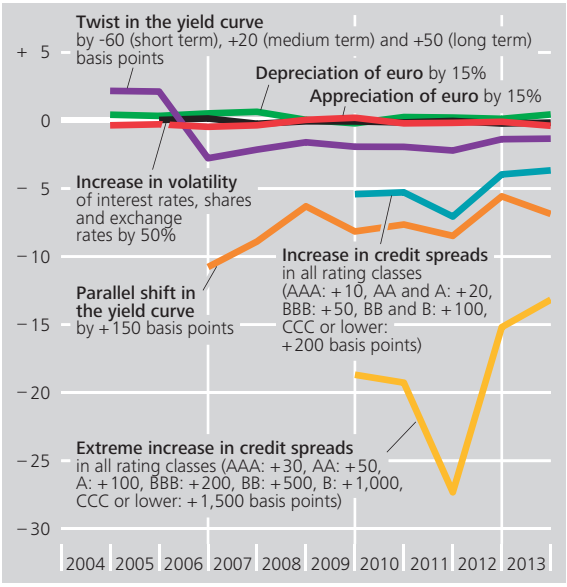
12 Of that total, China accounted for some US$28 billion, the Russian Federation for US$26 billion, India for US$25 billion, Turkey for US$21 billion and Brazil for US$18 billion.
13 The figures refer to the following group of emerging market economies: Argentina, Brazil, Chile, China, Czech Republic, Hong Kong, Hungary, India, Indonesia, Republic of Korea, Malaysia, Mexico, Philippines, Poland, Russian Federation, Saudi Arabia, Singapore, South Africa, Thailand and Turkey.
14 The Deutsche Bundesbank conducts a survey of 28 institutions as at 31 March each year. The institutions are asked about market value losses in the trading and banking book for 14 stress scenarios. Unweighted averages of the surveyed banks are shown.

Changes in market values* for selected market risk scenarios Chart 3.10

As a percentage of own funds



Source: Deutsche Bundesbank's market risk stress test surveys. * In the trading and banking book. Unweighted averages of the banks surveyed.

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shift in the yield curve would, on average, lead to market value losses for the surveyed savings banks and credit cooperatives amounting to 14% of own funds. This is due to the fixed interest period being longer on the asset side of the balance sheet than on the liabilities side. While an interest rate rise thus has a direct impact on banks' short-term liabilities, making them more expensive, banks only receive the corresponding higher returns on the asset side when they enter into new business. By contrast, commercial banks, special-purpose banks and regional institutions are largely hedged against interest rate risk: a 150 bp interest rate rise would lead to market value losses amounting to only 2% of their own funds.

A steepening of the yield curve would also carry risks. A 200 bp rise in long-term interest rates, with no change in the low interest rates at the short end, would initially lead to losses in market value on a similarly high scale to those caused by a parallel shift of 170 bp. The losses for the 28 surveyed institutions would thus be somewhat higher than in the scenario presented in Chart 3.10 (a parallel shift of 150 bp). In the medium to long term, however, a steepening of the yield curve would lead *ceteris paribus* to an improvement in banks' profitability. This would benefit German savings banks and credit cooperatives in particular, as a large proportion of their income stems from maturity transformation. However, it should be borne in mind that the current yield curve is already fairly steep.

Alongside an interest rate rise, a renewed widening of the credit spread also harbours risks for German banks. An extreme widening of the credit spread could be triggered, for example, by a renewed intensification of the sovereign debt crisis or a protracted period of economic weakness. In such a scenario, the 28 surveyed institutions would, on average, have to shoulder market value losses equal to 13% of their own funds (see Chart 3.10). Commercial banks, special-purpose banks and regional institutions, for whom proprietary trading is of greater significance, would be harder hit, with a loss equal to 15% of own funds on average, than savings banks and credit cooperatives.[15] However, only 12% of total market value losses appear in the trading books of commercial banks, special-purpose banks and regional institutions and are thus directly included in the profit and loss account.

German insurers are increasingly investing in corporate bonds

Overall, insurers' investment policy can be described as relatively conservative. The main focus is on debt securities, including Pfandbriefe, mutual fund shares and investments at credit institutions. The propor-

15 See also the section "Market risks mixed" on pp 58-60.

Corporate bonds held by insurers relative to total investments Table 3.2

Period	Corporate bonds held by insurers € billion				Total investments, € billion, All[4]			Ratio of corporate bonds to total investments %, All[5]	
	Directly held, Primary[1]		Indirectly held via domestic specialised funds, All[3]			*of which* Primary			
		of which Life[2]		*of which* Life			*of which* Life		*of which* Life
2007	10.7	8.1	.	.	1,187.5	981.4	696.5	.	.
2008	14.1	10.2	.	.	1,195.7	980.1	689.1	.	.
2009	15.5	10.3	20.8	5.7	1,215.0	1,011.0	707.4	3.8	2.3
2010	17.3	12.0	28.5	7.7	1,258.3	1,050.8	734.4	4.5	2.7
2011	17.8	11.8	32.3	9.0	1,287.5	1,072.3	742.7	4.6	2.8
2012	26.2	18.2	42.9	11.8	1,356.7	1,120.0	768.9	5.9	3.9
2013 Q1	29.7	20.8	44.8	12.0	1,381.6	1,145.0	780.8	6.2	4.2
2013 Q2	31.3	21.7	44.7	12.2	1,389.5	1,152.9	787.1	6.3	4.3

Sources: Federal Financial Supervisory Authority (BaFin), German Insurance Association (Gesamtverband der Deutschen Versicherungswirtschaft e.V.) and Bundesbank calculations. **1** Primary insurers (Primary) excluding pension funds and Pensionskassen. **2** Life insurers (Life). **3** All insurers (All). For specialised funds: excluding pension funds, but including reinsurers. **4** All insurers excluding pension funds and Pensionskassen. The figure for reinsurers' total investments as at the end of 2012 of €236.6 billion was carried forward for 2013 Q1 and Q2. **5** Approximately taking into account corporate bonds held directly by reinsurers.

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tion of investments explicitly categorised as high-risk from a regulatory perspective in a narrowly defined list is well below the permissible maximum level, despite a slight increase last year. However, in recent years insurers have gradually focused their investment policy on higher-yielding investments in areas not expressly classified as high risk. Above all, life insurers are constantly under pressure to assume greater risks on account of their obligations from long-term guarantees.

Overall, insurers' investment policy can be described as relatively conservative.

In order to improve their investment performance, insurers, in contrast to banks, have considerably raised the portfolio weight of corporate bonds, which are already fairly highly valued on the market. Between the end of 2009 and mid-2013, they increased their holdings of corporate bonds from €41 billion to €83 billion.[16] Their share in total investments rose from 3.4% to 6.0% (see Table 3.2). Growth in corporate bonds held indirectly via specialised funds, which now represent a larger investment sum than directly held bonds, made up the lion's share of the increase. Bonds issued by enterprises in emerging market economies play only a minor role.

This investment policy could result in burdens for insurers if the current valuations in a low-interest-rate environment prove not to be sustainable,[17] the fairly low risk premiums increase and defaults on corporate bonds rise. It is likely that there would

16 Approximately taking into account reinsurers' direct holdings of corporate bonds.
17 For more information on the impact of an extended period of low interest rates on the solvency of life insurers, see the scenario analysis in the chapter entitled "Insurance companies: bridging low interest rates and higher capital requirements" on pp 69-85.

then be additional losses from investment in loans and claims on enterprises from subordinated liabilities.

Insurers would benefit from a rise in the capital market rate

Insurance companies would in principle benefit from an interest rate rise. This applies in particular to life insurers with their very long-term liabilities. This is because in the event of an interest rate policy reversal, market value losses on corporate bonds and other interest-bearing assets would be more than offset by a sharper fall in value for liabilities.[18] In contrast to banks, future burdens for insurers are therefore more likely to arise from a search for yield.

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18 In economic terms, there is thus a rise in value for insurers. However, above all owing to the absence of a market valuation of liabilities, this does not have a positive impact on balance sheet capital and the capital requirements pursuant to Solvency I, which currently still apply (see the box entitled "Future regulation under Solvency II flags risks from low interest rates early" on pp 77-78). An interest rate rise would also improve investment performance. Only a very sharp interest rate increase might produce burdens for insurers in the form of higher cancellation rates. This applies above all to countries in which the typical terms and conditions of insurance contracts make it relatively easy to terminate them early.

German banks face increased pressure on profitability

The German banking system has been characterised by structurally low profitability for some time. This is reflected, in particular, in the erosion of the interest margin, which has halved since the mid-1990s and currently stands at just under 1%. This is due to intense competition owing, amongst other things, to overcapacity in the German banking industry. The low levels of underlying profitability make it more difficult to build up capital buffers from retained earnings.

Nonetheless, the tier 1 capital ratio of the group of 12 major German banks with an international focus has increased further to 15.3%. From 2010 to 2012 the profitability of the German banking sector was bolstered by unusually low write-downs in its lending portfolio. In a stress scenario based on a sharp recession on the scale of 2009, the operating income (after valuation) of the 12 major German banks with an international focus falls by around €15 billion in 2014 compared with a baseline scenario. This decrease is more than these banks' combined operating result in 2012, which came to €11 billion.

Significant risks have also developed in individual sectoral credit markets. Shipping loans, loans for foreign commercial real estate and legacy assets in the form of securitisations are particularly vulnerable to default risk. It is also important from the perspective of the German banking system that real estate lending in Germany does not give rise to excessive risks in the low-interest-rate environment.

Structurally low profitability in a low-interest-rate environment

The persistent low-interest-rate environment puts additional pressure on the margins of German banks, which in turn exacerbates their structurally weak underlying profitability. This hinders capital accumulation from retained earnings and can, depending on the situation of the bank, weaken resilience and ultimately jeopardise financial stability.

Operating performance stable in first half of 2013

The operating income of the group of 12 major German banks with an international focus[1] came to €35.4 billion in the first half of 2013, which represents a slight year-on-year increase of €0.7 billion (see Chart 4.1). This was mainly due to a marked improvement in volatile net trading income, which rose by €2.3 billion compared with the first half of 2012. Net fee and commission income also grew slightly. This more than compensated for the decrease in net interest income. Risk provisioning was slightly up on the previous year but still low by historical standards, increasing by €0.5 billion to €3.1 billion. It rose considerably at some banks in this group due, in particular, to cyclical overcapacity in the shipping industry (see the section entitled "Accumulation of sectoral credit risks" on page 60).

At savings banks and credit cooperatives, the combination of favourable funding terms and legacy business with high interest income has cushioned the reduction in net interest income thus far. In addition, the profitability of German banks is being bolstered by the low level of risk provisioning.

The profitability of German banks is being bolstered by the low level of risk provisioning.

The profitability of German banks is being squeezed by the low-interest-rate environment. This is because interest income is by far the most important source of earnings for most banks, and the interest margin tends to fall during phases of low interest rates (see Chart 4.2).[2] In addition, in an extreme low-interest-rate environment, banks are unable to reduce their deposit interest rates to the extent they would in a normal interest-rate environment, as they cannot offer a negative return on deposits (zero-interest-rate limit). The consequences of the shrinking interest margin can already be seen in the decrease in net interest income. If the interest rate level remains low, a further reduction is likely, as many loan agreements with higher interest rates are soon due to expire and will have to be replaced by new agreements with a lower nominal interest rate.

Low profitability is structural

However, Chart 4.2 clearly shows that the reduction in the interest margin did not begin in the current low-interest-rate environment. The trend dates back a number of years. While the interest margin was around 2% until the mid-1990s, it has since dropped to just under 1%.[3] The reasons for this fall are manifold. Competition has intensified considerably because of deregulation and liberalisation. In addition, technological advances, such as the internet, have facilitated market access for banks with-

1 This analysis often refers to the group of 12 major German banks with an international focus as a collective term for systemically important institutions in the German banking system. As of mid-2013, this group accounted for around 60% of the total assets of all German banks. In the Financial Stability Review 2010, this group consisted of 15 credit institutions. For the 2011 Review, two institutions which had transferred risky positions to resolution agencies were no longer included. In 2012, one institution was taken over by another bank in this category.
2 The interest margin is the ratio of net interest income to total assets. See Deutsche Bundesbank (2012), pp 13 to 34 and O Entrop, C Memmel, B Ruprecht and M Wilkens (2012).
3 This relates to the weighted average in relation to total assets for 2012.

out a network of branches and made it easier to compare terms and conditions.[4] This, combined with greater price awareness on the part of customers and less customer loyalty, has led to a marked increase in competition since the mid-1990s. This development affects not only German banks, but also banks in other European countries.[5]

Being highly dependent on interest income, German banks are particularly vulnerable to a contraction of the interest margin. While non-interest income accounts for little more than 20% of German banks' overall operating income on average, this proportion is much higher in some other countries.[6]

Risks also arise from maturity transformation due to the fact that, following a rise in interest rates, it will be more expensive to refinance loans issued in the current phase of low interest rates. This is also problematic for building and loan associations since their business model is based, in part, on the assumption of interest rate risk (see the box entitled "Building and loan associations in the low-interest-rate environment" on page 52).

Overcapacity puts pressure on margins

Banks are faced with greater competition from non-banks, too. They not only offer loans, but are also successfully attracting deposits. In addition, the provision of banking services in Germany is also above average compared with other European countries,[7] which, again, leads to increased competition. If overcapacity persists over an extended period, it

Profit components of selected banks* Chart 4.1

€ billion

Sources: Corporate data and Bundesbank calculations. * Comprises IFRS data of 12 major German banks with an international focus which did not transfer positions to resolution agencies in the observation period. **1** Sum of net interest income, net fee and commission income and net trading income. **2** Including income from financial assets carried at fair value.

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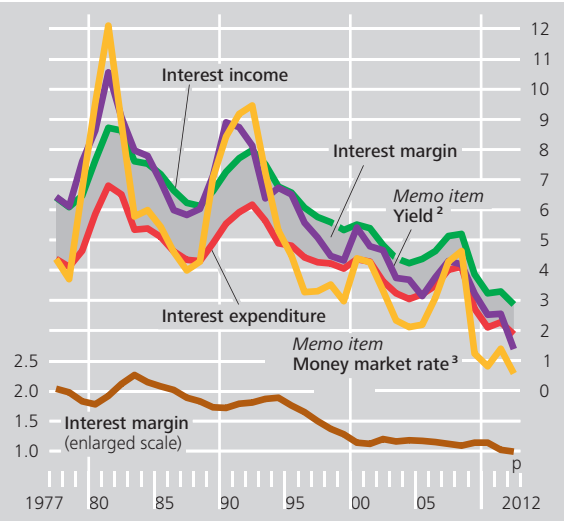
Interest income and interest expenditure of banks in Germany Chart 4.2

As a percentage of average total assets[1]



1 Up to and including 1998, as a percentage of average business volume. In 2011, aggregate total assets increased by around 10% in accounting terms as a result of the Act Modernising Accounting Law (Bilanzrechtsmodernisierungsgesetz). **2** Average yield on domestic bearer bonds. **3** Three-month EURIBOR. Up to and including 1998, three-month money market rate in Frankfurt.

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4 Statistical effects, such as changes in accounting rules which increase total assets and thus reduce the interest margin without any change in the economic reality, must also be taken into account.
5 For information on the development of the interest margin in Europe, see European Central Bank (2000).
6 Information from the OECD's Bank Profitability database for 2013.
7 In 2012, the ratio of bank employees to inhabitants in Germany was 1:124. In the EU, it was 1:166. Source: ECB.

Building and loan associations in the low-interest-rate environment

There are currently 22 building and loan associations in Germany, some of which operate in individual regional market segments and others on a nationwide scale. As measured by total assets, building and loan associations make up around just 2% of the German banking sector. They do, however, play a key role in real estate financing in Germany.

The idea behind saving under a building and loan contract is for the institution to accumulate customers' savings deposits and to bundle them together in a common pool from which the prospective homeowner is later granted a loan. One advantage of this type of savings contract is that the saver can secure a fixed borrowing rate when concluding the contract, even though he or she will not draw down the building loan until a number of years further down the line. The incentive to save is often not a high rate of interest paid on the credit balance, but planning certainty and the prospect of a lower borrowing rate.

This means that building and loan associations take on a risk, as savers have the option of drawing down their loan, but are under no obligation to do so. This option is particularly attractive to savers in a low-interest-rate environment. Savers might decide not to draw down their loan during a period of low interest rates if the contractually agreed rate of interest paid on their credit balances is higher than the market rate. This diminishes the interest margin of the building and loan associations and puts pressure on their earnings.

A sharp rise in interest rates can also be problematic for building and loan associations. If savers decide to draw down their loan in a period of high interest rates because their contractually fixed borrowing rate is lower than the current market rate, building and loan associations have to refinance these loans by paying correspondingly higher interest on new savings contracts. This likewise squeezes the interest margin. Thus, both persistently low interest rates and a sharp increase in interest rates pose a risk to building and loan associations. In some cases, however, this risk can be passed on to the market through interest rate swap transactions.

In view of these risks, at the end of 2012 the Bundesbank and the German Federal Financial Supervisory Authority (BaFin) investigated how the earnings of building and loan associations will develop if interest rates remain persistently low. The results suggest that their earnings will decline significantly. On the whole, however, the long-term sustainability of building and loan associations does not appear to be at risk, even though extensive countermeasures may become necessary for individual institutions. These measures include terminating contracts with savers who have already saved the agreed amount to be eligible for a building loan, but have not yet drawn down such a loan. Whereas in a persistent low-interest-rate setting the income of building and loan associations steadily declines, in the assumed scenario of a moderate rise in the interest rate level their earnings will deteriorate in the short term, but increase considerably in the medium term. The building and loan associations can invest the disposable assets at higher interest rates and more building loans will be drawn down, leading to a rise in interest income. This could jeopardise the liquidity of building and loan associations in the long term, as the investment ratio, ie the ratio of building loans to deposits under savings and loan contracts, tends to increase during periods of higher interest rates. This means that earnings risks decrease when there is a rise in interest rates, but liquidity risks increase.

jeopardises the stability of the financial system, as lower margins make it more difficult to build up capital through retained earnings. Banks become more vulnerable to shocks if no source of additional external capital is found. Moreover, banks could be more inclined to take risks to compensate for the reduction in margins. For these reasons it must be possible for banks to exit the market and for overcapacity to be reduced in an orderly manner.

It must be possible for banks to exit the market and for overcapacity to be reduced in an orderly manner.

Banks must review their business models

Changes in the regulatory environment and intense competition are forcing institutions to review their business model and adjust it where necessary. This applies not only to big banks and Landesbanken, but also to savings banks and credit cooperatives. The latter two were much less affected by the financial crisis and generate comparatively higher interest margins, but, in view of the low-interest-rate environment and increasing competition in traditional banking business, they, too, need to take a critical look at their business model if they are to safeguard their profitability and stability in future.[8]

Resilience clearly enhanced

The low profitability of the group of 12 major German banks with an international focus also has a knock-on effect on their capital formation.[9] Retained earnings thus play only a subordinate role. The growth in tier 1 capital from mid-2012 to mid-2013 is attributable in roughly equal parts to recovery in value and to external financing. Some of the banks in question increased their capital by issuing new shares to private investors. One institution used this additional private capital to repay government equity injections. The capital measures backed by the Financial Market Stabilisation Fund consequently fell by €1.7 billion in the course of the year to €17.1 billion at the end of September.

Banks in other countries have increased their capital levels by issuing contingent convertibles (CoCos). These are bonds that, under certain pre-defined conditions, are converted into equity (see the box entitled "CoCos boost banks' capital in times of crisis" on pages 54 and 55).

Reduction in total assets and risk-weighted assets

The 12 major German banks with an international focus have continued to reduce their risk-weighted assets, shrinking them by nearly 12% since June 2012. During this period, total assets fell by around 13%, due mainly to the sale of non-core business lines and a reduction in exposures to European programme countries.

Changes in risk-weighted assets generally depend, amongst other things, on how the probability of default of exposures develops. Countervailing developments, which have largely offset each other, have been evident of late. While the average probability of default has fallen in the corporate sector due to robust economic developments and the favourable outlook, it has risen for government and banking exposures.

8 See A Dombret (2012).
9 According to a study, retained earnings were the most important factor in the increase in capital ratios in the period from 2009 to 2012 for 82 large global banks; see B H Cohen (2013).

CoCos boost banks' capital in times of crisis

Over the past few years, the use of contingent convertibles (CoCos) as a funding instrument has become more widespread among banks. This growth can be largely attributed to the regulatory capital requirements in Switzerland and the United Kingdom. CoCos issued by banks in these two countries account for more than half of CoCo issuances on the entire market. Meanwhile, banks in countries such as Spain and Ireland have also begun using this tool to boost capital as a precautionary measure and to benefit from the fact that market conditions are still yield-oriented – and thus favourable for issuers.[1] On the whole, the prevalence of this hybrid capital instrument is still relatively modest, with a current outstanding volume issued by west European issuers of around US$59 billion.[2]

Depending on their specific structure, CoCos can be classified as additional tier 1 or tier 2 capital under Basel III.[3] Pre-defined criteria outline the conditions under which CoCo bonds can be converted from debt to common equity. Alternatively, CoCos can be structured so as to reduce creditors' claims through a principal write-down (by a percentage) instead of resorting to a conversion to equity. This means that, should a bank's capital diminish, private investors can be called upon to absorb losses. CoCos prove particularly beneficial from a financial stability standpoint as, during times of financial stress, banks might find it difficult to strengthen their capital base via private markets. As these instruments include a more or less automatic loss absorption mechanism, government intervention becomes less likely, which ultimately reduces the taxpayers' burden.

Investors are aware of the risks that an investment in CoCos entails. In a stress scenario, they must accept unrecoverable principal write-downs or a conversion to equity. However, in return, investors can demand a risk premium, thereby reinforcing the interlinkage between opportunity and risk. Furthermore, CoCos can have a disciplinary effect on issuers as investors expect higher risk premiums when they are required to assume more risk.

The structure of CoCos is largely defined by the type of trigger used. A trigger can be either mechanical, which is based on the market or book value, or discretionary. A discretionary trigger is activated if a supervisor deems it necessary. However, this can cause uncertainty amongst investors and, in turn, complicate the pricing of CoCos. This uncertainty is also expressed through lower ratings. Furthermore, supervisors may find it difficult to activate a discretionary trigger as the markets could interpret a conversion as a sign of crisis, which, in turn, could exacerbate sustained negative price dynamics. Even where such a decision is called

1 Issuance by west European issuers since June 2009 breaks down as follows: Switzerland US$21.5 billion, United Kingdom US$18.8 billion, Spain US$8.0 billion, Ireland US$4.1 billion, the Netherlands US$5.7 billion, France US$2.3 billion, Italy US$2.0 billion, other countries US$4.6 billion. Source: Bloomberg. Allocation by country of risk.
2 Since June 2009, CoCos amounting to US$67 billion have been issued by west European issuers. During the same period, subordinated debt totalling approximately US$550 billion as well as senior unsecured debt valued at approximately US$4,100 billion was issued. Source: Bloomberg, Allocation by country of risk.
3 For detailed information on the new Basel III framework, see Basel Committee on Banking Supervision: Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems, June 2011.

for, supervisors could potentially be seen to trigger or worsen tensions. It is thus essential to communicate the reason why such a decision is necessary. The mechanical trigger also has disadvantages. While market-value triggers might sometimes be difficult to price, the danger with book-value triggers is that they may not be activated in time.[4]

Even if the relatively new CoCo segment has yet to be put to a serious test, the preliminary picture looks positive. CoCo bonds are becoming increasingly popular amongst investors, meaning they can be used to boost banks' capital when market developments take a turn for the worse. Experience to date in the United Kingdom and in Switzerland shows that the actual contribution of CoCos to the capital base largely depends on the regulatory requirements in place. However, in this context, the most important factor seems to be that investors in CoCos themselves are not deemed to be systemically important – at least *a priori*. Otherwise CoCos could potentially be perceived as a transmission mechanism, once again ultimately transferring risk to systemically important intermediaries.

4 For information on the structure and impact of triggers as well as further information on CoCos, see S Avdjiev, A Kartasheva and B Bogdanova, CoCos: A Primer, BIS Quarterly Review, September 2013, pp 43-56.

Rise in tier 1 capital ratio, fall in leverage

The resilience of the large German banks has been improving since March 2008. This trend has also continued over the course of this year. By mid-2013, the tier 1 capital of the group of 12 major German banks with an international focus had increased from 13.2% year on year to 15.3% of risk-weighted assets (see Chart 4.3). With these higher capital ratios, banks are anticipating the regulatory changes under Basel III. In many cases, they are also responding to market expectations.

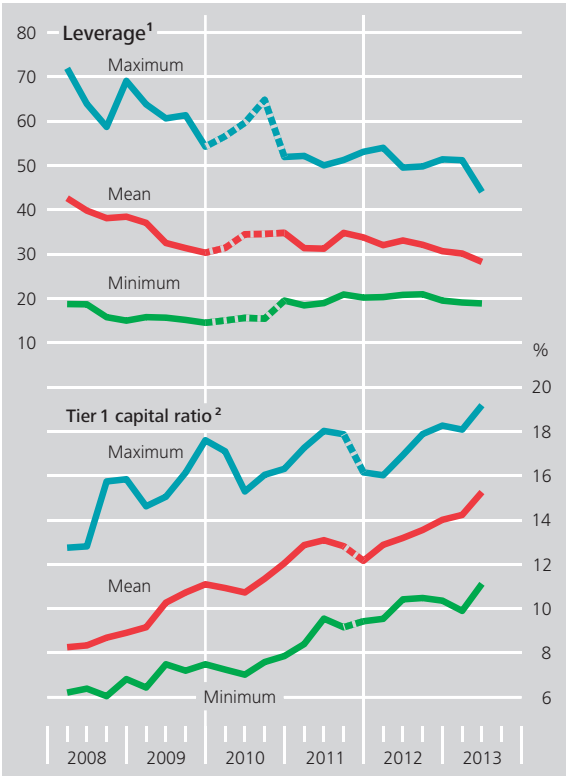
With higher capital ratios, banks are anticipating the regulatory changes under Basel III.

The 12 major German banks with an international focus have further reduced their leverage – ie the ratio of total assets pursuant to the German Commercial Code (*Handelsgesetzbuch*) to tier 1 capital. By mid-2013, leverage had dropped to 28 compared with 33 a year earlier (see Chart 4.3). In the case of several banks, conditions imposed by the European Commission have contributed to reducing total assets and leverage. However, some banks still need to increase their capital considerably and adjust their balance sheet items to fully meet the requirements of Basel III.

Chart 4.4 maps the changes in resilience since the beginning of 2008 in relation to changes in the underlying determinants (risk content of the balance sheet and leverage ratio). A downward movement indicates a fall in the leverage, while a movement from right to left indicates a reduction in riskiness. It is possible to distinguish between three phases in the adjustment process since the onset of the financial crisis. In the initial phase, from 2008 to 2009, banks increased their tier 1 capital and reduced their

Leverage and tier 1 capital ratio of selected banks*

Chart 4.3



* The analysis covers 12 major German banks with an international focus which did not transfer positions to resolution agencies in the observation period. **1** Ratio of total assets to tier 1 capital; 2010: transition period pursuant to the Act Modernising Accounting Law (Bilanzrechtsmodernisierungsgesetz). **2** Ratio of tier 1 capital to risk-weighted assets; from end-2011, revised valuation of risk-weighted assets owing to the third EU Capital Requirements Directive (CRD III).

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total assets, with risk content remaining relatively constant. In the second phase, the riskiness of the balance sheet then decreased, while the leverage remained largely unchanged. A third phase has been observed since the second half of 2012. It reflects a reduction in leverage due mainly to decreasing total assets at several large banks. Banks are thus largely anticipating the requirements of Basel III not only by increasing their capital ratios, but also by lowering their leverage. The gradual introduction of the new capital requirements by 31 December 2021 is intended to provide institutions with sufficient time to cover the rest of their capital needs. This process is being monitored and followed closely by the supervisory authorities.

Leverage and risk weight in the regulatory debate

There is currently a debate among regulators and in the public arena as to whether and to what extent capital requirements should apply to all balance sheet items equally or only to the relevant risk-weighted items. In the first scenario, the regulatory requirements would relate to the leverage ratio and, in the second, to the tier 1 capital ratio (based on risk-weighted assets).

Those in favour of a risk-based approach argue that the risk content of individual balance sheet items would be captured more accurately. Using a risk-based approach, a highly collateralised real estate loan has a lower weight than a risky securitisation tranche, for example. Banks themselves therefore also have an incentive to avoid high-risk investments.

Opponents of a risk-based approach argue that, in practice, the risk weights applied vary greatly across different banks and that every impaired asset would ultimately have to be absorbed by capital, irrespective of its risk weight.[10] Some are in favour of simple quantitative regulation, such as a ceiling on the leverage ratio.[11] There are indications from within the Basel Committee on Banking Supervision (BCBS) that there will be greater standardisation of risk weights, thus enhancing the comparability of institutions and countries.[12]

10 See R W Fisher (2013) and A Admati and M Hellwig (2013).
11 See A D Haldane (2012).
12 See Basel Committee on Banking Supervision (2013a and 2013b).

Liquidity situation remains stable

For the 12 major German banks with an international focus, the liquidity buffer – measured as the difference between liquid assets and short-term liabilities – has remained stable at a high level since mid-2010, at 22% of liquid assets.[13] This shows that banks are also anticipating the new liquidity-related regulatory requirements of Basel III and responding to investors' wish for a substantial buffer.

Stress tests used to identify risks

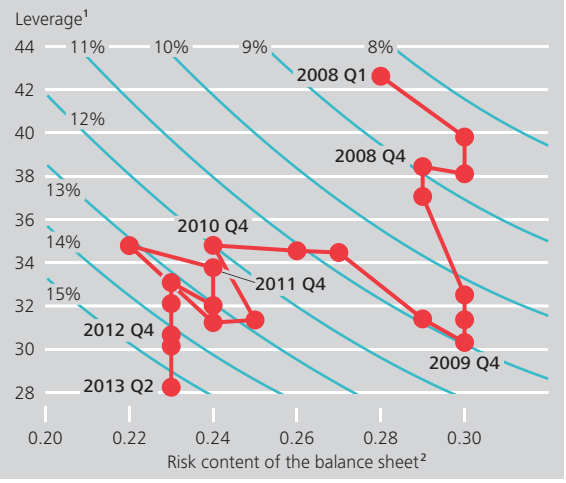
Stress tests are an effective way of identifying vulnerabilities in the banking system and are currently playing a particularly important role. As part of the partial transfer of supervisory responsibilities to a European level, possible legacy problems at the relevant banks are to be identified and the balance sheets of the banks made more comparable. With this in mind, the European Central Bank (ECB) plans to carry out a comprehensive assessment of 124 banking groups. This will involve an ECB stress test to be carried out in close cooperation with the European Banking Authority (EBA). For the sake of credibility, the comprehensive assessment including the stress test must be exacting. At the same time, banks, supervisory authorities and governments must be prepared for the assessment to uncover recapitalisation requirements at some banks.

Banks, supervisory authorities and governments must be prepared for the ECB's comprehensive assessment to uncover recapitalisation requirements.

Stress tests are also being carried out at a national level. A severe recession on the scale seen in Germany in 2009 following the financial crisis could present a major challenge for German banks. The following section focuses on a stress scenario for the German banking sector (see Table 4.1) over the period from July 2013 to the end of 2015. For comparison, a baseline scenario has been calculated using Bundesbank forecasts for 2013 and 2014 for the relevant macrovariables.[14] Table 4.1 shows the assumed values of these variables for both scenarios.[15]

The analysis looks at how banks' operating income (after valuation) changes in the stress scenario (see

Leverage versus risk content of the balance sheet of selected banks* Chart 4.4



***** The analysis covers 12 major German banks with an international focus which did not transfer positions to resolution agencies in the observation period. The isoquants represent the tier 1 capital ratios. **1** Ratio of total assets to tier 1 capital; 2010: transition period pursuant to the Act Modernising Accounting Law (Bilanzrechtsmodernisierungsgesetz). **2** Ratio of risk-weighted assets to total assets; from end-2011, revised valuation of risk-weighted assets owing to the third EU Capital Requirements Directive (CRD III).

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13 Liquid assets are understood to be liquid assets pursuant to the Liquidity Regulation (Liquiditätsverordnung) with a residual maturity of up to one month.
14 See Deutsche Bundesbank (2013a), pp 17 ff.
15 Only the main variables of the scenario are listed in Table 4.1. Another macrovariable from the stress test is the share issue volume, which influences commission and fees. For net trading income, a development is assumed in the stress scenario where 10% (in 2014) and 25% (in 2015) of the historical values for net trading income were worse (see the box entitled "What are macro stress tests?" on p 59).

Macro stress test: assumed development of main macro variables in Germany for selected scenarios Table 4.1

%

Item	2013	2014	2015
Baseline scenario			
(Real) GDP growth, year on year	0.4	1.5	1.3
Short-term interest rate[1]	0.2	0.3	0.3
Long-term interest rate[2]	1.5	1.8	1.7
Stress scenario			
(Real) GDP growth, year on year	0.1	– 5.1	– 1.0
Short-term interest rate	0.3	0.4	0.4
Long-term interest rate	1.5	1.9	1.8

1 Three-month EURIBOR. **2** Yields on Bunds with a residual maturity of ten years.

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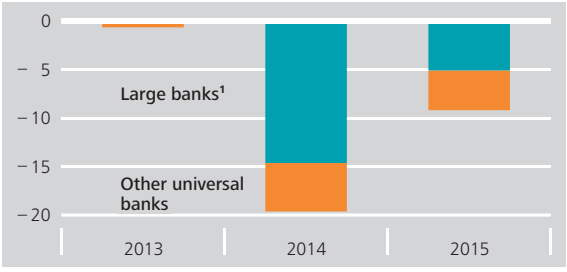
Macro stress test: operating result* of German universal banks in a stress scenario Chart 4.5

Deviation from baseline scenario in € billion



***** Sum of net interest income, net fee and commission income, net trading income and valuation result from lending business as well as other components not affected by the stress scenario. **1** Twelve major German banks with an international focus which did not transfer positions to resolution agencies in the observation period.

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Chart 4.5). Four key income components are particularly relevant in this regard. These are net interest income, net commission and fee income, net trading income and valuation adjustments in lending business.

The 12 major German banks with an international focus are particularly affected by the simulated economic downturn. The decrease of around €15 billion in operating income (after valuation) in 2014 and about €5 billion in 2015 compared with the baseline scenario is substantial, particularly when seen in relation to the combined operating result of €11 billion in 2012. Assuming that staff and administration costs remain constant, the stress scenario would actually cause the 12 major German banks with an international focus in aggregate to post a negative operating result after valuation. Table 4.2 shows that this development is primarily attributable to value adjustments and write-downs in lending business and net trading income (cumulative decreases over the three years of around €6½ billion and €11½ billion respectively). Savings banks and credit cooperatives are less affected by an economic downturn in this simulation, as their own-account trading plays a less important role and write-downs depend less on economic developments.

Under the stress scenario, the development at major banks is attributable to value adjustments and write-downs in lending business.

The crisis years of 2008 and 2009 showed that, in particular, the valuation result and net trading income can lead to losses. By contrast, the decrease in net interest income plays only a minor role for the 12 major German banks with an international focus. Even in a much worse scenario for interest rate developments, this profit component is barely affected, as these banks rarely take interest rate risks (see the box entitled "What are macro stress tests?" on page 59).

Market risks mixed

The regulatory capital requirements for the market risk of the German banking system amounted to

What are macro stress tests?

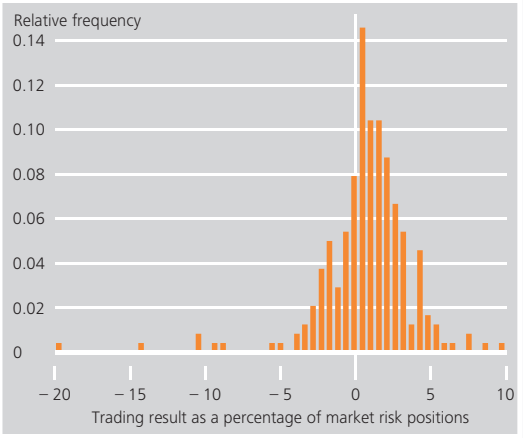
Macro stress tests for banks are designed to identify vulnerabilities the banking sector may have when faced with unfavourable developments in the national or global economy. A macro stress test usually comprises three steps. First, one or more comprehensive severe yet plausible economic scenarios are created. In this context, comprehensive means that the scenarios are described using a series of macroeconomic variables. The key variables used in the macro stress test described here are the short-term and long-term interest rates as well as GDP growth (see table 4.1 on page 58). A baseline scenario centred on forecasts of economic activity is used for comparison.

Second, the potential effects of the scenarios on the banks are examined. Either the banks carry out the simulations themselves for their institutions – known as the bottom-up approach, which, for example, the European Banking Authority (EBA) employs for its stress tests – or, as is the case here, the effects of the scenarios are assessed in a centralised manner for all banks – known as the top-down approach. For this, we differentiate between large and small banks as well as between four key items in the profit and loss account: net interest income, net fee and commission income, the trading result and write-downs on loans.

For the majority of the items on the profit and loss account, the analysis is based on the results of a combined serial and cross-sectional estimation (panel estimation), with the corresponding components explained by bank-specific and macroeconomic variables. The trading result is derived differently. As macroeconomic variables evidently cannot sufficiently explain the movement of the trading result, panel estimations do not provide reliable forecasts in this instance. For small banks the trading result is of only minor importance and is therefore not modelled here.

Frequency distribution of selected banks' trading result in relation to market risk positions*

Quarterly data for the observation period 2008-2012[1]



Sources: Corporate data and Bundesbank calculations. * Risk-weighted assets with market risk. Market risk positions before 2011 Q4 are adjusted by a factor of 2.03 due to a structural break based on a revised valuation owing to the third EU Capital Requirements Directive (CRD III). **1** The analysis covers 12 major German banks with an international focus which did not transfer positions to resolution agencies in the observation period.

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In the case of large banks, the historical distribution of the trading result is calculated. The stress scenario then entails using a realisation from the bottom end of the distribution, such as an event for which only 25% or 10% of the realisations were worse in the past (see chart on this page).

The third step is to compare and evaluate the individual components of the banks' operating income for each scenario. Further analyses could also include the effects on bank capitalisation.

Macro stress test: profit components of selected banks in stress scenario*

Table 4.2

Deviation from baseline scenario, € billion

Item	2013	2014	2015
Net interest income	– 0.0	– 0.0	+ 0.0
Net fee and commission income	– 0.0	– 1.7	– 0.5
Net trading income[1]	0.0	– 8.3	– 3.0
Valuation result from lending business	– 0.2	– 4.7	– 1.5

* The analysis covers 12 major German banks with an international focus which did not transfer positions to resolution agencies in the observation period. **1** Including net gains or losses on financial assets carried at fair value.

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€10.7 billion, or 5.1% of total capital requirements, in mid-2013. However, the importance of market risks varies greatly depending on the bank type.

In mid-2013, market risks accounted for 10.4% of overall capital requirements for the nine large banks which use internal market risk models. As a lesson learned from the financial crisis, the market risks of these "internal model banks" had to be backed by considerably more capital. For smaller banks with no internal market risk models, market risks are far less significant, accounting for just 2.0% of overall capital requirements. This is because, for one, small banks are more rooted in the traditional banking business in which credit risk plays a key role, and, for another, interest rate risks are not taken into account in the banking book. Within the scope of the Supervisory Review Process, the banking supervisory authority can, however, demand adequate capital surcharges for interest rate risks. Interest rate risk is the most important market risk for savings banks and credit cooperatives, as a significant proportion of their income results from maturity transformation.

For large banks, a widening of the credit spread – in other words, the difference between the market interest rate and the risk-free interest rate – is the most important source of market risk.[16] In a stress scenario, a marked widening of the credit spread[17] gives rise to market value losses totalling just over 15% of capital for 17 commercial banks, special-purpose banks and central institutions surveyed.[18] However, 88% of these losses occur in the banking book and therefore do not need to be realised, provided the widening of the spread is only temporary. For most banks, stock price risk and, in particular, exchange rate and volatility risk currently play only a minor role.

For large banks, a widening of the credit spread – in other words, the difference between the market interest rate and the risk-free interest rate – is the most important source of market risk.

Accumulation of sectoral credit risks

Credit risks are particularly prevalent in certain sectors. The default risks for German banks are especially high for shipping loans, loans for foreign commercial real estate and securitisations. There is a particular risk of losses in the event of weak economic development worldwide, in larger European countries or in the United States.

16 See also the section entitled "Vulnerability to an interest rate shock varies between categories of banks" on pp 45-46.
17 The stress scenario provides for a widening of the credit risk spread in all rating grades (each in basis points: AAA: +30, AA: +50, A: +100, BBB: +200, BB: +500, B: +1,000, CCC or less: +1,500).
18 Market risk stress test survey conducted by the Bundesbank as at 31 March 2013. The data relate to the unweighted averages of 17 surveyed banks. The losses as a weighted average are much lower (8% of capital). Taken as a whole, the total unweighted market value losses for all 28 surveyed institutions (including savings banks and credit cooperatives) amount to 13% of capital.

Further write-downs likely on shipping loans

The seven most systemically important German banks in the ship financing segment reduced their exposures from €97 billion in mid-2012 to €86 billion in mid-2013. €23 billion of this overall portfolio is covered by a public partial loss guarantee scheme.[19] In some instances, however, the stock of claims from ship financing makes up a very significant proportion of the overall portfolio of the banks in question.[20]

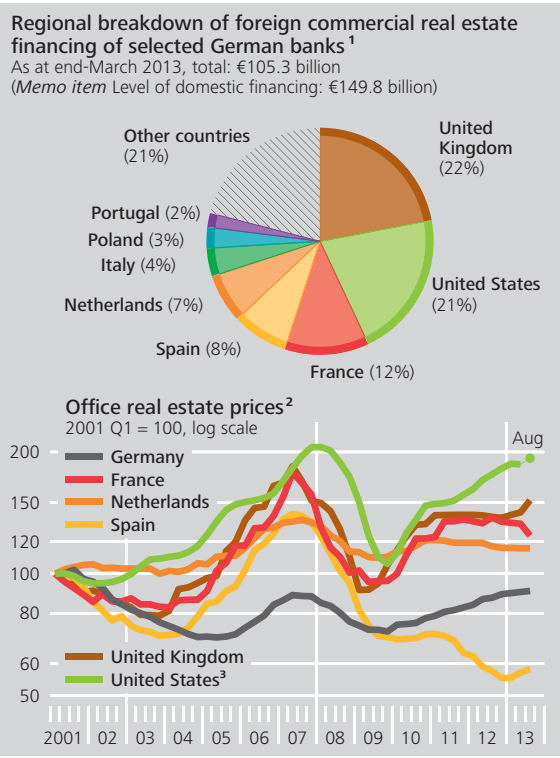
Given the unresolved problems in the shipping industry, it is likely that further loans will have to be written down. The industry is now suffering because it has not been possible in recent years for many market sub-segments to make full use of the capacity built up and commissioned prior to the financial crisis. Freight and charter rates have also fallen due to this overcapacity and are now at a level which allows only partial coverage of operating costs in many cases. The shipping industry is not expected to recover before 2015.

Risks from commercial real estate lending vary from region to region

The claims from foreign commercial real estate loans of the eight major German banks with an international focus surveyed here amounted to €105 billion at the end of the first quarter of 2013, which corresponds to a €16 billion reduction since the end of 2011.[21] Of the foreign markets, the United Kingdom makes up the largest percentage of the portfolio, with 22%, followed by the United States with 21%, France with 12%, Spain, Italy and Portugal with a combined share of 14% and the Netherlands with 7% (see Chart 4.6).[22]

On the German market for commercial real estate, default risk is not currently heightened,[23] and in the United States risks have decreased as a result of the economic recovery. By contrast, commercial real estate prices in the United Kingdom, the Netherlands and the countries affected by the European debt cri-

Indicators for commercial real estate Chart 4.6



Sources: Commercial real estate lending survey, Jones Lang LaSalle, Moody's/Real Capital Analytics and Bundesbank calculations. **1** Eight major German banks with an international focus which did not transfer positions to resolution agencies in the observation period. **2** The capital value indices of Jones Lang LaSalle reflect developments in the premium segment, ie real estate in prime positions in top locations with special features. **3** Moody's/RCA Commercial Property Price Index (CPPI) for offices in central business locations.

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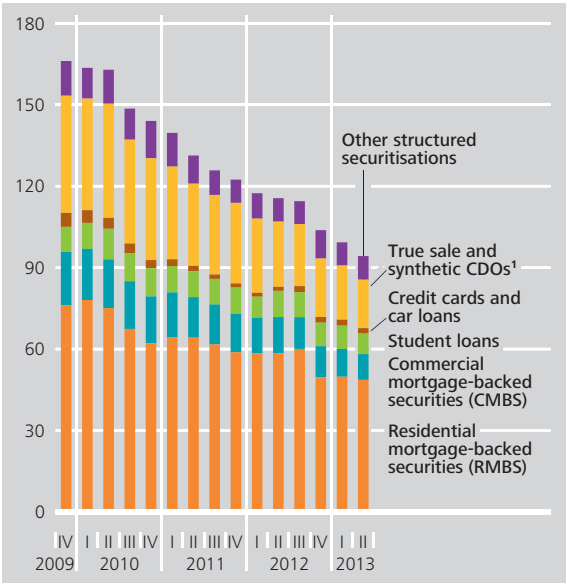
19 The public partial loss guarantee scheme is also intended to cover losses arising from other exposure classes. These figures are taken from requests for information by the Bundesbank regarding the exposure of German banks in shipping finance.
20 Some German banks intend to withdraw from ship financing.
21 These figures are taken from requests for information by the Bundesbank regarding the exposure of German banks in commercial real estate lending.
22 With €150 billion, Germany accounts for 58% of the commercial real estate lending in question (totalling €255 billion).
23 Demand for commercial real estate in Germany is benefiting from comparatively positive economic developments. It has been possible to make up for price reductions in some segments.

Securitisation portfolios held by selected banks*

Chart 4.7

€ billion, book values



***** The analysis covers 12 major German banks with an international focus which did not transfer positions to resolution agencies in the observation period. **1** Collateralised debt obligations.

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sis, which fell during this crisis, are unlikely to recover in the near future due, amongst other things, to the muted growth prospects in these countries. German banks could therefore incur losses on loans for European commercial real estate. For instance, it may not be possible to refinance some loans due to mature in the next few years, including commercial mortgage-backed securities (CMBS) from the pre-crisis boom years, as the value of collateral has fallen in line with prices and banks have also tightened their lending standards. This refinancing problem will be exacerbated by the high proportion of loans which will have to be extended in the coming years. Furthermore, the receptiveness of securitisation markets is currently low.

German banks could incur losses on loans for European commercial real estate.

Further reduction in securitisations

The 12 major German banks with an international focus have also further trimmed their holdings of securitisations. This group saw the book value of securitisations fall by €21 billion to €94 billion from mid-2012 to mid-2013, mainly due to maturities, repayments, redemptions and amortisations as well as net sales.[24] By contrast, write-downs had relatively little effect on the book value in this period. This was not the case during the earlier phases of the financial crisis, when write-downs had a significant impact on securitisations.

Residential mortgage-backed securities (RMBS) make up the largest share of holdings at 52%, followed by collateralised debt obligations (CDOs) at 19%, CMBS at 10% and securitised student loans at just over 8% (see Chart 4.7).

Until now, the signs of a gradual recovery in the securitisation market have been more pronounced in the United States than in Europe. Supported by more favourable economic developments, issuance volumes in the United States have increased at a somewhat faster rate, while weak growth and the low credit ratings of banks have had a detrimental effect on issuance volumes in Europe, particularly in countries affected by the debt crisis.

Last year, the 12 major German banks with an international focus further reduced problem assets in the risk sectors of shipping loans, loans for foreign commercial real estate and securitisation. Nonetheless, their claims from these sectors, taking into account the public partial loss guarantee scheme in the ship financing sector, still amounted to 5.4% of total

24 These figures are taken from a regular request for information by the Bundesbank regarding the exposures of German banks relating to collateralised debt obligations and other structured securitisations.

SEPA migration: operational but not systemic risk

On the path towards a Single Euro Payments Area (SEPA), credit institutions will be required as of 1 February 2014 – pursuant to the SEPA Regulation[1] – to accept and execute domestic and European credit transfers and direct debits denominated in euro only if they comply with the SEPA format. The move away from the national legacy payment schemes for credit transfers and direct debits and the narrow remaining time frame present payment service providers and their institutional customers with challenges that should not be underestimated. For businesses, public authorities and associations, the task of adjusting their payment processes entails considerable effort. This is true above all for the migration to the SEPA direct debit schemes.

The current take-up rate of SEPA instruments gives cause for concern: in the third quarter of 2013, SEPA credit transfers in Germany accounted for 13.9% and SEPA direct debits for 0.7% of all such transactions. A large number of businesses have scheduled their SEPA migration for the fourth quarter of 2013. In Germany, around 25 million credit transfers per working day with a value of €227 billion and just over 35 million direct debits worth €52 billion have to be migrated.

As a result, the upcoming migration is having to be carried out under great time pressure and is thus subject to greater operational risk. If businesses do not become SEPA-compliant in time, they or their business partners risk facing microeconomic liquidity bottlenecks and costs arising from payments that were processed incorrectly or late.

The advanced state of preparation of the financial industry and, in particular, that of large users as well as the services available for converting payment formats will ensure that no liquidity bottlenecks arise at the macroeconomic level. As things stand, a systemic risk to financial stability can therefore be ruled out.

1 Regulation (EU) No 260/2012 establishing technical and business requirements for credit transfers and direct debits in euro.

assets at the end of the first quarter of 2013. This ratio is much less favourable at individual banks.

Loans to US municipalities could develop into another risk sector for German banks should their financial situation deteriorate further. However, the total lending of the 12 major German banks with an international focus is smaller here, at €21 billion at the end of the first quarter of 2013, than in the problem areas mentioned above.

Each of these sectoral risks in itself appears to be manageable from a financial stability perspective. However, if two or more risks were to occur at the same time, this could well have an adverse effect on financial stability.

Individual enterprises may face liquidity bottlenecks and additional costs if they fail to adapt their payment processes to the new Single Euro Payments Area (SEPA) in time. As things stand, this presents no systemic risk to financial stability (see the box entitled "SEPA migration: operational but not systemic risk" on this page).

Housing market continues to grow dynamically

Mortgage lending is extremely important for financial stability and therefore requires particular attention.[25] The strong upward movement in German housing prices continued in 2012. The price of freehold apartments and terraced houses rose by a total of 3.9% in Germany as a whole, and by 5.5% in 125 German towns and cities. In the seven largest

25 The significant potential impact on credit institutions arises not least from the level of outstanding housing debt in Germany.

cities, the price of freehold apartments increased by 8.6%.[26] Based on the first three quarters, a similar price rise of around 9% has been observed in the seven largest cities in 2013.[27] In addition to the marked price increases in the largest cities, prices also rose in other areas in 2012.[28] Econometric analysis based on regional data confirms that, overall, housing prices in Germany have not moved far from the fundamentally appropriate level. However, estimates suggest that prices in some large towns and cities are likely to be overvalued now by as much as 20%.[29] From a financial stability perspective, there is a danger that a spiral of increasing prices in the German housing market and unsustainable bank lending practices might evolve.

There is a danger that a spiral of increasing prices in the German housing market and unsustainable bank lending practices might evolve.

Low-interest-rate environment favours build-up of macrofinancial risks

The current low-interest-rate environment, uncertainty in the capital markets and the resulting shift to tangible assets may result in a build-up of risks to financial stability and misallocations which could have a detrimental effect on the German real estate market and the German economy as a whole in the future. The decrease of around two percentage points in interest rates for residential mortgages in the last three years goes some way to explaining the increase in prices, since a much higher loan amount can be borrowed for the same monthly repayments due to the lower financing cost. For a 20-year loan with debt financing of 80%, the lower financing costs enable a purchase price which is around 15% higher in pure accounting terms.[30] In this case, a risk to financial stability would arise, in particular, from the risk of rollover financing if the loan were not repaid in full within the fixed-rate period.

The rise in housing prices is underpinned by the labour market, too, which has been in robust shape for some time. The income prospects of households have also improved markedly. However, there is a danger that borrowers will see the current price increases as a long-term trend and will act on the assumption that prices will keep rising sharply in the longer term. In particular, market participants could further drive up the demand for real estate if they no longer expect to be able to afford property in a few years' time.[31] Such inflated expectations would further fuel price increases. Both purchasers and lending banks must take into consideration the various potential medium and long-term risk scenarios when making purchase or lending decisions. In light of the possible overvaluations in individual regions, particular attention must be paid to ensuring sufficient equity for lending. From a financial stability perspective, a conservative lending policy is extremely important for sustainable real estate financing. Furthermore, marked procyclical behaviour on the part of the banking sector with regard to real estate market prices can lead to unhealthy developments. It is therefore important that the current upturn in the German housing market does not give rise to an increase in mortgage lending accom-

Conservative lending policy is extremely important for sustainable real estate financing.

26 Bundesbank calculations based on data provided by Bulwien-Gesa AG. The seven largest cities are Berlin, Cologne, Düsseldorf, Frankfurt am Main, Hamburg, Munich and Stuttgart.
27 Bundesbank calculations based on data provided by Bulwien-Gesa AG. Intra-year data on price developments in real estate markets are generally subject to stronger fluctuations and therefore great uncertainty.
28 For a detailed analysis of increases in the price of residential real estate since 2010, see also Deutsche Bundesbank (2013b), pp 13 ff.
29 According to Bundesbank estimates, apartments in large towns and cities may in particular be overvalued in terms of longer-term demographic and economic determinants. See Deutsche Bundesbank (2013b), p 24.
30 The calculations are based on an annuity loan with annual instalments assuming full repayment during the term of the loan.
31 See J Montalvo and J Vilchez (2012).

Risks arising from German households with outstanding housing loans

One of the factors to be considered from a financial stability perspective is whether household indebtedness and the associated credit risk is sustainable for German banks. Three questions need to be answered in order to assess these risks. First, how many borrowers are vulnerable, ie how many are highly likely to become insolvent? Second, how large is the volume of credit claims on vulnerable households? Third, what would be the resulting losses to banks should these vulnerable borrowers default? These questions are investigated using household data collected by the Bundesbank between September 2010 and July 2011.[1] Given that the study was carried out as a representative survey, the results can consequently be extrapolated for Germany as a whole.

The following analysis focuses on households with outstanding housing loans, which account for around 22% of all German households. Two alternative approaches are applied in order to identify vulnerable borrowers. Under the first approach, a household is classed as vulnerable if it spends more than 40% of its gross monthly income on servicing all its loans.[2] According to this definition, around 9% of all German households with outstanding housing loans are vulnerable. The aggregate debt of these vulnerable households extrapolates to approximately 20% of the indebtedness of all households with outstanding housing loans. Under the second approach, a household is classed as vulnerable if, after deducting the debt servicing costs on all loans from its monthly net income, it has less than the statutory non-impoundable minimum income left.[3] According to this definition, less than 1% of households with outstanding housing loans are vulnerable. The aggregate debt of these households extrapolates to approximately 6% of the indebtedness of all households with outstanding housing loans.

To estimate the potential loss to credit institutions from their lending to households, a pessimistic scenario is assumed below in which all vulnerable borrowers default on their loans. Three assumptions are made. First, all of the vulnerable households are unable to service their debts. Second, the value of the properties and financial assets remains unchanged. Third, the banks have full recourse to the borrowers' assets. The expected losses are calculated as the difference

1 A total of 3,565 German households were surveyed in a study of households' economic situation. For further information as well as initial findings, see http://www.bundesbank.de/Navigation/DE/Bundesbank/Forschungszentrum/Haushaltsstudie/haushaltsstudie.html.

2 This definition is often used in studies on households' debt sustainability. See also S Costa and L Farinha, Households' Indebtedness: A Microeconomic Analysis Based on the Results of the Households' Financial and Consumption Survey, Banco de Portugal, Financial Stability Report, May 2012 as well as J Bricker, B Bucks, A Kennickell, T Mach and K Moore, Surveying the Aftermath of the Storm, Changes in Family Finances from 2007 to 2009, Federal Reserve Board Working Paper 2011-07, March 2011 and R Djoudad, A Framework for Assessing Household Indebtedness Using Microdata, Bank of Canada, July 2010.

3 In international studies, the liquidity margin is used in this approach. See N Albacete and P Fessler, Stress Testing Austrian Households, OeNB Financial Stability Report 19 June 2010 as well as N Sugawara and J Zalduendo, Stress-Testing Croatian Households with Debt – Implications for Financial Stability, World Bank Policy Research Working Paper 5906, December 2011. For Germany, the non-impoundable minimum income serves as a suitable proxy for the liquidity margin. Under this approach, households have a greater buffer below the vulnerability threshold than in the first approach. The first approach therefore makes stricter assumptions and is thus the more prudent approach from a regulatory perspective.

between the outstanding credit volume and the vulnerable borrowers' total assets. According to the first definition of vulnerability, the estimated losses extrapolate to 1.09% of banks' claims on households (equivalent to around €15 billion). Using the second definition of vulnerability, the potential losses extrapolate to 0.17% of banks' corresponding claims (just over €2 billion). Given German banks' current capital base, the estimated losses *per se* should thus prove sustainable.

The analysis permits the overall conclusion that German banks' credit risk from lending to households that have taken out housing loans is manageable. For one thing, the debt sustainability of most borrowers is robust. For another, it may be assumed that the vulnerable households have a high level of assets in relation to debt, which limits the potential losses in the event of credit defaults.

It should be borne in mind, however, that the calculations are based on data from the years 2010 and 2011. Hence they do not include the most recent price developments on the German housing market. It cannot be ruled out that the rising property prices could lead to higher indebtedness and thus to lower debt sustainability. This could imply that the number of vulnerable borrowers may have meanwhile increased. The potential losses could also be greater as rising property prices increase the likelihood of price corrections, which would, in turn, have a negative impact on the value of collateral.

panied by an easing of lending standards and inadequate risk provisioning. Experience in other countries has shown that such developments can occur. For example, studies in the United Kingdom and the United States have shown that banks change their lending behaviour in booming real estate markets.[32] In these countries, a link has been established between increasing real estate prices and a higher loan-to-value (LTV) ratio and loan-to-income (LTI) ratio. In the event of a procyclical reaction in real estate lending, price increases and growing debt levels may become mutually reinforcing.

Increase in housing loans

Since the spring of 2010, German banks have registered an increase in demand from households for housing loans.[33] This is also reflected in the steady rise in total lending. At an annual rate of 2.2% in the third quarter of 2013, the associated credit growth is, however, still moderate, especially in view of the comparatively robust economic performance in Germany. The aggregate data on credit growth provide limited insight into any potential build-up of regional risks, however. Preliminary analyses suggest that credit growth in regions with particularly high rates of price increase is above average. Moreover, surveys show that low-deposit mortgages are far from unusual in individual large cities. Nationwide, however, the Bank Lending Survey still shows no indication of a loosening of lending standards. In fact,

32 See C Crowe, P Rabanal, D Igan and G Dell'Ariccia (2011), G Dell'Ariccia, D Igan and L Laeven (2012), G Jiménez, V Salas and J Saurina (2006), C Hott (2011), W Goetzmann, L Peng and J Yen (2012) and Financial Services Authority (2011).
33 Data collected in Germany as part of the Eurosystem's Bank Lending Survey, as of October 2013. The aggregate survey results for Germany can be found at http://www.bundesbank.de/Redaktion/EN/Standardartikel/Core_business_areas/Monetary_policy/volkswirtschaft_bank_lending_survey.html.

banks have announced that they are more likely to tighten these standards.

Bundesbank analyses based on fiscal data from 2010 and 2011 show that the debt sustainability of the vast majority of German real estate borrowers is good (see the box entitled "Risks arising from German households with outstanding housing loans" on pages 65 and 66). Good debt sustainability and a generally conservative lending policy mean that the potential losses from housing loans can be classified as manageable for German banks. However, the data provide no insight into the specific effects of the recent sharp price increases. The price dynamics may have given rise to excessive borrowing, thereby reducing the debt sustainability of borrowers in the regions most affected. Historically low interest rates may have also increased the real estate borrowing of low-income households with heightened employment risks.

Overall, the available data on housing loans and housing prices at a national level in Germany continue to show no sign of destabilising developments at present. However, careful monitoring of lending developments in regions with sharp price increases and the possible effects on the financial system as a whole must continue.

Overall, data continue to show no sign of destabilising developments in the German housing market at present.

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Insurance companies: bridging low interest rates and higher capital requirements

The low-interest-rate environment harbours a considerable potential risk to the solvency of life insurance companies. In a stress scenario with a prolonged period of low interest rates, more than one-third of German life insurers would no longer be able to fulfil the regulatory own funds requirements under the current solvency regime (Solvency I) by 2023. Measured in terms of their premium revenue, this group holds a market share of 43%. This result is attributable primarily to high guaranteed interest rates. In addition, the legally prescribed but economically unsound policyholders' participation in the valuation reserves – which are accumulating on a substantial scale in the current low-interest-rate environment – is leading to a rise in payout amounts. Efforts should, therefore, be made to create a sound and sustainable regulatory framework for policyholders' participation in the valuation reserves.

Moreover, Solvency II poses a challenge for insurance companies. Solvency II reveals the risks stemming from long-term obligations by valuing assets and liabilities transparently, and in a market-consistent and risk-appropriate manner. The package of measures proposed by the European Commission to alleviate any problems arising from the transition to Solvency II is still being examined.

The key position of insurers within the financial system raises the question of their systemic importance. Interconnectedness with the banking sector plays a significant role here. The Financial Stability Board released an initial list of global systemically important insurers in July 2013. The methodology for identifying systemically important insurers should be open to refinement.

Low-interest-rate environment is undermining the solvency of life insurance companies

The risks arising from the life insurance segment are a particularly important factor for the stability of the insurance sector. The significance of life insurers in Germany is evident from the fact that they account for around 48% of the premium income and about 62% of the total capital investment of all German primary insurance companies.[1]

Interest rate risk is of particular relevance to life insurers. It is the risk that, in the event of unfavourable market developments, income from investment may no longer be sufficient to make agreed guaranteed payments to policyholders and to fulfil any additional profit participation commitments. This is particularly important for investment undertaken in a persistent low-interest-rate environment.

Interest rate risk is of particular relevance to life insurers.

Life insurers under increasing pressure

Chart 5.1 shows that life insurance companies are confronted directly with the impact of the low-interest-rate environment. In 2011, the yield on public bonds issued by central government fell below the maximum technical interest rate for life insurers' new business for the very first time.[2] In the course of 2013, the yield has declined to an average of 1.3%, albeit with a slight increase of late. At the same time, life insurers' obligations to service outstanding policies remain high as the maximum technical interest rate in the industry's portfolio averages 3.2%.

Although life insurance companies were able to raise their net return on investment from 4.1% in 2011 to 4.6% in 2012, this was a temporary phenomenon. The increase in the net return on investment was due partly to write-ups and partly to life insurers realising valuation reserves in order to be able to make the required allocations to the additional interest provision.[3] The net return on investment is therefore likely to come under pressure in the future as, in realising valuation reserves, high-yielding holdings have been sold and can no longer be used to generate net investment income.

In 2011, funds had to be set aside in additional interest provisions for the first time as the reference interest rate, at 3.92%, was lower than the guaranteed return of 4% for certain outstanding policies. A sum of €1.5 billion was thus allocated to additional interest provisions. In 2012, the reference rate fell to 3.62%, leading to further inflows of €5.7 billion to the additional interest provisions. A similarly high level of accrual is expected in 2013.

The current low interest rates are creating – in some cases, substantial – valuation reserves for bonds with high coupons in life insurers' portfolios. As in 2012, these are being partly liquidated in order to fulfil the additional interest provision requirements. Moreover, since 2008, insurers have been obliged

1 Premium revenue in life insurance, including pension funds and Pensionskassen. See German Insurance Association (Gesamtverband der deutschen Versicherungswirtschaft e.V. or GDV) (2013) and Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht or BaFin) (2013a).
2 Insurance companies usually set the maximum technical interest rate as the guaranteed return. The average maximum technical interest rate in insurers' portfolios is, therefore, a good gauge of the average guaranteed return in insurers' portfolios. The yield on public bonds basically comprises the yield on bonds outstanding with an agreed maturity of more than four years pursuant to the terms of issue.
3 The additional interest provision (Zinszusatzreserve) is a reserve which life insurers are required to set up by law to ensure that they remain able to finance agreed guaranteed payments in the future. The additional interest provision is to be put in place if the reference interest rate – derived from the ten-year average yields on European government bonds with an AAA rating and a residual maturity of ten years – is lower than the guaranteed return promised to policyholders. See section 5 of the Regulation on the Principles Underlying the Calculation of the Premium Reserve (Deckungsrückstellungsverordnung).

to give policyholders a half share of the valuation reserves accrued when their contract ends.

Shrinking own funds buffers in 2012

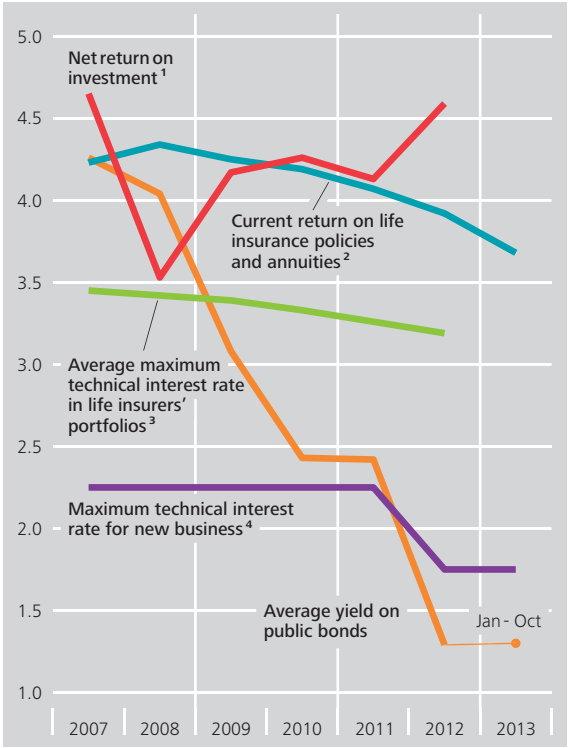
Life insurance companies may find that the income they generate is no longer sufficient to cover the policyholders' profit participation share as defined by the enterprises or even guaranteed benefits. Insurers may then be forced to tap into own funds.

Chart 5.2 provides an overview of the own funds held by German life insurers, in aggregate, pursuant to Solvency I. The diagonally shaded area depicts the regulatory own funds requirements, known as the "solvency margin". This consists essentially of 4% of the premium reserve and 3‰ of capital at risk.[4] The coverage ratio, by contrast, stems from the ratio of regulatory own funds to the solvency margin. In comparison with 2009, the coverage ratio has diminished, in aggregate, from 186% to 169%. Thus, life insurers had an own funds buffer of 69% at the end of 2012.

In comparison with 2009, life insurers' own funds buffer has diminished, in aggregate, from 86% to 69% in 2012.

Life insurers' key interest rates Chart 5.1

%



Sources: Assekurata, BaFin, Regulation on the Principles Underlying the Calculation of the Premium Reserve (Deckungsrückstellungsverordnung) and Bundesbank calculations. **1** Investment income less expenses relative to the annual average investment portfolio. **2** Comprises the maximum technical interest rate, direct credit amounts and the current surplus. **3** Average of the various product generations with different maximum technical interest rates when the respective contracts were concluded. **4** The maximum rate that life insurers can use as a basis when calculating the premium reserves required for new contracts.

Deutsche Bundesbank

Stress scenarios on the impact of the low-interest-rate environment

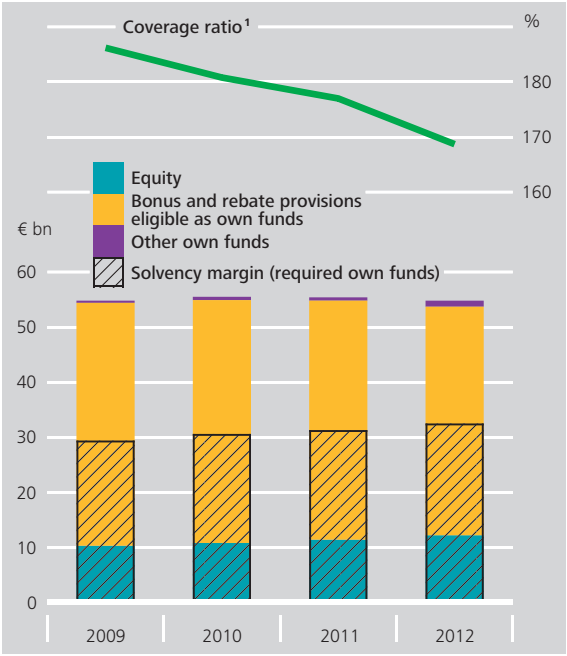
The bonus and rebate provisions originate principally from investment income and are thus directly impaired by the low-interest-rate environment (see the box entitled "Bonus and rebate provisions as a key component of own funds" on page 73). The following scenario analysis examines changes in the bonus and rebate provisions up to 2023 with a view to drawing conclusions about developments in own funds. The underlying data are drawn from 85 German life insurers.[5]

The yield on German Federal bonds (Bunds) with a residual maturity of six years forms the backbone of the scenarios as it has the greatest explanatory power with regard to developments in the net return on investment of the life insurers analysed. As the life insurance companies operating in Ger-

4 The capital at risk is derived from the difference between the insured amount and the premium reserve. For more information, see the Regulation Concerning the Capital Resources of Insurance Enterprises – the Capital Resources Regulation (Verordnung über die Kapitalausstattung von Versicherungsunternehmen – Kapitalausstattungs-Verordnung).

5 The analysis is based on a refinement of the model developed by Kablau and Wedow. See A Kablau and M Wedow (2012).

Life insurers' own funds Chart 5.2



Source: BaFin. **1** Ratio of actual own funds to the solvency margin. Deutsche Bundesbank

many hold a diversified investment portfolio, they have in the past often generated a return on investment that was higher than the interest paid on the government bonds under review. The projected net return in the scenarios takes this interest rate differential (excess return) into account.

– In the baseline scenario (scenario 1), the net return is mapped using Bunds with a residual maturity of six years on the basis of forward interest rates. The net yield is calculated as the sum of the forward rates derived and the excess return.[6] The enterprise-specific excess return thereby gradually shrinks to its historical mean before being extrapolated from that level.[7] The erosion of the excess return indicates that, with a given investment risk, it becomes increasingly difficult to achieve an above-average return in a low-interest-rate environment.

– In a mild stress scenario (scenario 2), the Bunds with a residual maturity of six years are extrapolated using historical yields on Japanese government bonds.[8] This is intended to plot a conceivable development path during a protracted period of low interest rates – as experienced in Japan since the end of the 1990s. The net return is brought into line with the Japanese interest rate level over a time horizon of six years as the insurance companies progressively restructure their portfolios. As in the baseline scenario, the excess return is added in order to forecast the net return on investment.

– In a more severe stress scenario (scenario 3), the excess return generated shrinks more quickly than in the other two scenarios, although not abruptly. In addition, in future, the enterprises are not able to achieve the mean of the excess return but rather only the minimum value of the historical excess return.[9] This simulates an increase in the severity of the low-interest-rate environment across the entire capital market, making it ever more difficult to achieve higher excess returns.

Chart 5.3 plots the developments in the net return on investment in the three scenarios described. The average guaranteed return in German life

6 It is assumed that the forward interest rates derived tally with the future spot rates. See also L E O Svensson (1994).
7 In the model, the enterprises produce the 90% quantile of the values observed as the excess return in 2013. This excess return shrinks to the respective enterprise-specific historical mean level over the course of several years. If the mean is negative, it is fixed at zero for the purposes of the projection.
8 The yields on Bunds with a residual maturity of six years were extrapolated from mid-2013 onwards using yields on Japanese government bonds achieved in 2003. In mid-2013, the yield on these Bunds was 0.70%. The yield of 0.75% recorded on Japanese government bonds at the end of January 2003 was chosen as the link-up point. In the extrapolation using historical yields on Japanese government bonds, the interest rate remains extremely low in both the mild scenario and the more severe scenario. In the extrapolation using the forward interest rates derived from the yield curve for Bunds in the baseline scenario, however, the interest rates rise gradually.
9 If the minimum value is negative, it is fixed at zero for the purposes of the projection.

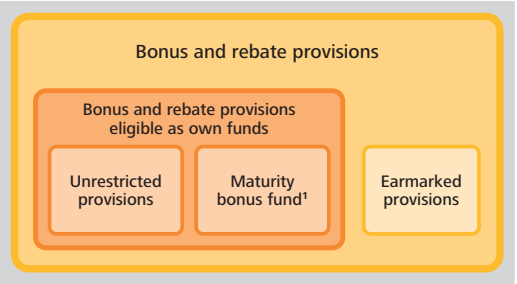
Bonus and rebate provisions as a key component of own funds

The bonus and rebate provisions are a balance sheet instrument used to smooth policyholders' profit participations. Surpluses generated by life insurers are usually not distributed directly to policyholders; instead, they are transferred first to the bonus and rebate provisions. The profit participation shares payable to policyholders are taken from the bonus and rebate provisions at a later point in time and paid out.[1] The bonus and rebate provisions thus serve as a buffer. This mechanism allows insurers to keep policyholders' profit participations relatively stable even when profits vary. The bonus and rebate provisions ebb and flow over time. They diminish in a low-interest-rate environment, when their inflows are lower than outflows for policyholders' profit participation shares, and they increase in a high-interest-rate environment.

The bonus and rebate provisions consist of provisions that are eligible as own funds as well as earmarked provisions. Policyholders do not have any actual entitlements to provisions that are eligible as own funds, which means that, provided they have the approval of the supervisory authority, insurers can use these provisions when faced with a looming contingency situation. The maturity bonus fund is also included in the bonus and rebate provisions eligible as own funds, as policyholders have no entitlement to maturity bonuses until their policy ends. By contrast, the earmarked provisions are irrevocably allocated to the policyholders and therefore do not qualify as own funds.

The scenario analysis investigates when – given low interest rates and high guaranteed payments – life insurers would no longer be able to satisfy the regulatory own funds requirements under the current Solvency I regime. As the bonus and rebate provisions eligible as own funds account for the bulk of insurers' own funds and the size of these provisions is largely dependent on net investment income and therefore on interest rates, it is possible to draw some conclusions about insurers' own funds situation based on certain assumptions regarding the development of bonus and rebate provisions.

Composition of bonus and rebate provisions on German life insurers' balance sheets

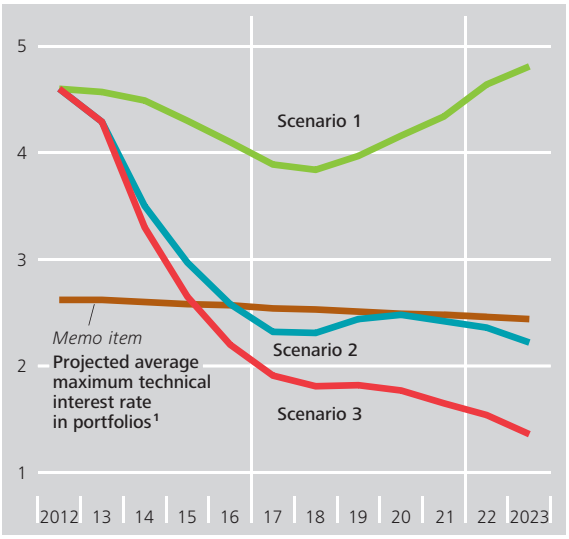


1 In exceptional cases, part of the maturity bonus fund must be classified as earmarked provisions and is therefore not included in the bonus and rebate provisions eligible as own funds.

Deutsche Bundesbank

1 The policyholders' profit participation comprises the current profit participation, the maturity bonus and the participation in the valuation reserves. The first two components are set by the insurance companies each year. The current profit participation shares are taken from the bonus and rebate provisions on a yearly basis and allocated irrevocably to each individual insurance contract. The maturity bonus is issued as a one-off payment upon maturity of the policy. The decisive factor in this case is the declaration of the insurers which is valid at maturity. Participation in the valuation reserves is also payable at maturity and is not guaranteed in advance.

Projected net return on investment* Chart 5.3



Sources: BaFin and Bundesbank calculations. * The impact of a low-interest-rate environment on 85 German life insurance companies was examined in three scenarios. Scenario 1 is the baseline scenario, scenario 2 represents a mild stress scenario while, in scenario 3, heightened stress conditions are assumed. **1** For reasons of comparability, the maximum technical interest rate has been translated to 100% of investment and extrapolated from the historical growth rate.
Deutsche Bundesbank

insurers' portfolios is also shown for comparative purposes.[10]

The net return on investment achieved by the enterprises in the three scenarios is the main component of allocations to the bonus and rebate provisions in the model. In addition, the risk result and other earnings are transferred to the bonus and rebate provisions.[11] Fulfilment of the additional interest provision allocation requirements reduces the amounts transferred to the bonus and rebate provisions. Besides investment income, valuation reserves – insofar as any exist – can be used to fund the additional interest provisions. Withdrawals from the bonus and rebate provisions are calculated on the basis of an overall interest projection.[12] It is assumed that the enterprises lower the overall interest rate and quickly align it to the guaranteed interest rate in a low-interest-rate environment. The model considers the bonus and rebate provisions as a whole. Allocations and withdrawals are imputed to the bonus and rebate provisions eligible as own funds on a *pro rata* basis.[13] All other own funds are kept constant in the model.

Own funds requirements pursuant to Solvency I frequently not met in stress scenarios

In the baseline scenario (scenario 1), only one life insurer no longer meets the own funds requirements pursuant to Solvency I during the observation period (see Chart 5.4). In the mild stress scenario (scenario 2), 12 of the 85 life insurance companies analysed would no longer be able to do so by 2023. Measured in terms of their premium revenue, this group holds a market share of around 14%.

In the more severe stress scenario, more than one-third of the life insurers analysed would no longer be able to fulfil the own funds requirements by 2023.

In the more severe stress scenario (scenario 3), 32 enterprises, ie more than one-third of the life insurers analysed, would no longer fulfil the own funds requirements by 2023. Together, these enterprises have a market share of about 43%.

10 Enterprises earn the net return on the entire investment portfolio. The guaranteed return, by contrast, is paid only on the saving component, which makes up around 80% of premiums. For reasons of comparability, therefore, the guaranteed return was extrapolated to the entire investment portfolio.
11 The risk result is the difference between calculated risk costs and actual risk expenditure. Other earnings consist mainly of the cost result. Investment income, the risk result and other earnings are all allocated in full to the bonus and rebate provisions for the purposes of the analysis conducted here.
12 Policyholders' credit balances yield interest at the overall interest rate, which consists of two components: the guaranteed return and the (current) interest profit share, which the life insurer redefines every year. The guaranteed interest rate is an expense for the financial year. The interest profit share, however, is withdrawn from the bonus and rebate provisions, provided it is not posted in full or in part as the direct credit amount (the "direct interest credit amount").
13 At the end of 2012, bonus and rebate provisions eligible as own funds made up, in aggregate, 81% of total bonus and rebate provisions.

Life insurers will have to respond more vigorously to the low-interest-rate environment

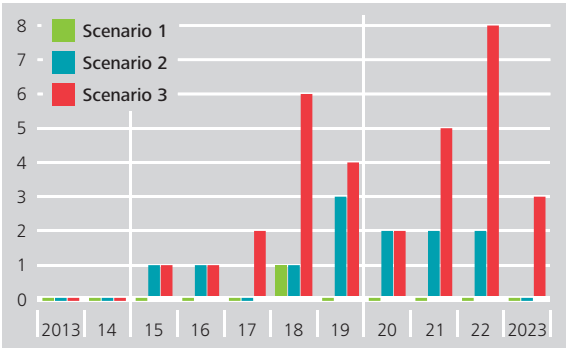
A persistent low-interest-rate environment thus harbours a considerable potential risk to the stability of life insurance companies. The scenario analysis was conducted on the basis of the currently applicable solvency regime (Solvency I). Solvency II will introduce a market valuation of assets and liabilities in order to better capture actual risks. Any problems in meeting the own funds requirements owing to low interest rates will come to light much sooner.[14] Therefore, a tendency towards poorer results is to be expected under Solvency II.

A persistent low-interest-rate environment harbours a considerable potential risk to the stability of life insurance companies.

Life insurers have several possible courses of action open to them in response to a protracted period of low interest rates. One option would be to strengthen regulatory own funds by raising equity. Another, through assuming greater risks, would be to try to increase the net return in order to enlarge the allocations to the bonus and rebate provisions, parts of which are recognised as own funds. Increased risk-taking would have to be viewed critically in terms of financial stability.[15] Insurers' risk management systems would certainly need to be adapted gradually. Insurance companies could also curb the drain on own funds by substantially lowering the overall interest rate at an early stage and, for instance, continuing to pay only the guaranteed return. Moreover, they could further extend their range of products with a flexible guaranteed return or no guaranteed return at all.

Life insurers with a coverage ratio of less than 100% Chart 5.4

Number



Sources: BaFin and Bundesbank calculations.
Deutsche Bundesbank

Rules on participation in the valuation reserves under review

The extent to which a low-interest-rate environment can impact life insurers is also determined by statutory requirements. For instance, since the reform of the Insurance Contract Act (*Versicherungsvertragsgesetz*) in 2008, German life insurers have been obliged to give policyholders a half share of the valuation reserves accrued when their contract ends.[16] This applies to all asset classes.

Life insurers currently have large valuation reserves

Declining interest rates in the capital markets have caused the valuation reserves of fixed-income secur-

14 See also the box entitled "Future regulation under Solvency II flags risks from low interest rates early" on pp 77-78.
15 See also the chapter entitled "Global liquidity: vulnerabilities emerging from increased risk-taking" on pp 35-48.
16 Participation in the valuation reserves is also based on a judgment passed by the Federal Constitutional Court (Bundesverfassungsgericht or BVerfG). For more information, see BVerfG, 1BvR 782/94 of 26 July 2005.

ities to grow substantially.[17] While they amounted to only €2.7 billion at the end of the first quarter of 2011, they had ballooned to €87.8 billion by the end of 2012.[18] The current rules therefore mean that, in times of falling interest rates, life insurers must make increasing payouts for policies that expire or are terminated. The distribution of valuation reserves is, at present, governed by requirements which are economically unsound. One reason is that, on the asset side of a balance sheet prepared in accordance with the German Commercial Code (*Handelsgesetzbuch*), a market interest rate is used, which leads to the creation of valuation reserves of interest-bearing securities in a low-interest-rate environment. At the same time, on the liabilities side, no allowance is made for hidden losses as the provisions are not determined using the market interest rate but a constant interest rate – the original maximum technical interest rate. Only parts of the hidden losses have been taken into account in the additional interest provision since 2011.

Current rules mean that, in times of falling interest rates, life insurers must make increasing payouts for policies that expire or are terminated.

Participation in the valuation reserves means that funds flow out of the enterprises and are no longer available to the community of policyholders. High-yield paper may have to be sold prematurely, while new investments to honour benefit commitments payable at a later time can be undertaken only in less profitable instruments. This impedes the accumulation of essential safety buffers, as future income and, consequently, own funds in the form of the bonus and rebate provisions are likely to be lower.

Against this backdrop, efforts should be made to create a sound and sustainable regulatory framework for policyholders' participation in the valuation reserves, with the principal aim of reducing the negative impact which the persistently low interest-rate level is having on German life insurers. One option would be to distribute only that part of the valuation reserves which exceeds the hidden losses on the liabilities side in future. The lower the selected close-to-market reference rate relative to the guaranteed interest rate, the higher the hidden losses in this case.

A potential revision of the rules should aim to reduce the negative impact which the persistently low interest-rate level is having on German life insurers.

Solvency II will identify long-term risks

The future requirements for the European insurance sector (Solvency II) are designed to better reflect long-term risks.[19] Insurers' assets and liabilities are, as far as possible, to be valued transparently, and in a market-consistent and risk-appropriate manner (see the box entitled "Future regulation under Solvency II flags risks from low interest rates early" on pages 77 and 78). The value of most assets can be established directly on the basis of market prices.[20] The valuation of liabilities

The future requirements for the European insurance sector (Solvency II) are designed to better reflect long-term risks.

17 Valuation reserves of fixed-income securities are created, above all, when capital market interest rates fall. They are automatically dissolved when the fixed-income paper is redeemed.
18 See BaFin (2013b).
19 The application date of the Solvency II Directive is currently scheduled for 1 January 2016. Transitional arrangements with various deadlines are planned for some aspects of the new framework.
20 However, the question of whether these market prices always reflect the correct asset value for insurers is contentious. First, prices may deviate from the level justified by the fundamentals. Second, price mark-downs on illiquid assets are not justified if these assets are held to maturity.

Future regulation under Solvency II flags risks from low interest rates early

The German life insurers' financial statements pursuant to the German Commercial Code (HGB) are currently indicating a good earnings situation. Similarly, the supervisory ratios derived from these under Solvency I to date hardly reflect future strains arising from the low-interest-rate environment. Solvency II will introduce marking to market, which flags risks from a falling interest rate level at an early stage. An example below illustrates this.[1]

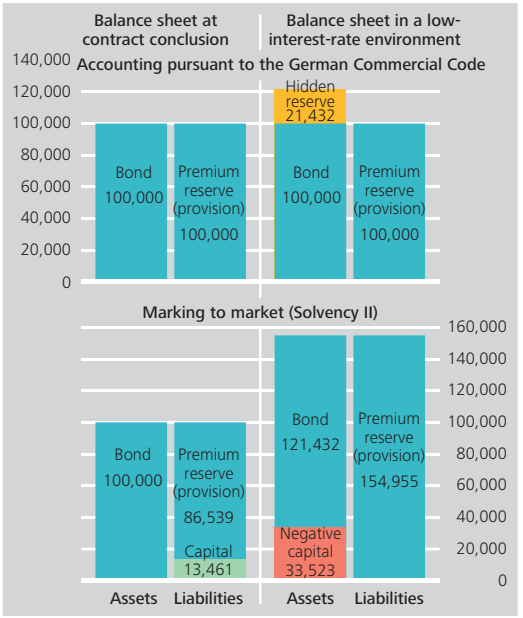
A life insurer sells a life insurance policy with a maturity of 30 years. The new customer pays a single premium of €100,000. Assuming a guaranteed return of 3.5% *per annum*, the customer is entitled to a guaranteed payment of €280,679 at maturity. The insurer invests the received single premium in a risk-free zero-coupon bond, which yields €148,024 at the end of its ten-year term.[2]

In its HGB balance sheet, the life insurer displays the bond on the assets side at the (amortised) cost of €100,000. On the liabilities side, the insured party's current claim of €100,000 is recorded as a premium reserve, which is a part of the technical provisions of the life insurer. Given that both values are identical, the insurer has no capital according to the German Commercial Code. The insurer's asset therefore covers exactly the insured party's current claims.

By contrast, marking to market looks at whether the insurer's asset is in fact sufficient to meet the insured party's future claims. The bond is recorded on the assets side at a market value of €100,000. On the liabilities side, the premium reserve amounts only to €86,539.[3] The insurance company would have to invest this amount for 30 years at the current market rate of 4% to be able to make the guaranteed payment. The insurer's capital would then amount to €13,461. The positive value shows that the insurer must invest only part of the single premium at current market rates to be able to meet the future payment obligation.

Stylised balance sheets of a life insurer

€



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1 Accounting rules are reduced to their essentials here, ie they are extremely simplified.
2 In the following, the yield curve is always assumed to be flat, meaning that the annual interest rate is constant across all maturities. The guaranteed payment by the insurer is €100,000 x 1.035^{30} = €280,679; the pay-out from the zero-coupon bond is €100,000 x 1.04^{10} = €148,024. The negative maturity transformation in the example is typical of life insurers: the average maturity of capital investments is usually considerably below that of the payment obligations. This exposes life insurers to interest rate risk.
3 Calculation: €280,679 ÷ 1.04^{30} = €86,539.

The effects of lowering the market rate to 2% differ greatly under the two frameworks of rules. Under the German Commercial Code (see chart), the life insurer records the bond on the assets side unchanged at the acquisition value of €100,000, despite its market value having risen to €121,432.[4] A hidden reserve is generated in the amount of the difference. On the liabilities side, the premium reserve remains unchanged as the interest rate does not affect the surrender value.

However, in the case of marking to market (see chart), the new market value of the bond of €121,432 is stated on the assets side whereas a premium reserve of €154,955 is recorded on the liabilities side,[5] which is the amount the insurer would have to invest in the capital market at current interest rates to be able to meet its payment obligation in the future. The negative capital shows that, for this, the insurer is short of €33,523 at present.

The example illustrates that risks arising from a low-interest-rate environment are immediately reflected when marking to market, whereas in an HGB balance sheet this is initially not the case. However, this representation is somewhat overstated, because HGB balance sheets, too, contain forward-looking elements. Since 2011, the additional interest provision obligates insurers to increase their premium reserve in times of low interest rates. Yet there is a lag when increasing and decreasing the additional interest provision, which means that hidden losses remain on the liabilities side of the insurer's HGB balance sheet at first.

4 Investors are required to invest €148,024 ÷ 1.02^{10} = €121,432 at the new market rate in order to receive the bond pay-out ten years later. Investors are therefore prepared to pay exactly this amount.
5 Calculation: € 280,679 ÷ 1.02^{30} = €154,955.

is considerably more complex as there are no market prices for many of the obligations of insurance companies. Their value is estimated by discounting the insurers' expected future payouts at the risk-free rate. The lower the discount rate chosen, the bigger the provisions that insurers must accumulate. Own funds diminish accordingly.

The resulting fair-value balance sheets are likely to paint a significantly more volatile picture of insurers' solvency situation than has hitherto been the case. If the solvency requirements are no longer fully covered, enterprises must submit a plan for the re-establishment of the coverage. Supervisory authorities are accorded a certain degree of discretion in interpreting these plans and in any supervisory measures which may be necessary.

Package of measures on Solvency II designed to mitigate procyclicality

In the spring of 2013, as part of its Long-Term Guarantees Assessment (LTGA), the European Insurance and Occupational Pensions Authority (EIOPA) tested various possible regulatory measures with a view to solving problems regarding the valuation of long-term liabilities under Solvency II. The Long-Term Guarantee Package (LTGP) examined in the assessment was designed mainly because of the higher volatility of fair-value balance sheets.[21] The fact that

21 See European Insurance and Occupational Pensions Authority (2013). The LTGP includes, first, adaptation to the risk-free term structure (countercyclical premium) in crisis situations, which is important for the discounting of insurance technical reserves; second, extrapolation of the term structure in order to value long-term liabilities; third, matching adjustment, intended to eliminate valuation discrepancies between assets and liabilities; fourth, an extension of the recovery period where the solvency capital requirements are breached. In addition, the adjustment costs for insurers are to be cut by phasing in a newly defined discount curve.

volatility can increase in times of stress was another reason for developing the LTGP. These factors combined could encourage procyclical behaviour on the part of insurance companies.[22]

Without the LTGP, European life insurers would currently be a total of €145 billion short of the capital requirements pursuant to Solvency II. With the LTGP measures, the participating German life insurance companies would, in aggregate, be in a position to fulfil the new capital requirements; for instance, their combined Solvency Capital Requirement (SCR) ratio in the LTGA baseline scenario is 113%.[23] Nevertheless, 41% of the participating German enterprises would fall short of the new capital requirements in the baseline scenario. The LTGP is currently still being discussed and revised.[24] Therefore, the industry's definite capital needs at the time when Solvency II comes into effect cannot be inferred from the figures mentioned.

Without further measures, European life insurers would fall short of the capital requirements pursuant to Solvency II.

Attention must be paid to risks from occupational pension schemes

Besides life insurance companies, institutions for occupational retirement provision (IORP), such as Pensionskassen and pension funds, are also impacted by the low-interest-rate environment.

Occupational pension schemes are an important pillar of old-age provisioning

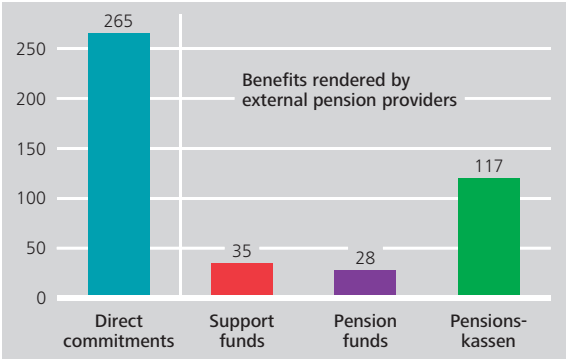
The statutory pension insurance scheme, occupational pension schemes and private pension plans together make up the three pillars of old-age provisioning in Germany. At the end of 2012, occupational pension entitlements, excluding direct insurance,[25] amounted to €444 billion. This equates to about 9% of German households' financial assets.

Under an occupational pension scheme, employees forgo part of their wages and salaries during their working life. In return, they acquire a right to future benefits.[26] Employers can undertake to render these benefits themselves. Direct commitments of this kind, at €265 billion (60%), are the most important occupational pension channel (see Chart 5.5). Many enterprises have set aside plan assets, which are both protected in the event of insolvency and separated from business operations, so as to be able to honour future payment obligations. Such off-balance-sheet funding of pension commitments, for example in the form of a contractual trust arrangement (CTA),[27] is not mandatory in Germany, however. Employers may also put the withheld amounts to use in their own enterprises. Occupational pension schemes are therefore an important source of corporate financing in Germany.

22 The procyclical effects of fair-value accounting are contentious, however. See, for example, C Laux and C Leuz (2010). Many of the considerations voiced in that paper can be applied to fair-value accounting pursuant to Solvency II.
23 In the LTGA baseline scenario, the LTGP instruments were applied in a standard version (for example, a countercyclical premium of 100 basis points), although not with the progressive transition which is important for German insurers.
24 For instance, EIOPA is in favour of replacing the countercyclical premium with a metric which is easier to calculate. This measure, named the "Volatility Balancer", is yet to be developed, but is to be symmetrical and activated on the basis of rules. Furthermore, EIOPA considers that the matching adjustment ought to be introduced only to a limited extent, and the extrapolation of the term structure and the recovery period ought to be changed.
25 Direct insurance is a form of life insurance which is taken out by an employer for the benefit of its employees.
26 In addition to defined benefit schemes, defined contribution schemes with minimum benefits and defined contribution-based schemes have been legally permissible since 2002.
27 Such trusts are common in Anglo-Saxon countries. They resemble pension funds, only with the difference that the employer remains directly obliged to make payment rather than being merely indirectly liable therefor.

Occupational pension entitlements Chart 5.5

€ billion, present values, as at end-2012, excluding direct insurance



Sources: BaFin and the German Occupational Pension Protection Association (PSVaG).
Deutsche Bundesbank

In addition to direct commitments, there are four indirect channels involving the provision of occupational pension benefits through external pension providers. The most significant of these pension vehicles are Pensionskassen, which hold provisions amounting to €117 billion (26%), followed by support funds (€35 billion worth of provisions or 8%) and pension funds (€28 billion worth of provisions or 6%). Direct insurance is captured statistically as life insurance and is not recorded separately.

Employees' occupational pension entitlements are protected by means of a multi-level system (see Chart 5.6). At the first level, employers are always liable for any benefits accrued, even if these are rendered indirectly by external pension providers. In the event of an employer's insolvency, the German Occupational Pension Protection Association (*Pensions-Sicherungs-Verein* or PSVaG) takes over the pension commitments covered by the Occupational Pensions Act (*Betriebsrentengesetz*) at the second level. The resultant costs are apportioned among all the enterprises which have opted to channel their occupational pensions through direct commitments, support funds and pension funds.[28]

Pension payments are more difficult to generate in a low-interest-rate environment

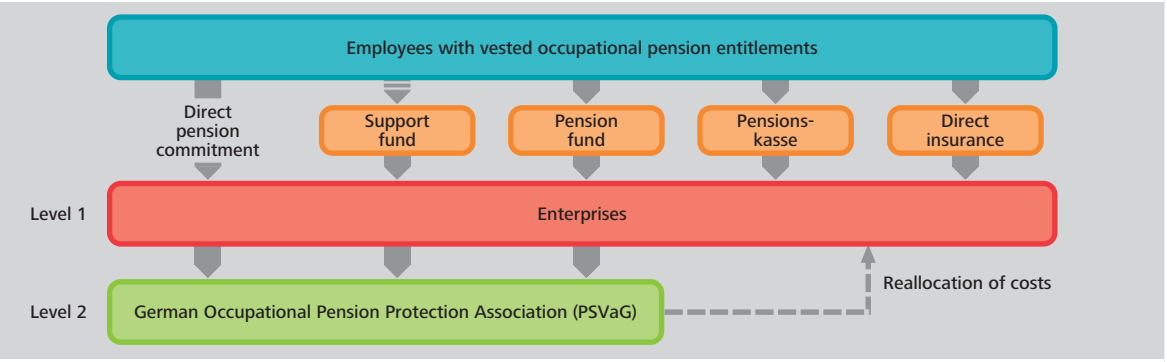
In the medium to long term, demographic change will be the main challenge for occupational pension schemes to overcome. It will result in rising pension payments going forward while, at the same time, the size of the workforce will shrink. This will lead to funding risk, especially on the part of enterprises with sizeable direct pension commitments that are not externally funded. The persistent low-interest-rate environment is, moreover, also a challenge for those enterprises which fund their pension commitments off the balance sheet as a response to demographic change. The low-interest-rate level is making it more difficult for them or their Pensionskassen, pension funds and support funds to generate the promised pension payments from the plan assets invested.[29] Pension plans set up more recently under defined contribution-based schemes and defined contribution schemes with minimum benefits are barely affected by these developments. Under these benefit schemes, which have been steadily gaining in importance since 2002, the employees bear the lion's share of investment risk. Enterprises must identify the risks that demographic change and the low-interest-rate environment pose to themselves and their external pension providers and make provisions in good time.

Enterprises must identify the risks that demographic change and the low-interest-rate environment pose to themselves and their external pension providers and make provisions in good time.

28 Pension commitments involving either direct insurance policies underwritten by life insurance companies or Pensionskassen are not safeguarded by the German Occupational Pension Protection Association (PSVaG). However, life insurers and some Pensionskassen have a safety net in the form of Protektor Lebensversicherungs-AG, the protection facility for life insurance companies.
29 Moreover, low interest rates will lead to higher balance sheet pension provisions through falling discount factors. However, this representation of future funding risk should not be mistaken for the actual risk.

Occupational pension payment claims and liability according to channels

Chart 5.6



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Reflections on the systemic importance of the insurance sector

The insurance sector is a key part of the German financial system: in mid-2013, just over 30% of households' financial assets consisted of claims on insurers. This raises the question of whether insurers, like banks, are systemically important. Their interconnectedness with other financial institutions, especially banks, provides grounds to assume that they are.

Interconnectedness with the banking sector is a key transmission channel

In mid-2013, the biggest German insurance companies held €515 billion worth or 36% of their capital investment with banks. Almost one-third of this investment was unsecured.[30] Pfandbriefe and other covered bonds accounted for most of the remaining investment activity undertaken with banks.

Systemic effects could be triggered by a sudden rise in the lapse rate of life insurance policies. Life insurers would thereby come under pressure to liquidate investments, which could cause the price of the assets concerned to plummet. In terms of financial stability, the deciding factor would then be the extent to which this development induces portfolio shifts on the part of other investors.[31] This could create negative price spirals, which could in turn lead to frictions in the financial markets.

As insurers are key investors in bank bonds, extensive sales of bank bonds may result in financing problems in the banking system. If this impedes lending, the real economy could also be affected. However, it may be assumed that at least part of the funds which policyholders receive in cancelling their policies would be reinvested with banks. This would cushion the impact on lending. Recent empirical studies on the effects of interconnectedness in the financial

Empirical studies reveal that insurers are seriously affected by shocks emanating from the banking sector.

30 Unsecured debt securities, subordinated bonds, profit-sharing certificates, shares and deposits.
31 For a more comprehensive account of the transmission channels, see Financial Stability Oversight Council (2013).

system confirm that shocks originating in the insurance sector have only a minor impact on banks. They also reveal that, conversely, insurers are much more seriously affected by shocks emanating from the banking sector (see the box entitled "Empirical evidence of systemic risk in the insurance sector" on page 83).

Contagion is also possible through the confidence channel

Furthermore, the insolvency of individual or several insurers could unleash a self-reinforcing run on the insurance sector via the confidence channel. However, the likelihood of a run is probably rather remote compared with that in the banking sector owing to the longer average maturity of life insurers' liabilities. For instance, the termination of an insurance policy is, as a rule, costly owing to low surrender values and a lack of alternatives as protection against individual risks.[32] In addition, the disorderly insolvency of an insurance company is rather unlikely. If a life insurer should encounter material financial distress, the continuation of the policies it has underwritten is an important feature of the company's resolution.[33]

Moreover, it is conceivable that a crisis of confidence in the insurance sector could hamper risk allocation in the financial system. Exchange transactions such as liquidity swaps may be seen as a special contagion channel between the banking and insurance sectors. Transactions of this kind are based on a liquidity spread between the assets of insurance companies and those of banks.[34] However, for German insurers, liquidity swaps have, most recently, not played a major role in terms of financial stability. A survey of the largest German insurance groups conducted by the supervisory authority in April 2013 showed that, although traditional securities lending and repo transactions are carried out regularly, the insurance companies surveyed do not use the collateral obtained to carry out further transactions. Collateral transformation in the sense of exchanging liquid highly-rated paper against illiquid paper with a poorer rating, therefore, does not take place. Even though the potential contagion effects in the German insurance sector have been limited up to now, developments in this area should continue to be monitored.

Systemic risk can arise from insurers' current operations, as evidenced by the distress of American International Group (AIG) in September 2008. The US insurer with an international focus and an extensive range of products was bailed out by taxpayers owing to its systemic importance. The general consensus is that stability risks arose from AIG's activities in credit default swaps on mortgage-backed CDOs and securities lending. These transactions are classed as non-traditional and non-insurance activities.[35] The distress of AIG shows how difficult it is to estimate *a priori* the potential systemic effects resulting from the interconnectedness of the insurance sector and the financial industry.

The distress of AIG showed that systemic risk can arise from insurers' current operations.

32 However, studies show that policyholders are not always deterred by these costs. For example, following a reduction in the profit participation share which is above the average for the rest of the sector, the number of policyholders terminating their contracts tends to increase. See M Eling and D Kiesenbauer (2012), pp 159 ff.
33 In Germany, Protektor Lebensversicherungs-AG acts as the special protection facility for life insurance companies.
34 For more information on liquidity swaps as a potential contagion channel between the banking and insurance sectors, see Deutsche Bundesbank (2012), pp 48-49.
35 In an analysis of the US insurance industry, Cummins and Weiss have found evidence that some core activities of life insurers may also be associated with systemic risk; see J D Cummins and M A Weiss (2013).

Empirical evidence of systemic risk in the insurance sector

Recent studies look at whether insurance companies are a source of systemic risk. Using a multivariate GARCH model, one study shows that the prices for credit default swaps of large insurance companies – including large German insurers – and large banks influence one another.[1] The model analyses risk transmission within the global financial system for the period from 2004 to 2011. The corresponding coefficients are statistically highly significant. Large insurers are so closely interconnected with banks that they transmit risks to other parts of the financial system. In terms of scale, the impact of banks on insurers is, of course, higher than *vice versa*; the relevant coefficient for banks is more than three times as high as that for insurers. A different study, too, shows that shocks originating from the banking sector substantially influence the insurance sector, while a shock that emanates from insurers affects the banking sector to a much lesser degree.[2]

Using an alternative approach, it can be shown that 80% of the financial system's systemic risk is atrributable to banks and 20% to insurers.[3] This result is derived using a procedure which calculates the marginal expected shortfall of the respective financial institution when a systemic event occurs. In this way, the contribution of individual institutions or sectors to systemic risk can be measured. Systemic risk is based on the need for these institutions to offset a capital shortfall when the system as a whole is undercapitalised. The results confirm that – compared with banks – insurers are of lower systemic importance, given the different nature of their liabilities and the lower level of interconnectedness with other financial institutions.

Analyses of the key factors behind insurers' potential systemic importance indicate a large contribution from activities in the non-traditional and non-insurance business. However, a study on the US insurance sector reaches the conclusion that some activities in the core business of life insurers could be associated with systemic risk as well.[4] The authors back this finding with the observation that life insurance products are similar in many ways to products in the banking sector and that insurers compete with banks in a number of business areas.

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1 See N Podlich and M Wedow, Are insurers SIFIs? A MGARCH model to measure interconnectedness, Applied Economics Letters, Vol 20, pp 677-681, May 2013.
2 See H Chen, J D Cummins, K S Viswanathan and M A Weiss, Systemic Risk and the Interconnectedness between Banks and Insurers: An Econometric Analysis, online publication, March 2013. Intended for publication in The Journal of Risk and Insurance.
3 See R Engle, E Jondeau and M Rockinger, Systemic Risk in Europe, Swiss Finance Institute Research Paper No 12-45, December 2012. For further details on the methodology and application examples, see V Acharya, R Engle and M Richardson, Capital Shortfall: A New Approach to Ranking and Regulating Systemic Risks, American Economic Review Vol 102 (3), pp 59-64, May 2012; and Deutsche Bundesbank, Monthly Report, March 2011, pp 37-51.
4 See J D Cummins and M A Weiss, Systemic Risk and Regulation of the U.S. Insurance Industry, Networks Financial Institute Policy Brief Vol 2013-PB-02, Indiana State University, March 2013.

Approaches to regulating systemically important insurers

Experience with AIG's distress was a contributory factor in insurance companies now standing alongside banks in being regarded as systemically important market players. The Financial Stability Board's (FSB) indicator-based approach for identifying global systemically important insurers (G-SIIs) is based on the methodology for identifying global systemically important banks (G-SIBs). In the light of experience gained with the AIG bail-out, the highest weighting of the five criteria used in the approach is given to non-traditional and non-insurance activities (45%).[36] Interconnectedness with the financial industry is the second most important criterion, with a weighting of 40%. The other three criteria of size, global activity and substitutability, by contrast, are given only a low weighting of 5% each.

The indicator-based approach for identifying global systemically important insurers gives the highest weighting to non-traditional and non-insurance activities.

With this indicator-based approach serving as a basis, the FSB in consultation with the International Association of Insurance Supervisors (IAIS) released an initial list of G-SIIs in July 2013.[37] The regulatory measures for G-SIIs are to be fleshed out in the coming years. They stipulate that the enterprises must, for example, draw up recovery and resolution plans, including liquidity risk management plans. Moreover, insurance groups must develop systemic risk management plans as part of enhanced group-wide supervision. In addition, capital surcharges are to be imposed in order to strengthen the resilience of G-SIIs. Reinsurers have not been included in the G-SII assessment for the time being. They are to be analysed in detail in a second phase by July 2014. Furthermore, a list of national systemically important insurers is currently being drawn up in Germany.

Systemic risk for insurers is different to that for banks

The FSB's designation of insurance companies as systemically important financial institutions is based on indicators similar to those used to identify G-SIBs. However, there are considerable differences in the sector-specific weightings of these indicators. For instance, the risk factor size has a much lower weighting for insurers than for banks because, in the case of insurers, risk diversification occurs mainly through risk balancing within the community of policyholders.[38]

One key difference between the banking system and the insurance sector is also the latter's smaller number of intra-sectoral links. For example, the sector does not have a market like the interbank market which might have crisis-intensifying effects. However, it is difficult to model solvency crises and crises of confidence in the area of life insurance as there is only limited past experience to fall back on. It is, therefore, to be welcomed that the future regulatory measures for G-SIIs attach a high level of importance to capturing liquidity risk in stress situations.

When considering the systemic importance of insurance companies, it would be best to avoid inevitably inferring a lack of systemic risk potential for the future solely from the stable conditions seen for many years

A lack of systemic risk potential should not be inevitably inferred solely from the stable conditions seen for many years in more traditional areas of business.

36 For a definition of non-traditional and non-insurance activities as well as of the indicator-based methodology, see International Association of Insurance Supervisors (2013a and 2013b).
37 See Financial Stability Board (2013). Allianz SE, which was designated along with eight other insurance groups, is currently the only German insurer to have been identified as a G-SII.
38 Owing to the law of large numbers, this requires the community of policyholders to be of a sufficient size.

in more traditional areas of business. As the perspective in shaping and allocating weights to the criteria for G-SIIs is based on the experience gained with the AIG bail-out and is, therefore, more backward-looking, it can only mark the starting point. For instance, the definition of non-traditional and non-insurance activities is not unequivocal, not least because the respective national supervisory authorities are allowed scope for interpretation. The methodology for identifying G-SIIs should, therefore, be open to refinement.

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Over-the-counter derivatives markets: mitigating systemic risk

Close and opaque ties between market participants throughout the global over-the-counter (OTC) derivatives markets are a potential threat to the stability of the financial system. The objectives of regulatory reform in this area are thus to increase transparency and mitigate systemic risk. The reform centres on shifting default risk incurred in derivatives transactions to central counterparties. Distinct progress has been made in setting international standards, implementing these at national level and applying the rules. However, the end-2012 deadline for having the new requirements fully implemented was missed.

Due to the global nature of the derivatives market, regulatory differences in the national implementation of reform measures can easily trigger arbitrage between the various jurisdictions. The cross-border effects of diverging national derivatives market regulations can also give rise to problems of consistency. In July 2013, the United States and the European Union were at least able to reach a provisional agreement on a procedure to mutually recognise their derivatives market rules. However, in the USA and EU, the rules for central counterparties to calculate initial margins are still very different. There are also material differences with regard to who reports to the trade repositories and what must be reported. Furthermore, there is no mechanism in place to aggregate data gathered in the individual jurisdictions for the purpose of analysis.

It is now a question of implementing the initiated reforms rigorously and in a globally consistent manner. As central counterparties have been given a systemically important role, strict global provisions are required for their risk management. At the same time, the derivatives markets should be continuously analysed to see how their structure changes.

Reform of OTC derivatives markets behind schedule

The global banking and financial crisis revealed weaknesses in the structure of the OTC derivatives markets. Large market participants are closely interconnected due to their derivatives transactions. These close ties and their opaqueness were fundamental in the loss of confidence in the financial system triggered by the collapse of the US investment bank Lehman Brothers.

A comprehensive reform of the OTC derivatives markets is thus rightly a core objective of restructuring the international financial system. The reform aims to improve transparency, mitigate systemic risk and enhance protection against market abuse. A G20 decision set a deadline of end-2012 for reporting all transactions where derivatives are traded OTC to trade repositories. Furthermore, all standardised OTC derivatives contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties (CCPs). Non-centrally cleared contracts should be subject to higher capital requirements and additional margin requirements.

Comprehensive reform of OTC derivatives markets supports regulation of shadow banking system and helps to solve "too big to fail" problem.

The design of this reform will also support the regulation of the shadow banking system, as all market participants will be subject to essentially the same strict requirements governing trading, clearing and risk mitigation techniques. This should reduce the incentive to redirect transactions to less tightly regulated market participants. The reform of the OTC derivatives markets will also help in the effort to solve the "too big to fail" problem. Through the collateralisation of OTC derivatives transactions, large market participants should be able to exit the OTC derivatives market without triggering disruptions or contagion effects because of their OTC derivatives positions.[1] Robust CCPs are an absolute must in this process.

Clear differences in national implementation

Ideally, the international agreements on reforming the OTC derivatives markets would have been implemented simultaneously where possible and in all countries. However, at national level, there are clear differences with regard to the scope of the reform and timetable for implementation. For instance, in its latest progress report, the Financial Stability Board (FSB) notes that so far 13 of 19 FSB jurisdictions have adopted legislation for central clearing (see Chart 6.1).[2] Yet, at the end of September 2013, concrete clearing obligations were only in place in Japan and the USA. Moreover, these regulations cover only a partial set of market participants and selected products, above all the very liquid OTC interest rate and credit derivatives. Other countries, such as Brazil and South Africa, are not introducing a legal clearing obligation for the time being and are setting financial incentives, such as various capital requirements, to encourage the use of central clearing. However, the FSB has rightly warned that this is not likely to be sufficient to meet the G20 objectives.

To date, clearing through a CCP has not been offered for many OTC products. This is due to the – necessarily – high hurdles for obtaining superviso-

1 In this context, the idea of limiting the right to terminate OTC derivatives in standard international master agreements is currently under discussion. It is hoped that this will prevent the premature termination of such contracts from intensifying a market participant's distress, thus hampering its orderly resolution.
2 See Financial Stability Board (2013), p 5.

ry approval to offer new clearing products as well as valuation problems encountered by CCPs as a result of insufficient standardisation of products. However, introducing margin requirements[3] as well as increasing the capital requirements for non-centrally cleared OTC derivatives should set key incentives for promoting the use of standardised products in the medium term.

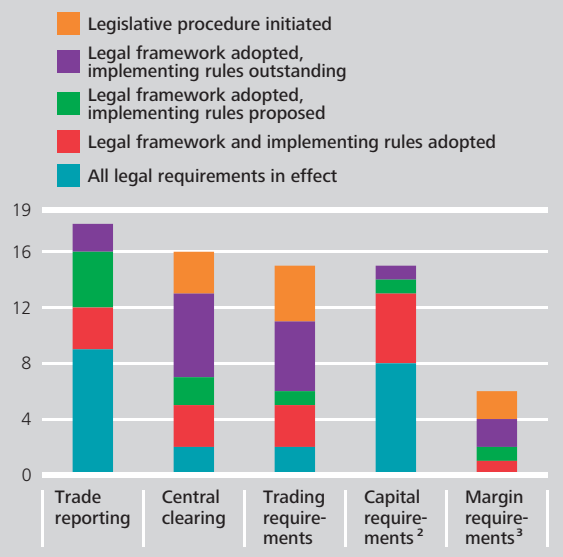
With regard to reporting obligations, three-quarters of the FSB member jurisdictions are expected to have adopted regulations requiring OTC derivatives trades to be reported to trade repositories by the start of 2014. In its latest progress report, the FSB urges regulators not to lose sight of shifting derivatives trading to organised trading platforms – a G20 reform objective which has been somewhat neglected thus far.[4]

EU paves the way for mandatory clearing

Although a corresponding EU regulation[5] came into force in August 2012, the scheduled end-2012 deadline for the full implementation of the OTC derivatives market reform in Europe could not be met. The regulation introduces a procedure to stipulate a clearing obligation for standardised OTC derivatives contracts and makes reporting to trade repositories mandatory for all derivatives transactions. However, these provisions are yet to come into full effect as supplementary regulatory technical standards are missing in some areas. For instance, the clearing obligation for OTC interest rate and credit derivatives is not due to come into force in the EU until the third quarter of 2014. In addition, the revision of the EU Markets in Financial Instruments Directive[6] is set to shift the trading of standardised and liquid derivatives to regulated trading platforms. Negotiations in this matter are about to be completed.

Progress in implementing reforms of the OTC derivatives market Chart 6.1

Number of the 19 FSB member jurisdictions,[1] as at July 2013



Source: Financial Stability Board. **1** Pursuant to the EU European Markets Infrastructure Regulation, EU member states are treated as one member jurisdiction. **2** As defined in the Basel III rules. **3** For non-centrally cleared trades.

Deutsche Bundesbank

Cross-border effects to be observed

As the new rules are being fleshed out in more detail in the various jurisdictions, regulators are now increasingly turning their attention towards possible interaction between national and regional provisions. There is a danger that the various jurisdictions will require market participants to meet different sets of standards. This would pose a

There is a danger that the various jurisdictions will require market participants to meet different sets of standards.

3 See Basel Committee on Banking Supervision and Board of the International Organization of Securities Commissions (2013).
4 See Financial Stability Board (2013), p 6.
5 Regulation (EU) No 648/2012 on OTC derivatives, central counterparties and trade repositories (European Market Infrastructure Regulation: EMIR).
6 Directive 2004/39/EC on markets in financial instruments (MiFID).

problem if the rules were to contradict each other, thus making it impossible to comply with both sets of rules. Uncertainty about which of the rules to obey could ultimately result in market disruptions or excessive fragmentation of the OTC derivatives market, thus causing market liquidity to dry up.

With this in mind, the provisional agreement reached between the USA and the EU in July 2013 regarding further steps in the procedure to mutually recognise their derivatives market rules is welcome. Market participants and infrastructure providers can now choose under which set of rules they wish to conduct their derivatives transactions. This agreement has initially dispelled fears of disruptions to the market as a result of exterritorial effects of US provisions.

Despite these significant steps in the right direction, a number of problems still remain to be resolved. For instance, the provisions governing how CCPs calculate initial margins are very different. In the United States, the legally stipulated minimum liquidation period is one business day for exchange-traded futures and five business days for OTC-traded interest rate swaps. However, in Europe the risk of liquidation must be covered by a two-business day holding period for both types of financial instruments. Moreover, the European provisions for OTC derivatives require a margin calculation on the basis of a 99.5% confidence interval. The USA calls only for the international minimum standard of 99%. As the margins have to cover potential market risks during the liquidation period, the collateral required for using a CCP is heavily dependent upon its location. For certain products, this could spell a move towards those CCPs that CCP participants deem to be more favourable for the product in question. This underlines the need for international provisions to provide clear and unambiguous guidance on as many details as possible.

Differences in reporting systems hamper analysis of financial stability

There are also material differences in reporting obligations to trade repositories, in particular with regard to which market participants are to report and which transactions and data are to be reported. EU provisions specify that all exchange-traded and OTC-traded derivatives transactions must be reported to an authorised trade repository by both contracting parties; in the USA, however, only major dealers and large market participants have to report their OTC derivatives transactions. Moreover, in the EU, information on the market value and the degree of collateralisation has to be provided at regular intervals in order to improve the usability of the reports. The differences in reporting obligations are one reason why the targeted level of transparency of the global OTC derivatives market will not be fully met in the near future. The FSB has set up a working group tasked with producing a feasibility study on whether and how reporting to national trade repositories can overcome the feared data fragmentation. This is important for increasing the amount of data available for global analyses of financial stability.[7]

The differences in reporting obligations are one reason why the targeted level of transparency over the global OTC derivatives market will not be fully met in the near future.

Multilateral negotiations under way

In addition to the EU-US efforts, it is essential to come to similar agreements with supervisory authorities in other countries with major OTC derivatives markets. The legal framework for cross-border derivatives transactions has to be harmonised glob-

7 For information about the content and scope of possible analyses of data on OTC derivatives, see T Droll and M Ockler (2013).

ally in order to create a level playing field and thus prevent regulatory arbitrage. A group of securities market regulators[8] has made some headway in multilateral negotiations. Over the course of 2013, this group has been drawing up solutions and principles for harmonising different approaches to regulation.[9] The aim of these principles is to avoid conflicting rules for market participants and transactions, thus reducing uncertainty for all parties involved. One of the group's key findings is that regulatory authorities should adopt a coordinated approach, for instance prior to assessing the equivalence of another jurisdiction's rules or before implementing a clearing obligation. Should regulations prove to be different, the stricter regime is to apply for both parties.

Furthermore, regulators are to remove any barriers to reporting, particularly data protection problems for reports to trade repositories, as well as any obstacles to authorities obtaining cross-border access to data held in trade repositories. The group is also looking at issues related to allowing regulators direct access to data on market participants in other countries and how to deal with branches and subsidiaries of foreign market participants.

Given the delays and the failure to specify details, especially regarding the cross-border interplay between derivatives regulation frameworks, many market participants are complaining about regulatory uncertainty and are hesitant to make the necessary adjustments to their internal systems and procedures.

Increase in global trading activities

According to a recent study by the Bank for International Settlements (BIS) – contrary to expectations voiced by various parties – substantial growth in OTC trading of interest rate and foreign exchange derivatives continued in the past three years.[10] It records average daily global trading volumes in April 2013 of US$2.3 trillion in OTC interest rate derivatives (compared with US$2.1 trillion in April 2010 and US$1.7 trillion in April 2007) and of US$3.3 trillion in OTC foreign exchange derivatives (compared with US$2.5 trillion in April 2010 and US$2.3 trillion in April 2007) in nominal terms. According to the BIS, the high growth in OTC foreign exchange derivatives trading is predominantly attributable to an increase in financial sector activities – mainly by medium-sized banks, while counterparties in the real economy were involved in only 8% of transactions. Growth in OTC interest rate derivatives is reported to be also driven by many market participants' greater need to hedge interest rate risk in the low-interest-rate environment currently prevailing.

Contrary to expectations voiced by various parties, substantial growth in OTC trading of interest rate and foreign exchange derivatives continued in the past three years.

CCPs gaining in importance

The most important element of the reform of OTC derivatives markets is reducing systemic risk by using CCP clearing. By interposing themselves between derivatives buyers and sellers, CCPs are designed to pool default risk for the majority of the derivatives markets. CCPs can thereby reduce risks in the financial system and dampen the shock waves sent out by the default of a large market participant by acting as a "breakwater".

The number of new contracts cleared by a CCP demonstrates the progress made in central clearing.

8 OTC Derivatives Regulators Group. This group consists of securities market regulators from the EU, the USA, Switzerland, Canada, Australia, Singapore, Hong Kong and Japan.
9 See OTC Derivatives Regulators Group (2013a and 2013b).
10 See Bank for International Settlements (2013).

Clearing of credit default swaps through central counterparties Table 6.1

Percentage share in total global new contracts

Counter-parties	Product group	2012 Q4	2013 Q1	2013 Q2
Dealer – Dealer[1]	Index CDS[2]	28	41	57
	Single-name CDS[3]	22	24	21
Dealer – Customer	Index CDS	1	4	25
	Single-name CDS	–	–	–

Source: Depository Trust & Clearing Corporation (DTCC). **1** Transactions between the 16 global OTC derivatives dealers. **2** CDS on a portfolio of reference entities. **3** CDS on a single-name underlying.

Deutsche Bundesbank

According to figures from the Depository Trust & Clearing Corporation (DTCC),[11] in the second quarter of 2013, 57% of new index credit default swaps were moved to CCP clearing. In the final quarter of 2012, the equivalent amount was only 28% (see Table 6.1). While CCP clearing was previously limited to transactions between globally operating derivatives dealers, in the second quarter of 2013, CCPs were involved in approximately one-quarter of all transactions in certain credit derivatives between these dealers and other market participants.

Despite the greater importance of CCPs in new contracts, growth in the overall number of OTC derivatives cleared through a CCP is sluggish. This is due to the rather long average maturity of derivatives. Measured in nominal terms, as at mid-2013 42% of globally outstanding OTC interest rate derivatives were cleared through a CCP, compared with 40% in the previous year. This figure stood at 14% (compared with 12% as at mid-2012) for globally outstanding credit default swaps.

The use of central clearing has increased predominantly due to the fact that CCP clearing obligations came into force in Japan in November 2012 and in the United States in March 2013. Such clearing obligations are to be rapidly rolled out to other market participants and products. The data on the use of central clearing for OTC equity, commodity and foreign exchange derivatives are currently unsatisfactory and do not enable any reliable conclusions to be drawn about any progress made. To mitigate systemic risk in OTC derivatives markets comprehensively, regulators should not lose sight of this area.

Clearing obligations are to be rapidly rolled out to other market players and products.

Central counterparties as elementary nodes in the financial system

In the future, CCPs are going to play a greater role in the global financial system. Due to this key position, CCPs in the EU will be supported by a new supervisory regime and additional risk management requirements. In Germany, CCPs will be supervised and overseen by the Federal Financial Supervisory Authority (BaFin) in collaboration with the Bundesbank. Due to the growing systemic importance of CCPs, a debate is currently under way regarding the introduction of recovery and resolution regimes tailored to the special role of CCPs in the financial system (see the box entitled "Recovery and resolution of central counterparties under discussion" on page 93).

As a rule, a CCP itself is not likely to trigger contagion effects as it does not trade actively and thus has no open trading positions of its own. Only when a clearing participant defaults, do CCPs have unmatched positions. Without these matching positions, the neutralisation effect no longer exists.

11 DTCC is a US-based operator of CCPs, trade repositories and central securities depositories.

Recovery and resolution of central counterparties under discussion

Central counterparties (CCPs) assume the counterparty credit risk arising from trades among market participants. The systemic importance of CCPs is increasing as a result of the clearing obligation assigned to them as part of the global reform of over-the-counter (OTC) derivatives markets.

From a financial stability perspective, there is a danger that the default of one or more clearing participants might place a CCP in distress. A CCP can take a range of measures to close out its open positions if a clearing participant defaults. In the case of exchange-traded derivatives, the CCP can conclude offsetting transactions on the exchange. In the case of OTC derivatives, it can conduct auctions with the clearing participants. Another option is to transfer the open positions to the remaining clearing participants. However, the CCP may incur uncovered losses when taking these measures.

For this reason intense consideration is currently being given to the possible design of a future dedicated recovery and resolution regime for these financial market infrastructures. The objective of such a regime is to safeguard financial stability. This would involve ensuring the continuity of the CCP's critical functions while limiting any contagion effects on the clearing participants.

Given the cross-border nature of many of the financial markets served by CCPs, recovery and resolution regimes should be based on internationally agreed principles. The Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO) consequently published a joint consultative report in August 2013 presenting tools and measures that might usefully feature in the recovery plans of CCPs and other financial market infrastructures.[1] Proposals for the resolution of financial market infrastructures, including CCPs, were drawn up in a parallel process by the Financial Stability Board (FSB) in conjunction with the CPSS and the IOSCO.[2] The implementation of the recovery and resolution rules relevant for Germany will take the form of an EU legal act. The European Commission plans to present a corresponding draft at the beginning of 2014.

The proposals from the CPSS and IOSCO and those of the FSB suggest that the coordinated recovery and resolution measures could take the following shape. During the recovery phase, the CCP's management board could attempt to absorb any uncovered losses through (partial) retention of the variation margins routed through the CCP,[3] the collection of supplementary margin calls from clearing participants or recapitalisation through the CCP's owners. In order to improve planning certainty for the clearing participants, a CCP should prepare an *ex ante* recovery plan listing the individual potential measures.

If these measures fail to overcome the CCP's distress, its resolution could be initiated under certain circumstances. The competent resolution authority could then be authorised in the future to curtail the CCP's liabilities or convert them into capital (bail-in). The FSB's proposals foresee also in the resolution phase the possibility of (partially) retaining the variation margins and – if permitted by law – even of using the collateral provided by all clearing participants for safeguarding liquidity or loss-sharing. Moreover, the resolution authority should be enabled to enforce restructuring measures. If the CCP is deemed to be systemically important in several jurisdictions, it would make sense for the competent national authorities to collaborate.

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1 See Committee on Payment and Settlement Systems and International Organization of Securities Commissions, Recovery of Financial Market Infrastructures, August 2013
2 See Financial Stability Board, Application of the Key Attributes of Effective Resolution Regimes to Non-Bank Financial Institutions, August 2013.
3 The variation margin is the cash settlement which must be paid by the contract partners to cover intraday gains or losses caused by price fluctuations.

CCPs continually value trading participants' open positions and demand appropriate collateral. Their financial resources include collateral provided by clearing participants, a clearing fund, possible additional contributions to this clearing fund as well as the CCP's financial reserves and capital.

Comprehensive risk management essential

In order to be able to fulfil its role as risk mitigator and breakwater in the financial system, a CCP must have a robust structure for managing counterparty and liquidity risk. As CCPs are increasingly direct competitors, they have to be prevented from undercutting each other in terms of the amount and quality of collateral that they require. Laxer collateral requirements could take the form of lower requirements for the quality of collateral as well as in smaller haircuts on the collateral received. In addition, it is possible that the models used to calculate the amount of collateral required systematically understate the level of risk in the clearing participants' portfolios (model risk).

A full risk analysis should look not only at the CCPs themselves but also at the structure of direct and indirect participants in CCP clearing as well as their mutual dependencies. It should be noted that globally operating derivatives dealers are connected as direct clearing participants to almost all CCPs that clear OTC derivatives and that they often provide small and medium-sized market participants with access to CCPs. In addition to their major role in OTC derivatives trading as a result of functioning as a go-between and of their proprietary trading positions, they are therefore also key to the clearing process. In this set-up, indirect clearing participants are exposed to the risk of a direct clearing participant defaulting. Thus, the EU's intention to separate customers' trading positions and collateral provided from those of direct clearing participants is a significant step towards reducing contagion risk in the financial system.

A full risk analysis should look also at the structure of direct and indirect participants in CCP clearing.

Global shortage of collateral?

One feared effect of OTC derivatives market reforms is that margin requirements for OTC derivatives transactions could lead to a shortage of suitable collateral. However, concrete estimates of the amount of collateral required globally are fraught with uncertainty. As outlined above, the rules are still taking shape, and the scope of exemptions has not yet been finalised for all areas.

A recent study found no evidence of an aggregate shortage of high-quality assets.[12] However, it does concede that problems may be experienced at a regional or sectoral level. If a global shortage were to push up prices for high-quality assets, market participants would probably change their behaviour. For instance, rising demand for high-quality assets would make collateral transformation services all the more important. In such transactions, assets of varying levels of quality and liquidity are swapped. These transactions can give rise to new risks for financial stability by creating a new form of interconnectedness – for instance, between banks, on the one hand,

Rising demand for high-quality assets would make collateral transformation services all the more important.

12 See Committee on the Global Financial System (2013). This study looks at requirements from both OTC derivatives market rules as well as other recent changes to financial market and banking regulations. It forecasts that demand for high-quality assets will increase by approximately US$4 trillion. However, seeing as the study also notes that the supply of these assets has risen by just under US$11 trillion since the end of 2007, no aggregate shortage of collateral is expected.

and insurance companies[13] or investment funds as traditional holders of high-quality securities, on the other. To date, it has not been possible to predict the future volume of such transactions.

It is safe to say that the various national and international bodies responsible for financial stability issues will be following reform efforts as well as monitoring and assessing the mid-term and long-term effects of measures taken for some time to come.

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13 See the chapter entitled "Insurance companies: bridging low interest rates and higher capital requirements" on pp 69-85.

Macroprudential policy in Germany takes shape

The institutional framework for macroprudential policy was substantially enhanced in 2013. The work of the European Systemic Risk Board, which has been responsible for macroprudential oversight and coordination in the EU since 2011, will now be complemented by that of national macroprudential authorities. In Germany, the Financial Stability Committee was established as the national macroprudential supervisory institution when the Act on Monitoring Financial Stability entered into force at the beginning of 2013.

When the European Capital Requirements Directive and Regulation become applicable as of January 2014, the competent authorities will acquire a range of tools facilitating intervention in the banking sector. In addition, under the single supervisory mechanism, the European Central Bank will be assigned tasks relating to the macroprudential oversight of credit institutions, albeit merely allowing it to tighten measures taken nationally. The Bundesbank – like other central banks and supervisory authorities in Europe – is working on establishing the foundations for the practical application of these instruments. Unlike in the banking sector, work on developing the macroprudential toolkit in other financial market segments, such as the insurance industry, is still at an early stage.

If macroprudential policy is to be enhanced, an appropriate national strategy will have to be formulated. To this end, the European Systemic Risk Board has issued a recommendation to EU member states and their macroprudential authorities on intermediate objectives and macroprudential instruments. In Germany, the Financial Stability Committee has a key role to play in implementing this recommendation.

Financial Stability Committee operational

In its recommendation on the macroprudential mandate of national authorities,[1] the European Systemic Risk Board (ESRB) calls on EU member states to designate an authority in their national legal provisions entrusted with the task of executing domestic macroprudential policy. In so doing, the member states will set up a framework within which they can contribute to safeguarding financial stability at a national level, either through their own initatives or in response to warnings or recommendations issued by the ESRB. At the same time, this development will ensure that macroprudential policy takes due account of the characteristics of individual member states' financial and economic systems.

With the entry into force of the Financial Stability Act (*Gesetz zur Überwachung der Finanzstabilität*)[2] at the beginning of 2013, Germany implemented this ESRB recommendation. The Financial Stability Committee, which serves as Germany's macroprudential authority, is at the heart of the Financial Stability Act. The Committee institutionalises the cooperation between the German authorities involved[3] in the area of financial stability and plays a key role in maintaining a stable financial system in Germany.[4]

Creation of Financial Stability Committee at heart of Financial Stability Act.

Bundesbank takes on key functions

The Bundesbank has key functions to exercise within the Financial Stability Committee. These include, in particular, responsibility for macroprudential oversight and risk analysis of the German financial system.[5] In addition, the Bundesbank can urge the Committee to issue warnings and recommendations and is tasked with evaluating their implementation. No decisions on such warnings or recommendations can be taken by the Committee contrary to the votes of the Bundesbank representatives.[6] Moreover, the Bundesbank is charged with compiling the Committee's annual report to the Bundestag.

One of the Committee's main tasks is to discuss factors that are key to financial stability as well as any relevant threats to Germany's financial system. Should it conclude that certain developments harbour substantial risks to financial stability at the national level, the Committee can resort to various courses of action. For instance, it can publicly voice its concerns about risks at an early stage of their development. Furthermore, it can submit a formal warning to the Federal Government, BaFin or any other German public authority or, alternatively, propose concrete measures to mitigate or avert the risks in question. These proposals could, for example, recommend the deployment of "hard" macroprudential instruments by BaFin. The Committee itself has no direct powers at its disposal for intervening in the business operations of financial market participants.

Hard macroprudential instruments comprise any measures based on the tools of financial sector regulation. Such measures are applied on a preventive basis with the aim of increasing the resilience of the financial system as a whole and, where necessary, moderating cycles through which systemic risks

1 See European Systemic Risk Board (2011).
2 See Financial Stability Act of 28 November 2012 (Federal Law Gazette I, p 2369), which was amended by Article 21 of the Act of 4 July 2013 (Federal Law Gazette I, p 1981).
3 The Federal Ministry of Finance, the Federal Financial Supervisory Authority (BaFin) and the Bundesbank each have three voting representatives on the Financial Stability Committee, while the Federal Agency for Financial Market Stabilisation (FMSA) has one non-voting advisory representative.
4 See A Dombret (2012).
5 See Deutsche Bundesbank (2013a), pp 39 ff.
6 The Bundesbank maintains its independence in all of the tasks assigned to it as a member of the Financial Stability Committee. See also, Deutsche Bundesbank (2013a), pp 44 ff.

develop.[7] Their use therefore depends on the risk scenario prevailing in an individual sector or across several different sectors of the financial system and is thus regularly targeted at groups of financial intermediaries. The availability of such macroprudential instruments continues to vary greatly from one financial market segment to another. While the banking sector has already made considerable progress in this regard, macroprudential tools for the insurance industry, in particular, are still at a comparatively early stage of development.

New toolkit available to the banking sector

Once the European Capital Requirements Directive IV (CRD IV) and the Capital Requirements Regulation (CRR) for credit institutions become applicable in January 2014, macroprudential institutions will have access to a wide-ranging toolkit tailored to the banking sector.[8] The new rules are designed to strengthen financial institutions' resilience by improving their capital and liquidity positions and to prevent future crises of the kind experienced by European banking systems in particular in the past six years. It is hoped that the new macroprudential instruments will allow financial stability risks to be countered at the national level. Nonetheless, very little practical experience has yet been gained in using them. For this reason, the Bundesbank – like other central banks and supervisory authorities in Europe – is working on establishing the necessary foundations for the practical application of these instruments.

Macroprudential authorities to have access to a wide-ranging toolkit tailored to the banking sector as of 1 January 2014.

Bundesbank working on establishing foundations for practical application of macroprudential instruments.

CRD IV and CRR encompass both countercyclical and structural macroprudential instruments.[9] In the final analysis, all the instruments concerned are geared to enhancing credit institutions' resilience and loss absorbency capacity. On top of this, due to their countercylical nature, some of the instruments can be used to lower the amplitudes of the credit cycle.

Countercyclical capital buffer with cyclical and structural features

The countercyclical capital buffer (CCCB) is to be included among those macroprudential instruments that not only bolster banking sector resilience but can also help to moderate the risk cycle.

Countercyclical capital buffer to bolster banking sector resilience and help moderate risk cycle.

In the EU, the CCCB is scheduled to be introduced on a step-by-step basis, starting in 2016, after which credit institutions will be required to set aside an additional capital buffer for relevant risk exposures in line with the CCCB rate.[10] As the size of the buffer is determined at national level, the rate may differ from country to country. The countercyclical capital buffer is to be accumulated during an upturn in the credit cycle as soon as strong lending activity triggers an increase in systemic risks. The core

7 Measures used in other economic policy areas (eg tax regulations) can also affect the stability of the financial system. Likewise, microprudential oversight contributes to safeguarding the stability of the financial system.
8 See Deutsche Bundesbank (2013b), pp 55 ff.
9 For information on the design of these instruments and the underlying legal framework, see Deutsche Bundesbank (2013a), pp 39 ff and Deutsche Bundesbank (2013b), pp 55 ff.
10 The buffer rate is the ratio of core tier 1 capital to risk-weighted assets.

tier 1 capital accumulated by credit institutions in this manner can then be used to absorb losses during a downturn, thus preventing potential pockets of instability.

Recourse to the CCCB in Germany lies within the remit of BaFin. Nevertheless, the Financial Stability Committee is mandated to assist in this by making recommendations concerning the rate at which the buffer is set. An ESRB recommendation outlining the CCCB's concrete design is expected in mid-2014. In Germany, the Financial Stability Committee has the task of specifying indicators, based on Bundesbank analyses, which can be used to calibrate the countercylical capital buffer.[11]

Larger buffers for all systemically important institutions

Vital work has also been done with regard to surcharges for systemically important financial institutions (SIFIs), known as SIFI buffers. The Basel Committee on Banking Supervision has, for instance, developed a methodology for identifying global SIFIs which it has used to create a system of capital surcharges that will be gradually introduced as of 2016. While the countercyclical capital buffer generally affects all credit institutions, the relevant authorities[12] are able to use the SIFI buffer to impose supplementary capital surcharges on any credit institutions deemed to be systemically important. These are designed, first, to ensure that non-cyclical systemic risks are contained. Second, they serve to reduce the implicit government guarantee as well as the associated funding advantages for these institutions.

With respect to systemically important credit institutions, CRD IV distinguishes between global systemically important institutions (G-SIIs)[13] and other systemically important institutions (O-SIIs). Since G-SIIs are identified by the Financial Stability Board (FSB), national authorities have very little scope to influence this process. By contrast, when it comes to defining O-SIIs, national authorities have considerable discretionary powers.[14]

At the beginning of 2015, the European Banking Authority (EBA) will publish a set of guidelines on identifying O-SIIs. The Financial Stability Committee will discuss the application of these guidelines in Germany, with a particular focus on the use of national discretionary powers, and address the buffer rate if necessary.

The systemic risk buffer[15] will be available from January 2014 onwards. The buffer will offer national authorities numerous options in terms of how it can be applied and tailored. It can be used to handle non-cyclical risk exposures vis-à-vis domestic and foreign debtors once the pool of other instruments which take precedence has been exhausted, and can be directed at both credit institutions as a whole and at certain groups of institutions.

Systemic risk buffer will offer national authorities numerous options regarding its application and design.

11 For details regarding calibration, see Basel Committee on Banking Supervision (2010).
12 The relevant national authority in Germany is BaFin.
13 See Article 131 CRD IV and sections 10f and 10g of the German Banking Act (Kreditwesengesetz). The additional capital requirements can be between 1% and 3.5%, depending on the systemic importance of a given credit institution.
14 The list of G-SIIs is drawn up on the basis of a single rulebook. O-SIIs are identified by BaFin, in agreement with the Bundesbank. When doing this, account must be taken of the following criteria: i) the bank's size, ii) its economic significance for the EEA or the respective member state, iii) its cross-border activities and iv) its interconnectedness with the financial system. See section 10g (2) of the Banking Act (Article 131 CRD IV).
15 The legal basis for the systemic risk buffer is provided by Article 133 CRD IV, transposed into German law in section 10e of the Banking Act.

Requirements pertaining to liquidity

In future, the CRD IV package will also provide the legal basis for any macroprudential intervention addressing the liquidity situation of credit institutions.[16]

As of January 2015 at the latest, the relevant national authorities will be able to issue stipulations concerning the liquidity coverage ratio (LCR).[17] These are designed to ensure that credit institutions always have an adequate stock of assets at hand that are sufficiently liquid, even in a serious stress scenario, to enable them to independently continue to meet claims falling due over a period of 30 days.

By contrast, the broad idea behind the net stable funding ratio (NSFR)[18] is to guarantee that credit institutions do not become overly dependent on short-term – and thus comparatively volatile – sources of funding;[19] it will thereby give them an incentive to make greater use of long-term funding instruments. Unlike the LCR, any practical application of the NSFR is still a long way off. Initially, the plan is to subject the concept to a thorough evaluation, lasting until 2018.

Aside from the LCR and the NSFR, the CRD IV package allows additional binding liquidity ratios to be defined and implemented at the national level.[20]

Addressing sectoral imbalances

Lastly, the CRR offers an opportunity to address sectoral imbalances, notably systemic risks arising from excessive, credit-driven growth in real estate prices. The sub-prime crisis in the United States, for instance, highlighted the considerable difficulties for financial stability that can arise from real estate financing. Above all, such risks are generated by the mutually reinforcing interaction between growth in real estate prices and lending developments and standards.

To counteract the build-up of such sectoral systemic risks, the CRR package makes it possible *inter alia* to increase risk weights from January 2014 onwards for exposures secured by residential or commercial mortgages to a level of up to 175% when the Standardised Approach is applied.[21] The associated improvement in credit institutions' capital base strengthens their loss absorbency capacity. At the same time, increased risk weights are potentially a suitable means of reducing the supply of real estate financing options on offer and dampening the credit cycle, thus avoiding excessive credit expansion.

Additional macroprudential instruments conceivable

The instruments described above in no way constitute a complete macroprudential toolkit. Additional instruments are conceivable in each of the various categories of action (capital-based, liquidity-related and sector-specific tools). In actual fact, the ESRB's recommendation on intermediate objectives and instruments of macroprudential policy explicitly calls on EU member states and their macroprudential authorities to regularly review the suitability of the

16 See Article 105 CRD IV and section 11 (3) of the Banking Act.
17 The LCR measures a bank's stock of highly liquid assets in relation to its net payment obligations under a stress scenario. By setting a lower bound for the LCR, it is possible to prescribe a minimum stock of certain highly liquid assets as a short-term liquidity reserve. The LCR will be phased in gradually between 2015 and 2018. See Article 460 CRR.
18 The NFSR is calculated as the ratio of available "stable" funding to that demanded by the supervisory authorities. See Article 510 CRR.
19 The legislative package provides for the imposition of a prudential charge if a financial institution's liquidity falls short of the prescribed national or European liquidity requirements. See Article 105 CRD IV.
20 See Article 105 CRD IV.
21 See Article 124 CRR in conjunction with Article 458 CRR.

tools available to them and make changes where necessary.[22]

Real estate-related macroprudential instruments are an area where enhancements are particularly easy to imagine. For instance, many countries have already successfully imposed caps on LTV, LTI and DTI ratios in order to combat inappropriate credit growth on the demand side. However, there is currently no legal basis at EU level or in Germany to support the use of such instruments.

Many countries have successfully imposed caps on LTV, LTI and DTI ratios to contain real estate lending.

Focus on introducing a leverage ratio

At present, there is also talk of imposing an upper borrowing limit (leverage ratio) on banks. The leverage ratio, which measures a credit institution's tier 1 capital as a percentage of its unweighted total assets,[23] can set a binding minimum requirement to limit that institution's overall indebtedness over and above the risk-weighted capital requirements. Making the leverage ratio time-variable thus renders it potentially suitable for slowing procyclical dynamics in expansionary phases and limiting financial institutions' debt ratio irrespective of the riskiness attached to their balance sheet assets. Currently, a tier 1 capital share of at least 3% of a credit institution's total unweighted assets is under discussion. However, credit institutions will not be subject to these binding minimum requirements regarding the leverage ratio, which would supplement the existing Pillar 1 risk-weighted capital requirements, until 2018 at the earliest. Prior to this date, the concept of a leverage ratio will undergo a thorough analysis.

National and European activities closely interlinked

Given the high degree of interconnectedness within the international financial system, use of macroprudential tools at the national level can also affect financial stability and economic development in other countries. The possible cross-border impact of these measures should therefore be gauged in advance and taken into account when calibrating their deployment. For this reason, there are some extensive coordination and information requirements to be met vis-à-vis the European institutions.

Possible cross-border impact of macroprudential instruments to be gauged in advance and taken into account in their calibration.

ECB able to tighten macroprudential measures

Under the single supervisory mechanism (SSM), the ECB will acquire more than a mandate for joint European banking supervision. The mechanism will also entrust it with tasks relating to the macroprudential oversight of credit institutions.[24] While national macroprudential authorities will retain their powers to initiate relevant measures, the ECB is in future to be notified in advance of any planned macroprudential intervention at the national level wherever the instruments in question could also be applied by the ECB.[25] Finally, the SSM will equip the ECB with powers to tighten the measures taken by national macroprudential authorities. This ensures that crucial steps to safeguard financial stability do

22 See European Systemic Risk Board (2013), Recommendation B.
23 See Article 429 (2) CRR.
24 For additional information on European banking supervision, see Deutsche Bundesbank (2013c), pp 13 ff.
25 See Article 4 (1) of the SSM Regulation. If the action taken is expected to generate cross-border effects, any deployment of instruments is to be coordinated beforehand with the ESRB.

not fall victim to other domestic interests. Despite the creation of this additional level of macroprudential supervision, the tasks and powers of the national macroprudential authorities and the ESRB will remain intact; at the same time, due attention will be paid to the increasing harmonisation of regulations and the advancing European integration process.

National authorities involved in formulating ECB macroprudential policy

The institutional framework underlying macroprudential oversight by the ECB allows the involvement of domestic authorities in participating member states. National authorities are involved in conducting financial stability analyses and producing corresponding decision-making proposals for the Governing Council of the ECB. Close cooperation between national authorities and the ECB in terms of macroprudential activities is designed to make the best possible use of synergies and to ensure an efficient policy decision-making process with respect to macroprudential oversight and microprudential supervision.

ESRB recommends system of intermediate objectives and allocated instruments

In 2014, more key decisions are to be taken affecting the future structure of Germany's macroprudential framework. Although a comparatively broad set of instruments already exists for use in the banking sector, macroprudential measures under discussion for insurers, investment companies and financial infrastructures are still at an early stage. As these financial intermediaries use very different business models to those favoured by credit institutions, the macroprudential instruments being considered for the banking sector cannot be readily applied to other participants.[26]

The Financial Stability Committee also has the task of formulating the strategy called for by the ESRB recommendation on intermediate objectives and instruments of macroprudential policy.[27] Publishing such a strategy in good time is important in fostering public understanding of the activities of the Financial Stability Committee and simultaneously fulfills the need for accountability. The recommendation also proposes five intermediate objectives for the macroprudential authorites,[28] which can be understood as an operational specification of the stability objective at which macroprudential policy is aimed. Where necessary, the aforementioned intermediate objectives are to be revised and supplemented by new targets if special structural features exist at the national level which could give rise to a systemic risk. To this end, indicators have to be identified for the purpose of monitoring the emergence of new threats to financial stability and achieving the intermediate objectives. The ESRB recommendation on intermediate objectives and instruments of macroprudential policy further stipulates that the Committee should undertake periodic reviews of these objectives, assessing the appropriateness of the tools used.

Financial Stability Committee has the task of formulating a strategy that fosters public understanding of its activities.

26 See the section entitled "Systemic risk for insurers is different to that for banks" on p 84.
27 See European Systemic Risk Board (2013).
28 These are i) mitigating and preventing excessive credit growth and leverage, ii) mitigating and preventing excessive maturity mismatch and market liquidity, iii) limiting direct and indirect exposure concentrations, iv) limiting the systemic impact of misaligned incentives with a view to reducing moral hazard and v) strengthening the resilience of financial infrastructures. See European Systemic Risk Board (2013), Recommendation A.

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European Systemic Risk Board (2013), Recommendation of the European Systemic Risk Board on intermediate objectives and instruments of macro-prudential policy, ESRB/2013/1, April 2013.

Bundesbank publications concerning financial stability

This overview lists selected recent Bundesbank publications on the subject of financial stability. The Financial Stability Review and the Monthly Report are available in both German and English, while most Discussion Papers are only available in English. The publications are available free of charge to interested parties and may be obtained from the Bundesbank's External Communications Department. They are also available online. Additionally, a CD-ROM containing roughly 40,000 published Bundesbank time series, which is updated monthly, may be obtained for a fee from the Bundesbank's Statistical Information Management and Mathematical Methods Division or downloaded from the Bundesbank's ExtraNet platform. Orders should be sent in writing to the addresses given in the imprint. Selected time series may also be downloaded from the Bundesbank's website.

Financial Stability Review

Financial Stability Review, November 2012
Financial Stability Review, November 2011
Financial Stability Review, November 2010
Financial Stability Review, November 2009
Financial Stability Review, November 2007
Financial Stability Review, November 2006
Financial Stability Review, November 2005

Articles from the Monthly Report

October 2013	The determinants and regional dependencies of house prices increases since 2010
	International cooperation in the area of financial sector policy – the Financial Stability Board (FSB)
September 2013	The performance of German credit institutions in 2012
	The development of government interest expenditure in Germany
July 2013	European Single Supervisory Mechanism for banks – a first step on the road to a banking union
	Estimating yield curves in the wake of the financial crisis
June 2013	Household wealth and finances in Germany: results of the Bundesbank survey
	Implementing Basel III in European and national law
April 2013	Macroprudential oversight in Germany: framework, institutions and tools

March 2013	Banks' internal methods for assessing and maintaining internal capital adequacy and their relevance to supervision
January 2013	Current developments in the mutual funds market: demand, structural changes and investor behaviour
December 2012	German enterprises' profitability and financing in 2011

Discussion papers

40/2013 How Stressed are Banks in the Interbank Market?
39/2013 Uncertainty and Bank Wholesale Funding
35/2013 Modelling and Measuring Business Risk and the Resiliency of Retail Banks
34/2013 A Model of Mortgage Losses and its Applications for Macroprudential Instruments
33/2013 Balance Sheet Strength and Bank Lending During the Global Financial Crisis
32/2013 Equity Returns in the Banking Sector in the Wake of the Great Recession and the European Sovereign Debt Crisis
31/2013 A Single Composite Financial Stress Indicator and its Real Impact in the Euro Area
30/2013 Bank Risk Taking and Competition: Evidence from Regional Banking Markets
29/2013 Banks and Sovereign Risk: A Granular View
28/2013 The Evolution of Economic Convergence in the European Union
22/2013 Evaluation of Minimum Capital Requirements for Bank Loans to SMEs
21/2013 Catharsis – The Real Effects of Bank Insolvency and Resolution
20/2013 The Price Impact of CDS Trading
19/2013 Banking across Borders
18/2013 Is Local Bias a Cross-Border Phenomenon? Evidence from Individual Investors' International Asset Allocation
17/2013 Does Non-Interest Income Make Banks More Risky? Retail- versus Investment-Oriented Banks
16/2013 Repo Funding and Internal Capital Markets in the Financial Crisis
14/2013 Restructuring Counterparty Credit Risk
13/2013 Time Variation in Macro-Financial Linkages
09/2013 Optimal Sovereign Default
08/2013 Sovereign Default Swap Market Efficiency and Country Risk in the Eurozone
05/2013 Is the Willingness to Take Financial Risk a Sex-Linked Trait? Evidence from National Surveys of Household Finance
04/2013 Robustness and Informativeness of Systemic Risk Measures
03/2013 Understanding Global Liquidity
01/2013 CDS Spreads and Systemic Risk – A Spatial Econometric Approach
36/2012 The Common Drivers of Default Risk
34/2012 Estimating Endogenous Liquidity Using Transaction and Order Book Information
33/2012 Which Banks are More Risky? The Impact of Loan Growth and Business Model on Bank Risk-Taking
32/2012 Persuasion by Stress Testing – Optimal Disclosure of Supervisory Information in the Banking Sector
30/2012 Measuring Option Implied Degree of Distress in the US Financial Sector Using the Entropy Principle

New edition of *"Weltweite Oganisationen und Gremien im Bereich von Währung und Wirtschaft"*

This Bundesbank special publication on global organisations and bodies dealing with monetary and economic issues contains information on the structure and activities of the IMF, G7/G20, BIS, FSB, OECD, World Bank Group and selected regional development banks and describes their work with the Bundesbank.

The publication can be downloaded or a free print copy ordered from the following address: http://www.bundesbank.de/26320