DEUTSCHE BUNDESBANK
EUROSYSTEM

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November 2010

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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 Data unknown, not to be published or not meaningful; – Nil.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

The Deutsche Bundesbank, as Germany's central bank and guardian of price stability, has an inherent interest in a stable financial system. A robust financial and banking system is not only a precondition for the effective implementation of monetary policy measures, it is also key to a prospering economy.

The Bundesbank's co-responsibility for safeguarding financial stability derives, above all, from its involvement in banking supervision and from its role as an operator and overseer of payment systems. Furthermore, as an integral part of the European System of Central Banks, it has an explicit mandate to contribute to financial stability.

The Bundesbank defines financial stability as the ability of the financial system to smoothly fulfil its key economic functions – in particular, the efficient allocation of financial resources and risks along with the provision of a well functioning financial infrastructure – at all times, including in stress situations and periods of structural upheaval.

The Bundesbank's ongoing analysis of the stability situation in the primarily bank-based German financial sector is focused on credit institutions and insurers, and especially on the segment of systemically important institutions, which is closely interlinked with the global financial system. This analysis is aimed at identifying systemically important changes and emerging risks as early as possible. In contrast to the microprudential approach that deals with individual institutions, macroprudential analysis covers feedback effects within the national and global financial systems, interdependencies between the financial sector and the real economy as well as the effects of the regulatory framework on the financial sector's functionality and efficiency.

In the present *Financial Stability Review*, the Bundesbank gives an assessment of the risks in the German financial system and an evaluation of planned or possible changes to the regulatory framework. This stability analysis adopts a risk-oriented approach, which is often based on looking at "downward scenarios". Unlike projections, which show the most likely development, downward scenarios spotlight potential developments and their implications that might cause major harm to the whole economy, even though the probability of their occurrence appears slight. More than anything, the recent financial crisis has forcibly reminded us of the significance of risks that lie on the margin of probability distributions but can have a major impact. The analyses and assessments in this report are intended to make a contribution to the public debate on financial stability, and the recommendations derived from them are designed as a starting point for initiating necessary corrections.

Financial stability in 2010 – an overview

Sovereign debt crisis jeopardises the stability of the European financial system …

In Europe, the financial crisis intensified dramatically in the spring of 2010. This was triggered by growing doubts about the Greek government's solvency, which turned into a self-reinforcing spiral. The markets' reassessment of sovereign risk spilled over to other European countries whose public finances were also regarded as over-stretched. Moreover, ebbing confidence in individual countries' creditworthiness also hurt the credit standing of banks and enterprises based there. Foreign financial institutions thought to have large exposures to these countries were also increasingly caught up in the crisis of confidence. At the beginning of May 2010, the stability and functioning of the European financial system were acutely at risk.

… and requires massive government intervention …

Governments and central banks in Europe responded rapidly and forcefully to this escalation of the crisis on the financial markets. A Greek default was averted with the help of an aid package jointly put together by the euro-area countries and the International Monetary Fund (IMF) and tied to strict conditionality. As the situation deteriorated, a European support mechanism was, moreover, set up to prevent the crisis from spreading to other euro-area member states. The European Central Bank (ECB) halted the exit from non-standard liquidity measures that it had already announced and initiated. Furthermore, the publication of the results of the EU-wide stress testing exercise among 91 credit institutions, which was conducted under the aegis of the Committee of European Banking Supervisors (CEBS), helped to strengthen confidence in the resilience of the European banking system. The combination of these measures and initiatives prevented the European sovereign debt crisis from escalating.

… which must now be followed by strengthening the foundations

The largely successful crisis management response now needs to be followed by equally resolute action to strengthen the foundations of financial stability. First and foremost, policymakers must create and maintain a global macrofinancial environment that promotes financial stability over a longer-term horizon. Such an environment must include, in particular, a rapid return to sustainable public finances – not just in Europe –, the preservation of price stability and a continuation of the necessary structural adjustment process in the banking sector. It is also important to further bolster the regulatory framework for markets, products and intermediaries in an internationally harmonised and competitively neutral manner.

Ongoing strains on financial stability

More than three years after its onset, the international financial crisis is far from being resolved. A whole range of problems, some of which are interrelated, continue to put strain on the financial system. In addition to the dangers associated with a lack of fiscal discipline that became virulent in the spring of 2010, there is still considerable need for structural adjustment which was created by excesses in the run-up to the crisis and was exposed with its outbreak. In a number of countries, for instance, not just the public sector but also highly indebted households and enterprises

must consolidate their finances. Financial intermediaries whose portfolios continue to contain heightened default risk must also adjust further. Moreover, a correction of the real estate markets is still in full swing in numerous countries. These legacy problems resulting from previous excesses persist. A thus weakened banking system may, in turn, contribute to faltering economic momentum. This, together with a segmentation of the wholesale markets, could cement a situation in which governments and central banks have to take or maintain extraordinary measures which have undesirable implications in the medium term.

Dynamics of government debt

Thus the mounting accumulation of government debt has developed its own self-reinforcing dynamics. The first phase of the financial crisis, in which the solvency of a number of financial institutions was endangered, triggered a sizeable transfer of risk from the private to the public sector. In the second phase, which was marked by a sharp recession following the insolvency of US investment bank Lehman Brothers, general government deficits and debt then soared as the impact of the automatic stabilisers was mostly reinforced by expansionary fiscal policy. In the meantime, several countries have decisively embarked upon the road to consolidating their budgets. The programmes must now be implemented credibly and the consolidation course doggedly maintained. The chapter From the financial crisis to the sovereign debt crisis (see pages 17 to 30) takes a detailed look at the tensions on the European financial markets in early summer 2010 and their consequences.

Central banks all over the world have successfully helped stabilise the financial system and contain the economic crisis through a policy of generous liquidity and low interest rates. However, a protracted phase of low interest rates may create undesirable incentives. These include the danger of a re-emergence of the search for yield coupled with high risk tolerance, which was a widespread phenomenon ahead of the recent financial crisis and one that had damaging consequences. Moreover, persistently low interest rates are promoting the trend towards short-term refinancing and increased maturity transformation. Finally, the abundant supply of liquidity could encourage a prolongation of impaired loans. In the longer term, this could create potential weaknesses in the financial sector.

Persistently low interest rates create undesirable incentives

German banking system strengthened overall

In this environment, the constitution of the German banking system is currently improved overall, although considerable vulnerabilities remain. The risk situation has eased somewhat, while resilience has concurrently improved, and the system has remained operational at all times. Temporary fears of a credit crunch have not materialised. It should, however, be noted that the German banking system, in particular, is currently benefiting greatly from favourable macroeconomic conditions. The buoyant economic upturn is supporting domestic borrowers' creditworthiness. And confidence in the German banking system is also being bolstered by the comparatively positive view that the international financial markets are taking of the general government budget situation in Germany – an assessment that needs to be preserved.

Refinancing remains short-term

The slight easing of the risk situation overall should, however, not be allowed to divert attention from potential problems. The low

Box 1.1

STABILITY SITUATION IN THE GERMAN FINANCIAL SYSTEM IN 2010

Factors that …

… strain the stability situation

- Public finance situation not sustainable in many industrial countries
- Financial systems in many countries weakened by legacy problems; danger of negative feedback between adjustments to financial system, consolidation of public finances and pace of growth in some euro-area countries
- Segmentation of the money market; a number of European banks are dependent on the Eurosystem for refinancing
- Unwelcome implications of monetary and liquidity measures in the medium term
- Latent danger of asset price bubbles; indicated by high capital inflows to EMEs
- Vulnerabilities of large banks with regard to refinancing due to short-term bias and possible vying with financial needs of governments
- Interest rate risk still high
- Insurance firms may feel the strain of persistent low interest rates
- New incentives to shift activities to unregulated segments of the financial system

… alleviate the stability situation

- Fiscal consolidation initiated in many countries
- Contagion effects and risk of losses from sovereign debt-laden countries contained by support measures
- Domestic credit risks eased
- Market risk in German banks' trading books reduced
- Resilience in the German banking system has increased
- Banks' capitalisation better both in quantitative and qualitative terms
- Earnings improved, operating income up, loss provisions down
- No indication of credit crunch in Germany
- Regulatory headway: international agreement on capital and liquidity standards
- Extension of institutional framework: establishment of a European System of Financial Supervision

Recommendations …

… to market participants

- Use favourable conditions for necessary balance sheet clean-up
- Make business models sustainable
- Aim for more balanced refinancing structure
- Use favourable earnings position to further strengthen capital base
- Use credit assessments awarded by rating agencies responsibly

… to policymakers

- Proceed with fiscal consolidation resolutely
- Tighten national and European fiscal rules to safeguard long-term sustainability of public finances, and make institutional arrangements for crisis resolution that bail in private creditors
- Push ahead with restructuring of problem banks
- Apply internationally agreed standards for financial market regulation
- Enhance macroprudential tools
- Regulate shadow banking system and incorporate it in macroprudential oversight
- Additionally mandate the Bundesbank with macroprudential oversight and enshrine this in the German Banking Act

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short-term interest rates are encouraging banks to take on liquidity risk and thereby increasing dependence on volatile market developments. The percentage of German institutions' outstanding bank debt securities with a residual time to maturity of less than a year, which for many years was stable at 22%, had, for instance, risen to around 30% at the last count. The necessary reversal of this expansion in the short-term maturity segment is overdue. Banks should limit potential risks arising from asset-liability maturity mismatches. While this short-term bias continues in wholesale funding, the German banking system has made progress towards achieving a more stable mix of funding sources. Thus, the share of deposits by non-banks, which are historically less volatile, in the total liabilities of the German banking system has risen from 37% before the financial crisis to 40%.

Market risk on the decline

Market price risk for German banks has declined perceptibly since mid-2009. One factor in this is that they have reduced their previously sizeable credit trading positions. Banking groups whose business model typically involves maturity transformation based on large deposits by non-banks continue to face high, albeit slightly reduced, interest rate risk. From a systemic perspective, it is cause for some concern that banks active in the markets are again displaying similar response patterns in proprietary trading and therefore a comparable risk profile as the sovereign debt crisis widens. The chapter Market and systemic risks in a protracted low-interest rate environment (see pages 31 to 58) examines potentially problematic developments on the markets and in banks' behaviour.

Credit risk has stabilised overall …

German banks' credit risk has stabilised in domestic business but is more differentiated in foreign business. The easing of tensions in terms of domestic credit risk is attributable to the dynamic upturn and robust labour market in Germany. The share of loans extended to non-banks in foreign business dropped by almost 4 percentage points from its high in October 2008 to just under 21% at the end of 2009 and has stabilised at this historically still high level. International credit risk, however, is now more differentiated. The credit quality, in particular, of enterprises that do business globally and are active on the capital market has improved. By contrast, some sovereign borrowers' credit standing has declined. Within the euro area, the establishment of a temporary support mechanism for member states with strained public finances has, however, prevented the escalation of credit risks from such exposures.

… but individual credit segments still subject to heightened default risk

The most vulnerable segments of foreign credit exposures remain commercial real estate funding, loans to selected corporate sectors such as the construction industry in countries currently undergoing structural adjustment as well as holdings of structured securities. According to a survey on commercial real estate lending which the Bundesbank conducted among 11 German banks, the overall lending volume in the first quarter of 2010 totalled around €325 billion. This is roughly 3¼ times these banks' tier 1 capital. Among structured securities, securitised residential mortgage loans represented the largest individual item, with a book value of roughly €82 billion at the end of June 2010. In addition, portfolios contain mainly collateralised debt obligations (CDOs, approximately €62 billion), securitised student loans

(just under €34 billion) and commercial mortgage backed securities (CMBS, some €22 billion). Although these portfolios are sizeable, the associated risks for the stability of the German banking system are manageable on the whole. The chapter Credit risk between legacy problems and economic recovery (see pages 59 to 77) analyses this risk category, which is still the most significant for banks.

Resilience enhanced

While the risk situation in the German banking system has therefore improved somewhat overall compared to what it was a year ago, resilience has increased. Above all, major German banks with an international focus have lowered their leverage and bolstered their tier 1 capital considerably. These banks raised their tier 1 capital ratio by an average of 2.4 percentage points to 10.4% between the first quarter of 2008 and the second quarter of 2010. Business activity and total assets have shown fairly divergent trends, partly because some banks that have taken recourse to government aid had to comply with demands from the European Commission to reorient their business model. Balance sheets nonetheless managed to expand by an average of 10% in the first half of 2010. Operating earnings have recovered well from the sharp downturn they experienced in the fourth quarter of 2008 in the wake of the recession, although large German banks' trading income is increasingly volatile given resurgent uncertainty on the financial markets. Their earnings risks relate chiefly to trading business. The credit cooperatives and savings banks have adequate capital levels given that their business model is geared to relatively stable earnings. For them, the main risk to profitability lies in a flattening of the yield curve.

Loss provisions on the decline

Loss provisions in the German banking system totalled around €37 billion in 2009 and will likely amount to some €23 billion this year. For both years together, losses thus amount to €60 billion, which is at the lower end of the range forecast in the 2009 *Financial Stability Review*. In a baseline scenario, loss provisions in 2011 are expected to remain virtually unchanged at €23 billion. In a risk scenario involving a massive economic downturn of 4% of gross domestic product (GDP), aggregate write-downs would total €35 billion, some €9 billion more than the average of the last five years.

Vulnerabilities in the German banking system need reducing

The favourable overall environment should be used to further reduce known vulnerabilities in the German banking system. This applies particularly to sectors of the German banking system that have proved susceptible in recent years. Consolidation, the adoption of sustainable business models and probably also capacity reductions are the key needs in this context.

Low interest rates a risk for insurers

German insurers are also benefiting from the economic recovery. They have raised premium and investment income, in some cases substantially. However, they must keep a vigilant eye on interest rate risk. In particular, a protracted phase of low interest rates could erode earnings and perceptibly impair long-term resilience. In the chapter Increases and differences in resilience in the German financial system (see pages 79 to 99), empirical analysis methods are used to determine how earnings and solvency in the German banking and insurance sector might evolve given changed market conditions and new regulatory standards.

Improvements to regulatory framework, …

Enhancements to the regulatory and institutional framework are one of the main drivers of progress towards a resilient financial system. Higher minimum capital ratios and the tighter definition of capital based more strictly on banks' loss absorbency capacity stipulated in Basel III will stiffen banks' robustness. It is important to resolutely advance the international reform agenda with due consideration of national particularities. However, the adoption of new, tighter regulations for the traditional banking sector must not be allowed to serve as a springboard for a migration of business to segments of the financial system that are subject to little or no regulation. Sufficient prudential oversight of the shadow banking system is an additional prerequisite for identifying systemic risk and is therefore one of the pillars of macroprudential supervision. The box Shadow banking system within the macroprudential approach (see page 122) examines this important aspect.

… but systemic importance still a challenge

Dealing with the systemic importance of financial institutions presents regulators with special challenges. Greater loss absorbency capacity on the part of systemically important banks should ensure that existing implicit government guarantees of their continuing existence are cost-effective and thereby limit competitive distortions. Dedicated bank insolvency legislation enabling timely intervention by supervisors is, in future, to allow the orderly market exit of a bank and should therefore influence banks' behaviour. One reason why the sanction of allowing institutions to close down is so important is that the weaknesses of individual banks played a key part in the crisis. Internal and external control mechanisms at some systemically important institutions failed. Glaring deficiencies were also revealed in internal risk management, such as many institutions' practice of overrelying on rating agencies, particularly for structured products. Strengthened public oversight is no substitute for market players' own responsibility to critically examine rating agencies' credit assessments.

Macroprudential approach …

A uniform macroprudential approach and its coordination with microprudential supervision should help to identify and combat complex systemic risk at an early stage. The newly established European Systemic Risk Board (ESRB) represents an important institutional macroprudential anchor at the European level. The chapter Enhancement of the regulatory and institutional framework (see pages 101 to 134) explains and assesses core areas in which regulators have responded to the crisis.

… should contribute to a coherent financial market architecture

The financial crisis has resulted in government assuming a more active role both through direct interventions and through regulatory responses. The main challenge in terms of building a coherent financial market architecture is to establish an institutional and regulatory framework that promotes a risk culture in which profits and losses from commercial activities are understood and recognised as two sides of the same coin. To achieve this risk culture, the institutional and regulatory framework must strengthen the foundations for macroeconomic stability, which include, in particular, price stability and sustainable public finances. In terms of public finances, national and European fiscal rules must be tightened. A transparent and predictable procedure which also notably guarantees a comprehensive and credible consolidation and reform programme could, in conjunction with improved financial

market regulation, largely limit the risk of a systemic crisis. In this context private creditors, too, have an essential responsibility for restoring sustainable public finances in over-indebted countries.

Central banks face new challenges

As part of the changed balance between the government framework and market activity, the central banks, too, face new challenges. They are closely involved in the process of analysing and assessing risk. They are widely seen as key to identifying misdirected developments within the financial system at an early stage, allowing these to be corrected before they cause any damage. Various committees on which the Bundesbank is represented are currently discussing the choice and potential deployment of macroprudential instruments. Adding a legal mandate for macroprudential oversight and policy through a corresponding amendment of the German Banking Act (*Kreditwesengesetz*) to the Bundesbank's current range of tasks would strengthen and safeguard its role in national, European and international stability policy. The final chapter Elements of a coherent financial market architecture (see pages 135 to 138) considers the fundamental and longer-term challenges for an effective institutional and regulatory framework.

From the financial crisis to the sovereign debt crisis

In the spring of 2010, doubts over the sustainability of the budgets of some European countries caused them to face an acute crisis of confidence, leading to cross-border and cross-sector contagion. This posed a direct threat to the stability and smooth functioning of the European financial system. Governments and central banks were forced to make massive interventions in order to prevent the crisis from escalating. The sovereign debt problem has come at a time when the financial system is weakened and is still struggling with the strains caused by earlier excesses. The combined effect of doubts over budgetary discipline, a subdued growth outlook and weakened financial systems could therefore trigger negative feedback loops between the financial sector and the real economy. This would have a detrimental effect on prospects for a lasting stabilisation of the global financial system, which is still displaying symptoms of stress. It is therefore all the more important that the fiscal consolidation now initiated by many governments continues to be rigorously implemented.

Crisis of confidence in the euro area requires extensive public interventions

Deteriorating public finances triggered crisis of confidence, …

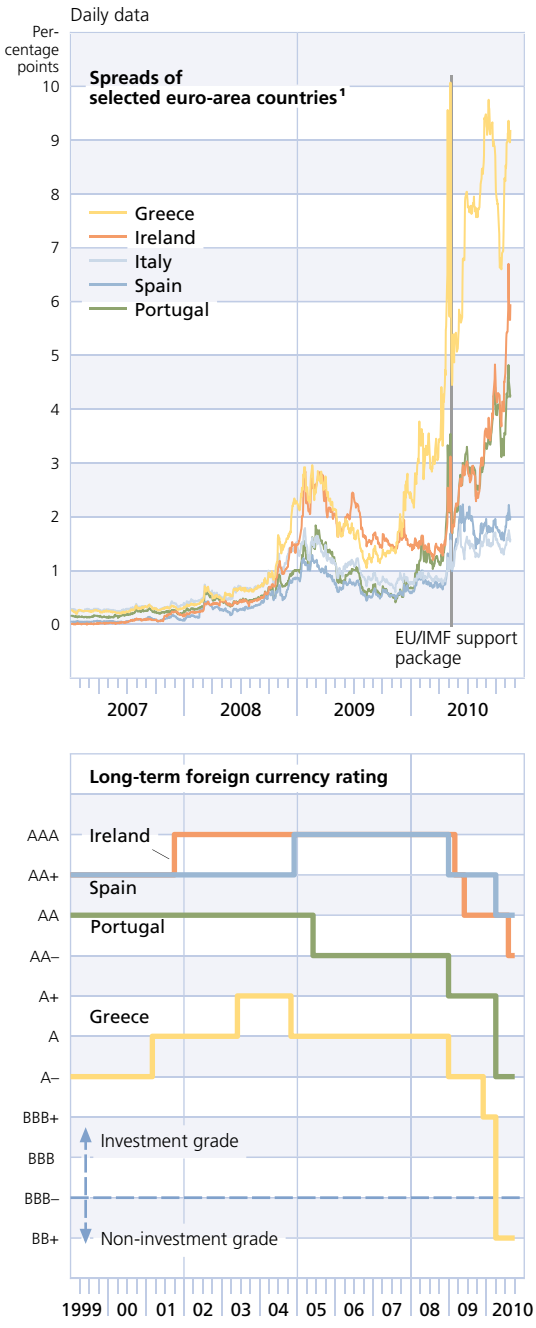
In the spring of 2010, the deteriorating public finance situation in some euro-area countries came under the scrutiny of market participants. The sovereign debt problem came as an additional burden to the financial system, which was already facing the strains of ongoing adjustments resulting mainly from the excesses of the pre-crisis period. Initially, Greece in particular was hit by an increasing loss of confidence. However, it subsequently began to spill over to other European countries and ignited market turmoil, which spread beyond the government bond segment. The refinancing costs of a number of euro-area countries rose steeply. In addition, the credit rating agencies downgraded the sovereign ratings for these countries (see Chart 2.1). At the beginning of May 2010, the stability and smooth functioning of key markets in the European financial system were acutely under threat.

… which was contained through exceptional measures

In light of these events, the euro-area finance ministers and the International Monetary Fund (IMF) decided to support the necessary consolidation process in Greece, which faced an acute risk of default, by granting credit based on strict conditionality. Even before the EU finance ministers were able to finalise the package, the situation on the capital markets deteriorated further. This led to the creation of the European Financial Stability Mechanism (EFSM), with a volume of €60 billion, and the European Finan-

Chart 2.1

INCREASED RISK AVERSION



Sources: Bloomberg and S&P. — **1** Spread of ten-year government bonds over Bunds of a comparable maturity.

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cial Stability Facility (EFSF),[1] with a volume of €440 billion, through which loans can be disbursed under the imposition of consolidation conditions. Through these extensive public interventions, it was possible to stem the loss of confidence in the markets triggered by the situation in Greece. To support this process and ensure a smooth transmission of monetary policy, the Governing Council of the ECB decided to launch a securities markets programme for public and private debt securities. Furthermore, the publication of the results of the EU-wide stress testing exercise, which was conducted for 91 European banks under the aegis of the Committee of European Banking Supervisors (CEBS), strengthened confidence in the resilience of the European financial system (see Box 2.1 on page 19).

Sovereign debt under the spotlight of the financial markets

Sovereign debt crisis partly due to financial and economic crisis

The surging growth in sovereign debt stems, in part, from distortions which built up over an extended period of time and were largely ignored by the markets. These include long-term factors, such as eroded competitiveness and a lack of fiscal consolidation in good times. In some countries, however, the sharp rise in government debt is also a direct result of the crisis. In the first phase of the financial crisis, when the solvency of a number of credit institutions was in jeopardy, a sizeable transfer of risk occurred from the private to the public sector. In the second phase – the sharp reces-

1 The borrowings of this facility, which is a special-purpose vehicle, are backed by guarantees from euro-area member states. Germany's share in these guarantees is 27%. S&P assigned a long-term issuer rating of AAA to the EFSF.

Box 2.1

SCENARIOS AND RESULTS OF THE EU-WIDE STRESS TESTING EXERCISE

In the wake of the renewed tensions in the financial markets, a joint bank stress testing exercise was conducted in 20 EU member states in the summer of 2010 under the aegis of the Committee of European Banking Supervisors (CEBS). The question of whether credit institutions would be in a position to withstand a substantial deterioration in economic conditions – after already having suffered very high losses in previous years – was increasingly dominating discussions among international capital market players and was also reflected in the focus of the stress tests. Furthermore, the stress tests took account of the increased need for information about the vulnerability of exposures in connection with the emerging sovereign debt crisis in a number of European countries.

A total of 91 credit institutions took part in the EU-wide stress testing exercise; 14 of them were large German institutions.[1] The sample of banks was chosen so as to cover at least 50% of the total bank assets of each EU member state. The objective was to test the impact of a benchmark scenario and an adverse scenario over a period of two years: 2010 and 2011. Whereas the benchmark scenario assumed a mild economic recovery, the adverse scenario assumed a "double-dip" recession. In addition, the effects of a shift in the yield curve as well as a simultaneous rise in the risk premiums on European government bonds were considered which, in the simulations, resulted in considerable write-downs in the banks' trading books in some cases.

On the whole, it may be stated that the vast majority of the participating banks were able to prove their resilience, even in a severe and not very likely adverse scenario. Thus, only seven institutions' tier 1 capital ratios fell below the predefined 6% threshold during the observation period.[2] This was the case for just one credit institution in Germany, which had already been nationalised as part of the German government's crisis intervention measures and which received permission from the European Commission to transfer toxic assets worth €173 billion to a "bad bank" only after the stress tests had been completed. The good performance of the other German participants was due primarily to their high level of capitalisation. The tier 1 capital ratio of the German banking system as a whole has risen by 1.8 percentage points since the first quarter of 2008, which means that the available risk buffer is now significantly larger than at the beginning of the crisis.

The response to the stress tests in the financial markets was predominantly positive. Above all, the disclosure of credit institutions' total government bond holdings – in both the trading book and the banking book – is likely to have provided greater transparency and helped to counter the downward spiral in the financial markets.

1 For a detailed description of the stress tests, see www.c-ebs.org or www.bundesbank.de. — **2** It should be noted that this requirement does not constitute a current regulatory hurdle. Pursuant to the Basel II minimum requirements, tier 1 capital must be equivalent to 4% of risk-weighted assets.

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Table 2.1

VULNERABILITIES IN SELECTED COUNTRIES

Forecast values

Country	Deficit as % of gross domestic product (GDP) 2010	General government gross debt as % of GDP 2010	Interest payments as % of GDP 2010	2015	Financing needs as % of GDP 2010-11[1]	General government debt held abroad as % of GDP 2010	Year-on-year percentage change in GDP 2010
United States	– 11.1	92.7	2.4	4.9	27.2	26.7	2.6
Japan	– 9.6	227.2	2.9	4.0	59.1	11.5	2.8
United Kingdom	– 10.2	76.7	2.9	3.5	15.7	18.5	1.7
Euro area	– 6.5	84.1	3.0	3.4	–	–	1.7
France	– 8.0	84.2	2.6	2.9	21.5	51.4	1.6
Germany	– 4.5	75.3	2.6	2.1	13.8	37.8	3.3
Greece	– 7.9	130.2	5.6	7.8	24.6	94.2	– 4.0
Ireland	– 32.0	98.6	3.3	5.2	17.3	54.9	– 0.3
Italy	– 5.1	118.4	4.6	5.5	24.6	55.5	1.0
Portugal	– 7.3	83.1	3.2	4.1	20.7	59.9	1.1
Spain	– 9.3	63.5	2.3	3.9	19.0	31.1	– 0.4

Sources: Bloomberg, IMF and OECD. — **1** Fourth quarter of 2010 to fourth quarter of 2011; calculated from the sum of maturing liabilities and budget balances as a percentage of projected GDP for 2011.

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sion following the bankruptcy of US investment bank Lehman Brothers – most countries shifted to a highly expansionary fiscal stance, which, alongside the effects of the automatic stabilisers, drove up deficits and debts. The sovereign debt problem is thus partly a result of the previous turmoil in the financial markets and the real economy.

Massive deterioration in public finances …

In the western industrial countries, falling tax receipts, extensive debt-financed economic stimulus programmes and rescue packages for financial institutions have led, overall, to historically high budget deficits and soaring government debt (see Table 2.1). In addition, debt ratios can be expected to rise further. In relation to gross domestic product (GDP), sovereign debt in the euro area as a whole will have increased by just over 18 percentage points within only three years (from 2007 to 2010) (see Chart 2.2). In the United States, government debt will have risen by as much as around 30 percentage points over the same period. Before the financial and economic crisis in 2007, aggregate government indebtedness in the G7 countries stood at 83% of GDP; by the end of 2010, it will reach around 110%, and is likely to climb even further by 2015.

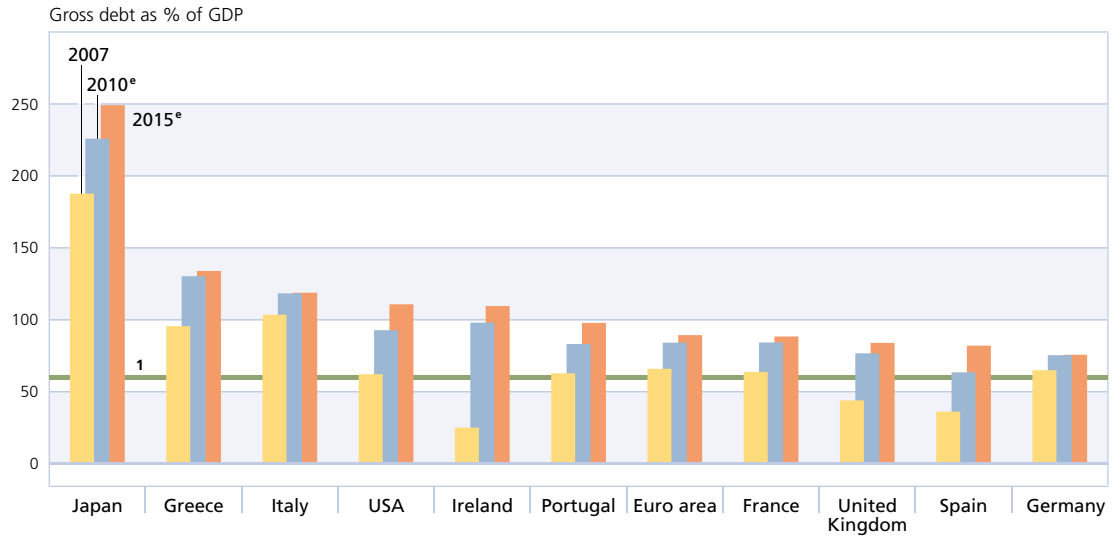
… caused mainly by cyclically-induced revenue shortfalls

Cyclically-induced revenue shortfalls, in particular, have contributed to this development; by contrast, the impact of direct measures to support the financial sector has been comparatively small.[2] According to the IMF, the funds used

2 Around 40% of the rise in government debt in the G7 countries is due to cyclically-induced revenue shortfalls. See C Cottarelli and A Schaechter, Long-Term Trends in Public Finances in the G-7 Economies, IMF Working Paper, 1 September 2010.

Chart 2.2

SOVEREIGN DEBT



Source: IMF. — **1** Maastricht criterion (60% of GDP).

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for this purpose in the industrial countries, which account for three-quarters of worldwide direct financial sector support, amounted to 5.4% of GDP.[3] However, only some of the costs of restructuring the financial system are explicitly reflected in government budgets, and there are considerable contingent liabilities. In addition, substantial fiscal burdens are looming on the horizon in many countries caused by evolving demographics.

High risk premiums and contagion effects

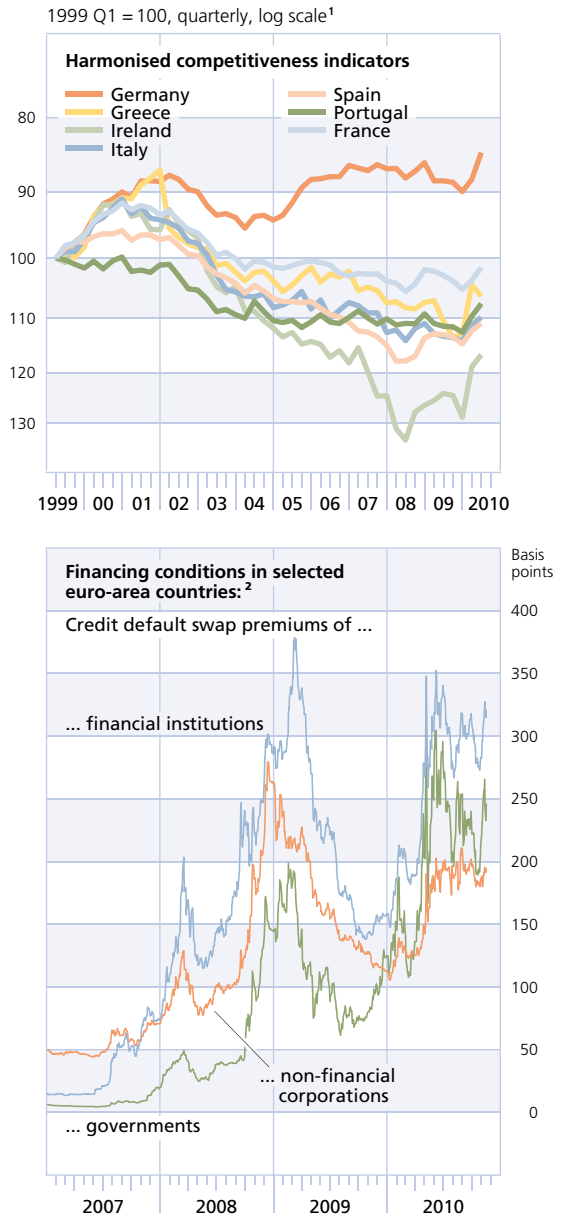
Risk premiums still high

Despite the measures taken by the European Union to ease the acute tensions in the euro area, the risk premiums for some countries remain high. This is likely to reflect, above all, a lingering lack of confidence on the part of the market participants in the sustainability of the consolidation strategy that has been adopted. Moreover, the need for structural adjustment in the economies is vast. International competitiveness has deteriorated since the start of monetary union – in some cases significantly (see Chart 2.3). It is therefore essential, in addition to implementing a credible fiscal consolidation strategy, to improve external price competitiveness through far-reaching structural reforms, moderate wage settlements and other cost-cutting measures.

3 To date, the United States and the United Kingdom have utilised 5.3% and 7.3% of GDP (respectively) of the funds pledged for this purpose, which amount to 7.4% and 11.9% of GDP. Until now, Germany has utilised 4.7% of the pledged direct support measures, which amount to 6.8% of GDP. See IMF, Fiscal Exit: From Strategy to Implementation, November 2010.

Chart 2.3

HARMONISED COMPETITIVENESS INDICATORS* AND FINANCING CONDITIONS



Sources: ECB, Markit and Bundesbank calculations. — * Based on unit labour costs. — **1** Inverted scale: rise in the curve (decrease in the values) represents a gain in price competitiveness. — **2** Greece, Ireland, Italy, Portugal and Spain; GDP-weighted.

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Correlation between financing conditions of governments and banks

In some euro-area countries, feedback loops between the public sector and the banking sector exacerbated existing tensions. Given declining external demand, countries with high levels of debt were periodically reliant on domestic banks taking up their government bonds. Other countries had to bear especially large burdens resulting from support measures, including contingent liabilities vis-à-vis their respective domestic banking systems. The detrimental effect of a deterioration in the creditworthiness of the sovereign borrower on banks domiciled in these countries was therefore disproportionately strong. The risk faced by governments and banks in the worst affected euro-area countries rose simultaneously, leading to a high correlation between the risk premiums for the governments and those for financial institutions.[4] Enterprises were likewise unable to fully detach themselves from this development owing to such factors as the expectation that the necessary consolidation of government budgets would dampen aggregate demand (see Chart 2.3).

Cross-border burdens

In addition to national vulnerabilities, cross-border contagion effects and burdens also emerged. For example, relatively unsuccessful government bond auctions often triggered a rise in the risk premiums on the bonds of governments and banks in other euro-area countries, increased uncertainty in these countries and led to further haircuts on the markets for government bonds. These losses in market value are placing a strain on banks throughout the euro area. Furthermore, the sectoral conta-

4 For information on the interconnectedness of bank risk and sovereign credit ratings, see S Gerlach, A Schulz and G Wolff, Banking and sovereign risk in the euro area, Deutsche Bundesbank Research Centre, Discussion Paper, Series 1, No 09/2010.

gion effects outlined above suggest that risk analyses should include not only claims on the public sector but also exposures to the other sectors (banks, enterprises, households). At the end of the second quarter of 2010, European banks had substantial foreign exposures to some euro-area countries (see Table 2.2). All in all, the tensions connected with the sovereign debt problem are impairing the recovery of the financial system, parts of which remain stressed.

Ongoing symptoms of stress in key market segments

High volatility and strong wish for security

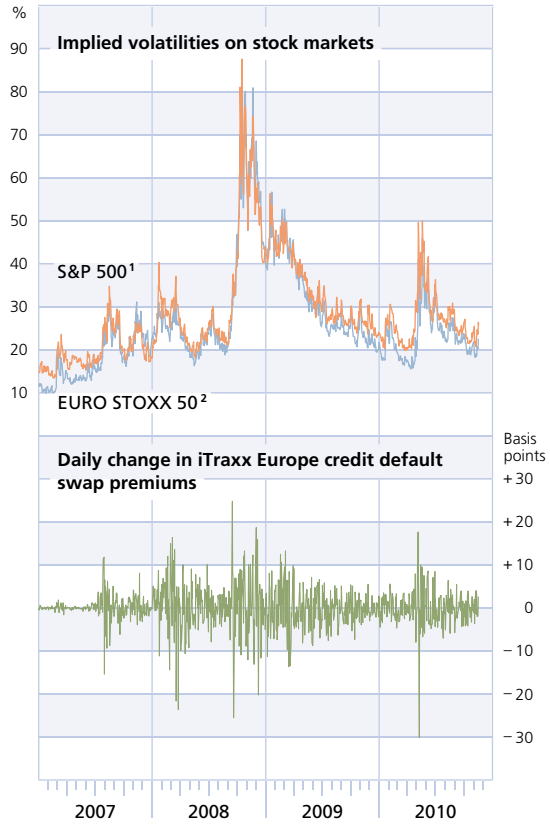
Since the spring of 2010, the sovereign debt crisis experienced by some euro-area countries has led to high uncertainty and a renewed rise in risk aversion in the markets. For example, volatility in the stock markets and corporate credit markets rose sharply at times and remains above the historical average; in other market segments, such as commercial mortgage backed securities, frictions remain high (see Chart 2.4 and Chart 2.5).

Money market only partially funktional …

The euro-area money market, too, displayed symptoms of stress on the back of the sovereign debt crisis. The lack of confidence in a number of European financial institutions is still substantially hindering the smooth functioning of the interbank market, which has been impaired since the autumn of 2007. Thus, owing to concerns about counterparty risk, a number of banks – especially those domiciled in the euro-area countries that have come under particular scrutiny – are barely able to conduct any unsecured borrowing on the interbank market. Refinancing on the repo market was made more difficult by the fact that, in some cases, the bonds of several euro-area countries were either not accepted as collateral at all, or only to a very limited extent. As a result of these frictions, the spread between three-

Chart 2.4

UNCERTAINTY IN THE MARKETS



Sources: Bloomberg and Markit. — **1** CBOE Volatility Index (VIX). — **2** VSTOXX volatility index.

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Table 2.2

BANKS' CONSOLIDATED FOREIGN EXPOSURES TO EURO-AREA COUNTRIES ON AN ULTIMATE RISK BASIS

US$ billion; as at 30 June 2010

	All reporting countries	Creditors									
		Euro area							*Memo item:*		
Borrowers		Austria	France	Germany[1]	Ireland	Italy	Netherlands	Spain	Switzerland	United States	United Kingdom
Austria	290	–	21	86	5	121	9	5	11	9	9
Belgium	534	3	254	35	6	4	109	6	13	44	30
Cyprus	38	2	3	10	0	2	1	0	3	1	4
Finland	159	1	8	14	1	1	3	2	3	9	5
France	1,167	9	–	197	19	34	81	27	68	243	270
Germany	1,653	51	269	–	30	261	156	40	108	234	175
Greece	157	3	57	37	8	5	5	1	3	7	12
Ireland	518	4	44	139	–	15	19	14	19	57	132
Italy	911	22	424	154	40	–	43	33	13	35	67
Luxembourg	522	4	99	148	7	24	14	8	64	23	26
Malta	15	2	1	2	1	0	1	0	0	0	6
Netherlands	759	12	123	149	13	22	–	19	41	124	140
Portugal	212	2	41	37	5	5	6	78	3	3	22
Slovakia	64	26	7	3	0	16	1	0	0	1	1
Slovenia	33	14	3	5	1	7	0	0	0	0	0
Spain	727	7	165	182	27	26	73	–	13	52	105
Euro area	7,758	163	1,520	1,197	165	543	522	232	362	843	1,003

Source: BIS. — **1** For Germany, only data on an immediate risk basis are available.

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month EURIBOR and EONIA swap rates (see Chart 2.5 and Chart 2.6) expanded again.[5]

… and reliant on generous supply of liquidity

In light of these events, the financial system in the euro area has become reliant on the generous supply of liquidity from the Eurosystem.[6] In relation to their total assets, the amount of funds being borrowed from the Eurosystem by a number of banks domiciled in the euro-area countries most affected by the crisis of confidence is far above average. The fact that European banks have recently been hoarding much less excess liquidity than at the height of concerns over some euro-area countries' ability to refinance their debt can be viewed as a sign of a return to normality in the European money market.

Refinancing in US dollars made more difficult by concerns about counterparty risk

The uncertainty regarding the situation of European financial institutions has also impaired their access to refinancing on the US money market. There are vulnerabilities in this area as a result of numerous European banks' structurally high short-term US dollar funding needs. At times, US investors, such as money market funds, showed substantial reluctance to prolong their investment in short-term debt instruments from European issuers. The volume of

5 Although the outstanding volume on the European repo market has recently returned to the pre-crisis level, the aggregated increase overstates the extent of the recovery, as financial institutions with relatively healthy balance sheets have significantly increased their market share to the detriment of weaker competitors with persistent refinancing problems.
6 While the Eurosystem is no longer offering additional, one-year longer-term refinancing operations, it is still conducting the main refinancing operations as fixed-rate tenders with full allotment. Furthermore, in May 2010, the Eurosystem reactivated its swap line with the Federal Reserve in order to ensure an adequate provision of US dollars to the euro-area banking system.

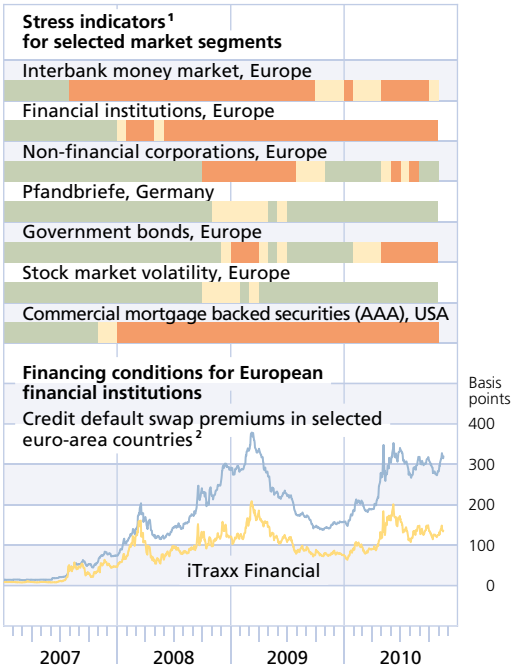
commercial paper issued by foreign (mainly European) financial institutions in the United States thus began to fall markedly at the beginning of the year and has only recently rebounded (see Chart 2.6). European banks therefore made greater use of the foreign exchange (FX) swap market as a wholesale funding alternative. This was one of the factors behind the temporary significant increase in the three-month LIBOR-OIS spread on a US dollar basis from May to July 2010.

Clear differences in refinancing capabilities of individual banks

As in the case of short-term funding on the money market, banks' longer-term refinancing also displays a fairly strong differentiation among euro-area countries. While many big banks have been able to issue bonds without any major problems (aside from the phases of acute stress during the sovereign debt crisis), numerous smaller and medium-sized financial institutions, particularly those domiciled in the countries affected by the European sovereign debt crisis, still have only limited access to the bond market. The differing wholesale funding conditions are reflected in the trends in credit default swap premiums. The premiums for banks in the countries most affected by the sovereign debt crisis have thus risen far more than the iTraxx Europe Financials index for the credit default swap premiums of European financial institutions as a whole (see Chart 2.5).[7]

Chart 2.5

FRICTIONS IN THE INTERNATIONAL FINANCIAL SYSTEM



Sources: Bank of America Merrill Lynch, Bloomberg, Markit, Morgan Stanley and Bundesbank calculations. — **1** The stress indicator is the level of credit risk premiums or the implied volatility vis-à-vis the long-term average. Green indicates normal market conditions, yellow raised to exceptionally high stress levels and red extremely impaired markets. — **2** Greece, Ireland, Italy, Portugal and Spain; GDP-weighted.

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Necessary consolidation of public finances initiated

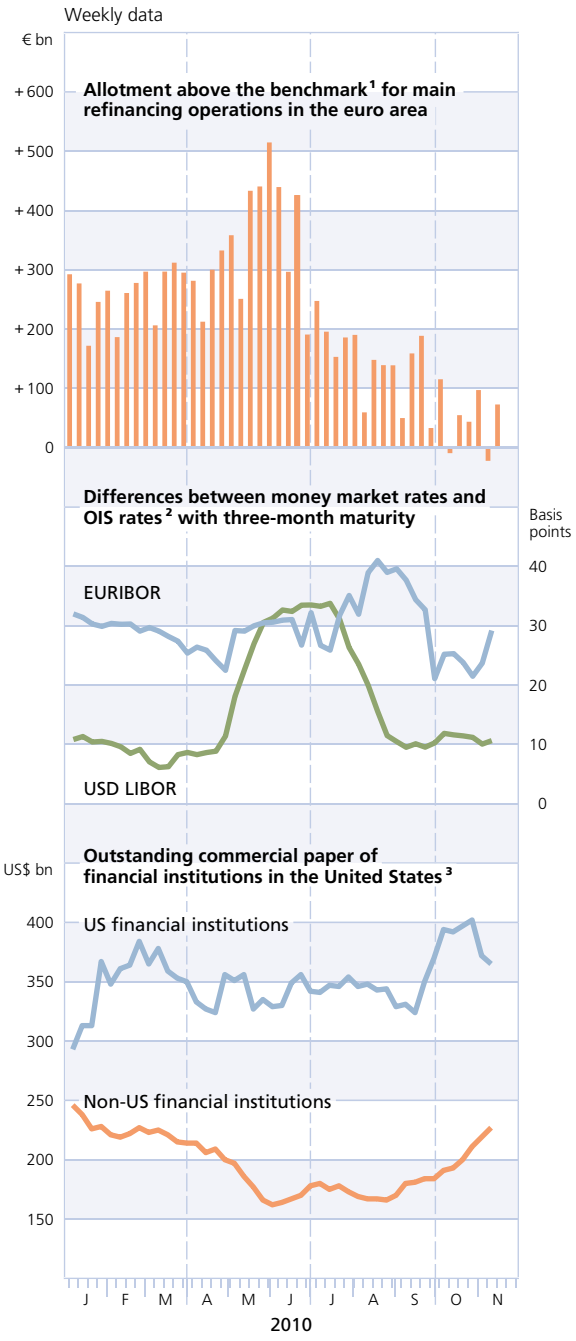
Rigorous consolidation programmes required

In order to counteract a further erosion of confidence and safeguard access to the financial markets, the governments of some countries have since resolutely initiated measures to consolidate their budgets. Rigorous medium-term financial planning and a credible implementation of the consolidation programmes are now needed in order to ensure orderly refinancing and mitigate negative spillovers to other sectors, which would also impact negatively on macroeconomic growth (see Box 2.2

7 Of the institutions from the euro-area countries that have recently come under particular market scrutiny, only a few larger entities – which are usually in better fundamental shape than many smaller and medium-sized banks – are included in iTraxx Europe Financials.

Chart 2.6

TENSIONS IN THE MONEY MARKETS



1 Difference between the actual allotment and the previously projected benchmark. — **2** Overnight indexed swaps. — **3** Source: Federal Reserve.

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on pages 28 and 29). Owing to the extensive feedback effects between the public finance situation and the stability of the financial system, even those countries that are not currently in the spotlight of the financial markets should give the highest priority to ensuring the sustainability of their public finances. The fact that the financial markets have, until now, focused their attention on the fraught public finance situation in certain European countries must not blind us to the substantial need for fiscal consolidation in many other industrial countries, too.

Ongoing burdens caused by earlier excesses

Problem of government debt …

The problem of high and rising government debt – which is acute in some parts of the euro area – is having a detrimental effect on prospects for a lasting stabilisation of the international financial system, not least because of potential negative feedback between growth and consolidation. The ongoing need for adjustment, which was caused by the excesses of the period preceding the crisis and exposed by its onset, is a crucial factor in this respect. As a result, countries with large adjustment requirements in both the private and the public sector are finding it particularly difficult to return to a robust growth path.

… combined with still weakened financial sector

The international banking system is still getting to grips with burdens caused by particularly risky exposures entered into ahead of the financial crisis. Consequently, the banking system remains highly susceptible to the danger of renewed market dislocations or a weak growth environment. It is therefore very impor-

tant to ensure that balance sheets in the financial sector are strengthened further, eg by improving capital bases and paring down short-term debt financing. Balance sheets need to be cleaned, too, of non-performing loans that are ultimately hindering financial institutions from adopting sustainable business models.

Ongoing balance sheet repair in private sector as an economic risk

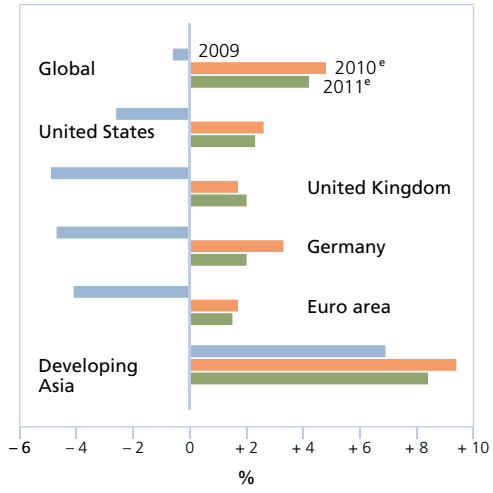
Households in countries where credit growth was accompanied by a boom in the real estate market have now entered a phase of debt reduction. However, their liabilities currently remain very high, meaning that the process of adjustment is likely to be protracted. The resulting low propensity to consume and muted demand for residential property will probably have a dampening effect on economic activity – all the more so if the correction in the housing markets continues. Key components of aggregate demand could therefore remain subdued for years to come.[8]

Financial stability at risk from economic slowdown

Following the steep slump in activity in the real sector in 2009 as a result of the financial crisis, signs of recovery have been evident in the past few quarters. They were particularly strong in export-driven economies such as Germany, which had previously been hit especially hard by the economic downturn. In many industrial countries, however, macroeconomic momentum has remained subdued. Global growth is likely to weaken somewhat in 2011 – particularly given that the thrust applied by the extensive economic stimulus packages adopted in response to the financial crisis is coming to an end (see Chart 2.7). A deceleration of the cyclical upturn in the western industrial countries would impair credit quality, especially that of firms which are still very highly leveraged following the excesses of the pre-crisis period. This would probably place additional pressure on the commercial real estate markets, too. Moreover, the recovery in the labour markets would then tail off, which would place a further strain on households' credit quality.

Chart 2.7

GROWTH IN REAL GDP IN SELECTED COUNTRIES



Source: IMF.

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Low interest rates and abundant liquidity not without dangers

The possible feedback effects between growth, structural weaknesses in the banking system and the consolidation processes in both the private and public sectors might cement a situation in which governments and central banks are forced to adopt or uphold exceptional measures that have undesirable implications in the medium term. A protracted phase of low

8 For evidence of protracted adjustment processes following financial crises, see C M Reinhart and V R Reinhart, After the Fall, NBER Working Paper 16334, September 2010.

Box 2.2

THE EFFECTS OF HIGH GOVERNMENT DEFICITS AND DEBT LEVELS ON FINANCIAL MARKETS AND THE PACE OF GROWTH

A number of recent academic papers examine the consequences of high government deficits and the effects of the fiscal consolidation measures taken by governments. These studies show that a high level of sovereign debt has a direct impact on government refinancing costs and thus also on the general level of interest rates in the country concerned. According to one paper, an increase equivalent to 1 percentage point of gross domestic product (GDP) in the general government deficit pushes up the nominal yield on ten-year government bonds by an average of 17 basis points in the same period.[1] At 29 basis points, the rise in real interest rates resulting from this growth in the deficit is even greater.

The actual strength of the effect in each case is affected by a number of different factors. High initial debt or a high initial deficit tend to amplify the rise in interest rates: if the initial deficit is higher than 2% of GDP, interest rates climb by a further 14 basis points for each additional percentage point in the deficit. If the total initial debt is above 60% of GDP, an additional rise of 6 basis points in interest rates is to be expected. Weak government institutions, generalised uncertainty in the financial markets – as measured by stock market volatility – and high inflation expectations or an unfavourable demographic trend can all have a compounding effect. By contrast, countries with a high saving ratio are more readily able to absorb additional debt, and the rise in interest rates is smaller. The increase is also smaller in countries with systems that rely on bank financing more than the capital markets for funding investment. High capital inflows from abroad can likewise limit the rise in interest rates.[2] This, alongside other factors, has probably kept interest rates in the United States from rising; in principle, however, the link between the deficit and interest rates also applies to the USA.[3] This link is particularly apparent in the projection of future deficits.[4] One paper estimates the impact of the five-year-ahead deficit projection for the United States by the Congressional Budget Office (CBO) on five-year and ten-year forward yields on Treasury bills.[5] It reaches the conclusion that forward rates five years into the future rise by 20 to 30 basis points in response to a projected sustained increase of 1 percentage point in the deficit and by about 3 to 4 basis points in response to an increase in the debt level equivalent to 1 percentage point of GDP. Here too, the higher the initial level of sovereign debt, the stronger the effect.[6]

This empirical finding can be explained by the interplay of a number of factors. First, if demand remains constant, a greater supply of government bonds leads to a higher yield via the mechanism of market equilibrium. Second, a high level of debt can trigger fears of rising inflation, meaning that investors demand a higher inflation risk premium. Finally, the markets begin to doubt whether the government in question will be able to service its debt obligations on time, leading investors to demand a higher risk premium.

Even though the impact of debt on interest rates remains muted in some countries, its fundamentally negative repercussions must still be borne in mind. Overall, higher long-term interest rates hamper the growth of an economy, as they also influence credit conditions for enterprises.[7] It becomes increasingly

1 See E Baldacci and M S Kumar (2010), Fiscal Deficits, Public Debt, and Sovereign Bond Yields, IMF Working Paper No 10/184. — **2** See E Baldacci and M S Kumar (2010), Fiscal Deficits, Public Debt, and Sovereign Bond Yields, IMF Working Paper No 10/184. — **3** See K M Kiani (2009), Federal budget deficits and long-term interest rates in USA, The Quarterly Review of Economics and Finance Vol 49, pp 74-84. — **4** See W G Gale and P R Orszag (2003), The Economic Effects of Long-Term Fiscal Discipline, The Urban Institute, Discussion Paper No 8. — **5** The forward rates are estimated on the basis of the yield curve for Treasury bills. — **6** See T Laubach (2009), New Evidence on the Interest Rate Effects of Budget Deficits and Debt, Journal of the European Economic Association 7, No 4, pp 858-885. — **7** See S Ardagna (2009), Financial markets' behavior around episodes of large changes in the fiscal stance, European Economic Review 53, No 1, pp 37-55. — **8** See M S Kumar and J Woo (2010), Public Debt and Growth, IMF Working Paper No 10/174 and C M Reinhart and K S Rogoff

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difficult to fund profitable investment projects. The uncertainty associated with rising debt also has a direct impact on growth. The lack of clarity as to whether the government will reduce its debts through spending cuts, tax hikes, inflation or restructuring increases the uncertainty affecting business activity and consequently dampens aggregate growth. The other sectors of the country's economy also suffer as a result. In addition, a high debt level could also restrict the government's options for funding public infrastructure projects, which also reduces the country's growth opportunities. A number of studies suggest that the higher a country's level of debt, the greater the dampening effect on economic growth: if the initial debt is higher than 90% of GDP, a rise of 10 percentage points in debt lowers growth by 0.2 percentage point per year.[8] The threshold above which debt has a significantly negative effect on growth is estimated by one paper at 77% of GDP, and at the considerably lower figure of 64% for developing countries.[9] Another study, which is based upon data from 12 euro-area countries, identifies a threshold of between 90% and 100%; however, the estimation is fairly imprecise, meaning that a value of between 70% and 80% is also within the bounds of probability.[10]

When governments take steps to consolidate public budgets, this usually temporarily dampens growth, as such measures often go hand in hand with substantial adjustment processes in the economy in question.[11] By restoring investor confidence, however, such measures can also have a positive impact in the short term. In particular, long-term interest rates rapidly start to decline. One study shows that, in OECD countries, if the primary balance falls by more than 1.5% of GDP year-on-year or by 1% in a period of two consecutive years, this causes the yields on ten-year government bonds to decrease by 124 basis points. This decline extends over four years; the greater the initial debt, the larger the decrease will be. Moreover, the fall is robust to the macroeconomic conditions.[12]

A further argument suggesting that consolidation causes only a slight reduction in growth is the experience[13] that, when the debt-to-GDP ratio reaches or exceeds 90%, Ricardian effects arise, and attempts to boost aggregate demand through government spending thus become increasingly futile. Even in the scenario of a concurrent consolidation of budgets in all euro-area countries, annual GDP growth is expected to be a mere ¼ percentage point lower on average between 2010 and 2014.[14]

When debt rises beyond a certain level, which varies from country to country and also depends on contingent liabilities and the individual country's historical track record of adjustment, the financial markets no longer consider a government budget to be sustainable.[15] Consequently, it is particularly those countries with only little room for fiscal manoeuvre that can benefit from consolidation. Above all, Greece, Italy, Japan and Portugal are now assumed to have little room for fiscal manoeuvre. In the alternative scenario – a failure on the part of these countries to consolidate their budgets – an extremely sharp increase in refinancing costs is to be expected, leading to a serious deterioration in macroeconomic developments.

(2010), Growth in a Time of Debt, NBER Working Paper No 15639. — **9** See M Caner, T Grennes and F Koehler-Geip (2010), Finding the Tipping Point – When Sovereign Debt Turns Bad, World Bank, Working Paper No 5391. — **10** See C Checherita and P Rother (2010), The Impact of High and Growing Government Debt on Economic Growth: an Empirical Investigation for the Euro Area, ECB Working Paper No 1237. — **11** See IMF, World Economic Outlook, October 2010, pp 93-124. — **12** See S Ardagna (2009), Financial markets' behavior around episodes of large changes in the fiscal stance, European Economic Review 53, No 1, pp 37-55. — **13** See C Nickel and I Vansteenkiste (2008), Fiscal Policies, the Current Account and Ricardian Equivalence, ECB Working Paper No 935. — **14** See Deutsche Bundesbank, The cyclical effects of concurrent fiscal consolidation within the euro area, Monthly Report, July 2010, pp 30-31. — **15** See J D Ostry, A R Ghosh, J I Kim, M S Qureshi, Fiscal Space, IMF Working Paper 10/11, 1 September 2010.

interest rates is especially prone both to medium-term price stability risks and to new threats to financial stability.[9] Even if monetary policy still has a necessary part to play in safeguarding the functioning of individual market segments, monetary policymakers, too, now need to monitor these risks more closely.

9 See also the chapter Market and systemic risks in a protracted low-interest rate environment on pp 31-58.

Market and systemic risks in a protracted low-interest rate environment

An extended period of low interest rates may produce unwanted side effects. Above all, there is the risk that investors will again step up their search for yield while incurring high risks. Tendencies towards a heightened risk appetite can already be observed in currency carry trades. An unexpected upward correction of the yields on benchmark bonds could place a strain on banks. Although risks stemming from price developments in other assets appear to be moderate so far in both the industrial countries and emerging market economies (EMEs), they need to be watched carefully. Since the outbreak of the financial crisis, the refinancing of large financial institutions active on capital markets has become more short-term. Their funding requirements are still at a high level and might vie with those of governments. Market risks have declined significantly for German banks since mid-2009. Interest rate risks, too, have been going down from a high level following their marked rise in 2009. From a systemic perspective, it is a cause of some concern that market-active banks have again been displaying a similar response pattern in proprietary trading in the wake of the debt crisis.

Heightened systemic liquidity risks

Debt crisis confronts vulnerabilities in the financial system

In spring 2010, the European sovereign debt crisis confronted a financial setting characterised by structural faults and major legacy problems. The way in which the banking system functions is essentially based on structures which have proved to be likely to propagate and amplify shocks. Moreover, the incentives in markets and for systemically important financial institutions are obviously distorted by implicit or explicit guarantees. Finally, the underlying monetary conditions are characterised by protracted low interest rates and an ample supply of liquidity. On the one hand, given the limited functioning of some market segments and the fact that the financial system is still weakened, such a period is necessary to allow the economy to recover from the legacy of the crisis. On the other hand, this phase of low interest rates may create problems in the longer run.

Impact of high liquidity on asset prices …

In terms of financial stability, the issue of liquidity has two quite different aspects. From the perspective of the asset markets, an abundant supply of liquidity can heighten the risk of exaggerations and mispricing over the medium and longer term. Depending on the degree of risk aversion, different classes of assets are likely to be affected by this. A major risk appetite encourages the process of searching for high-yield assets. Under major risk aversion,

however, heightened liquidity can pour into a small number of segments as part of a flight into safe assets. In actual fact, either case can encourage the creation of bubbles that harbour potentials for a setback. When the necessary correction finally sets in, losses can occur which could attain systemic importance, especially if they are concentrated in a small number of segments in the financial system.

… and wholesale funding

From the perspective of financial intermediaries, however, the liquidity risk is seen as a refinancing need. A systemic problem emerges if a clear segmentation in the wholesale funding markets occurs that excludes either individual large market players or whole groups of intermediaries. In spring 2010, the phenomenon of segmentation came back to the fore again. Despite abundant liquidity in the economy as a whole, major market segments nearly dried up.

Wholesale funding and systemic risks

Financial crises typically escalate in the wholesale funding markets. This is where self-reinforcing adjustment processes occur which may converge into a systemic crisis. Markets and intermediaries then form "communicating vessels" through which shocks spread like waves in the financial system. Naturally enough, intermediaries whose wholesale funding is geared to the short term are especially vulnerable.

Unwanted side effects of low interest rates

Under the given circumstances, the non-standard support measures taken by the central banks were indispensable for countering a looming escalation of risks to stability. In the longer term, however, high liquidity and protracted low key interest rates in major industrial countries could create undesirable incentives and potential for new risks to the stability of the financial system.

Concern about a renewed search for yield …

Given experience immediately prior to the financial crisis, one concern is that low interest rates and high liquidity entice banks and other investors to search for yield while incurring high risks. In such a setting, an increasing use of leveraged capital would be especially fraught with problems from a financial stability perspective. For example, after considerably reducing their leverage ratios, by the first quarter of this year hedge funds had raised them again to much the same level as before the crisis.[1] Furthermore, net inflows of capital into hedge funds have again shown a marked increase. So far, there are hardly any signs of large, internationally active banks being more highly leveraged; they have significantly reduced their leverage since 2008. Banks in this category are likely to be still involved in clearing up the problems arising from the crisis and adapting to the future regulatory framework. Owing to the scale of planned regulatory measures in the banking sector, there is, furthermore, a risk that activities will increasingly be shifted into the shadow banking system, which has little transparency at present and is scarcely regulated. For example, restrictions on US banks' proprietary trading introduced as part of the financial market reforms in the United States have created a new incentive to pursue such activities through hedge funds.

… exists in the medium term

The risk of a pronounced search for yield owing to low interest rates exists mainly in the me-

1 Source: Hedge Fund Research. Nevertheless, hedge funds are likely to have reduced their leverage again in the wake of the market turbulence due to the sovereign debt crisis in the second quarter of 2010.

dium term. A turning point would undoubtedly be reached if large systemically important financial institutions wanted to boost their profitability again by taking major risks. At present, investors still have a high need for security, and the recovery of prices in the financial markets does not yet reflect an undue increase in risk appetite. So far, there are only limited signs of an exaggerated risk propensity. The large and increasing trading volume in the forex markets might be due in part to riskier business strategies, for example. In some segments of the forex market, the percentage of speculative investors appears to be growing. Low interest rates in the major currency areas US dollar, euro and yen are setting the floor for the interest rate differentials vis-à-vis investment currencies of faster-growing countries and are, therefore, setting incentives for risky currency carry trades. In the event of a market turnaround, the reversal of these trades might be accompanied by considerable exchange rate volatility.

Incentive for intensive maturity transformation

Moreover, the large gap between short-term and long-term interest rates in many countries is creating an incentive for banks and other financial market players to defer the adjustment of the short-term profile of their wholesale funding and to continue conducting maturity transformation on a large scale. An unexpected rise in short-term interest rates, especially, but also in longer-term rates might therefore place a strain on banks that have not hedged adequately against interest rate risks. Above all, such banks remain exposed to the risk of tensions resurfacing in the money markets.

Finally, persistently low interest rates may induce credit institutions to prolong loans to very weak borrowers in order to defer write-downs. If some of these weaker borrowers are not viable in the longer term, however, necessary adjustments will be delayed. Although the affected institutions can defer the impact of write-downs on their profits, they will be harmed in the longer run by their legacy problems and thus restricted in their ability to function.

Deferment of balance sheet adjustments possible

Insurers and pension funds with lower earnings

The relationship between interest rates and long-term stability is configured differently in the case of insurers. For these institutional investors, long-term interest rates play a key role in the investment of their premium income and inflows of funds respectively. While low interest rates support the balance sheet value of such investments, which are to be shown at market values, low interest income makes it more difficult to generate dividends to cover the minimum guaranteed interest rate for policyholders.[2]

Heightened risk of a setback in government bond markets

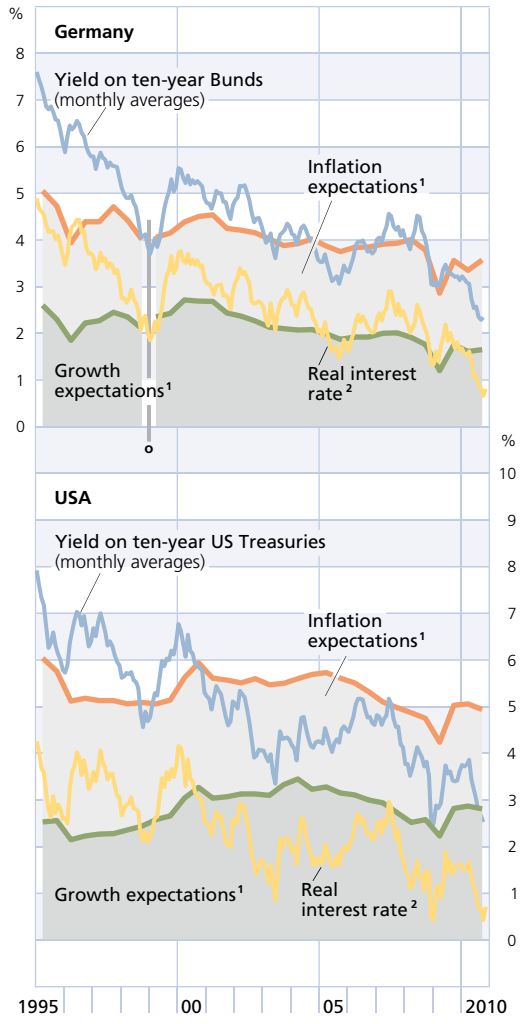
Low interest rates in Germany and USA

Concerns about the outlook for growth and about high government debt have been increasing investors' risk aversion over the course of this year and shaping government bond markets in Europe and the United States. Extreme yield differentials have arisen. While interest rates in some euro-area countries have gone up sharply, the yields on US Treasuries and German government bonds have shown a marked fall. In Germany, the yield on ten-year

2 See also the section Insurance companies: bridging higher premiums and low interest rates on pp 93-99.

Chart 3.1

INTEREST RATE LEVEL AND EXPECTATIONS OF INFLATION AND GROWTH



1 Bundesbank calculations based on half-yearly surveys on short-term and long-term expectations of movements in the consumer price index and GDP over the next ten years. Source: Consensus Economics. — **2** Calculated on the basis of the Consensus Forecasts. — **o** From 1999, expectations for the euro area. The nominal yield on German Bunds depends, in the European monetary union, on growth and inflation expectations in the euro area as a whole. Owing to the fact that there is no exchange rate risk in monetary union, the interest rate spread between German Bunds and other euro-area government bonds is affected only by differences in creditworthiness and liquidity.

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Bunds even hit an all-time low (see Chart 3.1). Given the historically low bond yields, there arises the question of whether German financial service providers are threatened not only by the potential loss from claims against other euro-area countries that are in acute need of consolidation, but also by price losses due to a possible correction in German Bunds and US Treasuries.

Longer-term adjustment potential

A number of disappointing US economic indicators since the middle of 2010 as well as the Fed's subdued assessment of the outlook for growth have prompted investors to revise down their expectations of the future pace of economic activity. How far this has also affected long-term expectations of inflation and growth is especially important for the assessment of longer-term bond yields. On the basis of the usually assumed positive relationship between long-term growth expectations and capital market rates, nominal growth expectations indicate that the market sees a potential for correction in the longer term. In the United States, the current yield on ten-year US Treasuries is very clearly below the sum of expectations of real growth and inflation. As the sovereign debt crisis started in May this year, the values moved somewhat more clearly away from this longer-term reference mark in Germany, too (see Chart 3.1).[3]

Special factors due to crisis

A number of crisis-induced special factors are likely to be playing a role in this situation. Marked

3 The same result is achieved looking at the monthly interest rate forecasts for ten-year government bonds published by Consensus Economics. According to the November 2010 survey, market participants see the yields on ten-year US Treasuries and ten-year German Bunds at 3.4% and 3% respectively at the end of November 2011. This corresponds to a potential for correction of 0.8 percentage point in the USA and 0.6 percentage point in Germany (as at 8 November 2010).

risk aversion owing to the uncertain outlook for growth is leading to safe-haven flows and is thus exerting additional downward pressure on the yields of US Treasuries and German Bunds. Increased maturity transformation is also likely to have played a part in this. The incentive for maturity transformation can be seen from both the interest rate spread and the carry-to-risk ratio, which is a risk-adjusted measure of such investments. Both indicators have been at a high level for quite some time (see Chart 3.2). In the United States, pressure on yields has also been stepped up by the Fed's decisions to increase liquidity by means of additional balance sheet-enlarging measures.

Incentives to invest in government bonds as a result of forthcoming liquidity provisions

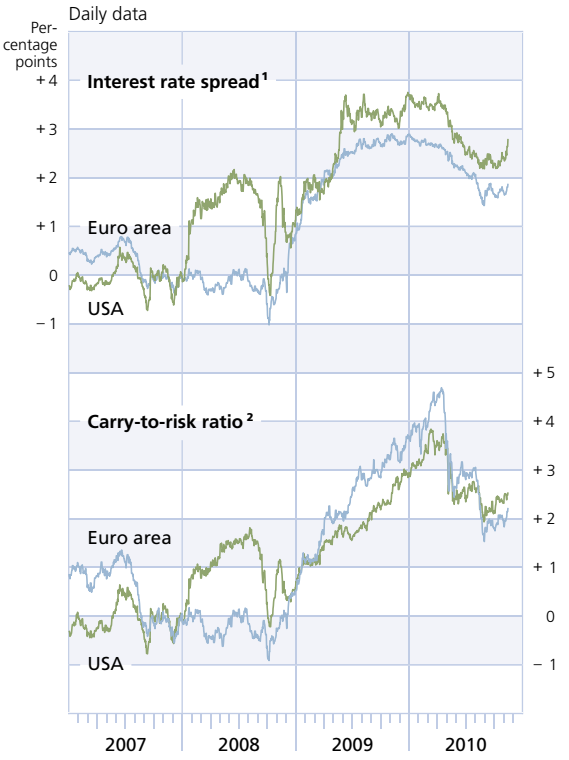
The planned global liquidity provisions are an additional factor that makes a heightened demand for US Treasuries and German Bunds likely in the future, too.[4] Owing to the new regulatory framework, banks will probably expand their investments in secure government bonds in the future. Part of the observed decline in yields is likely to be due to this fact.

Potential interest rate adjustment could be abrupt

Notwithstanding these more short-term, demand-oriented factors, the question nevertheless arises as to how the markets will absorb governments' high funding needs in the future. The comparatively large supply of government bonds would generally suggest a rise in interest rates, even though the special factors cited above have concealed this effect so far. Given the large budget deficit and high level of debt in the United States, there remains a virulent risk of rising interest rates, however.[5] Owing to the international linkages between interest rates, possible interest rate hikes in the US might also impact on German rates. If the special crisis-induced factors go into reverse, there might also be an abrupt adjustment on a major scale. Banks and other financial market participants should bear such a scenario in mind.

Chart 3.2

ATTRACTIVENESS OF MATURITY TRANSFORMATION



Sources: Bloomberg and Bundesbank calculations. — **1** Interest rate spread between ten-year swap rate and three-month money market rate. — **2** Interest rate spread divided by the implied volatility of three-month/ten-year swap options.

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4 See Enhancement of the regulatory and institutional framework on pp 101-134.
5 As part of its 2010 Article IV Consultation with the United States, the IMF also examined the potential impact of an increase in sovereign debt on long-term Treasuries. According to the estimates, the supply of Treasuries could exceed the expected demand by an amount equivalent to 30% of GDP. As a result, the longer-term borrowing costs of the USA could increase by 60 to 150 basis points. See also Box 2.2 on pp 28-29.

On the way to new asset price bubbles?

Low interest rates heighten risk of asset price bubbles

In the current setting of low interest rates and abundant liquidity, there is a particularly large risk that, as time goes on, asset prices will rise to a level higher than is justified by the fundamentals. Bundesbank studies, for example, show that an expansionary monetary policy can be reflected in higher asset prices (see Box 3.1 on page 37). Despite positive surprises in corporate profits in the majority of cases,[6] however, concerns about excessive government debts and investors' relatively high risk aversion have so far helped to prevent a rise in prices on industrial countries' stock and corporate bond markets to excessive levels as well as discernible price bubbles.

Risk premiums higher than average in stock markets

After picking up strongly last year, stock market prices in Europe – with some exceptions – and the United States have changed little since the beginning of this year, albeit with relatively high volatility. The implied risk premium is at a high level, and stock market valuations appear, if anything, to be on the low side (see Chart 3.3).[7] Nevertheless, in this case – as is generally done – the risk premium of the S&P 500 is calculated using, as a risk-free rate of interest, the yield on US Treasuries, which might be biased downwards.[8] If, say, a risk-free rate of interest of 4½% is assumed, ie some 2 percentage points higher than the lowest level of ten-year US Treasuries in the past months, the risk premium is correspondingly lower.[9] Moreover, if concerns about a marked slowdown in growth are justified and long-term nominal growth is, for example, 2 percentage points lower in the future, the calculated value for the risk premium declines further to a level that is still slightly higher than average by historical standards, but which may be justified in view of the unusually great uncertainties at the moment (see Chart 3.3).

Weaker growth of corporate profits cannot be ruled out

Stock prices might fall in the coming months in the event of increasing risk aversion, such as if the European sovereign debt crisis takes an unfavourable course. Prices might also fall if enterprises fulfil investors' profit expectations less often in the coming quarters than they did in the first half of this year. One possible sign that expectations might still be too optimistic with regard to individual US enterprises is that the forecast of total profits for S&P 500 enterprises in 2011, adopting a bottom-up approach as the weighted sum of estimates for individual enterprises (earnings per share US$96), is higher than in a top-down approach, such as the median of estimates of more macroeconomically oriented investment strategists (US$89). The fact, too, that the percentage of positive surprises in sales for the S&P 500 in the past quarter was lower than in the case of profits suggests that corporate profits in the US might disappoint more frequently in the future than in the past few quarters if final demand is weak and stockbuilding slows down.[10]

6 In the second quarter of this year, the share of positive surprises in profits was 75% for the S&P 500 and 73% for the DAX 30. The third-quarter results published thus far indicate similar shares of positive profit surprises.
7 The chart shows the implied risk premium for the S&P 500. There has also been a similar development in the past few months for the DAX 30.
8 See also the section Heightened risk of a setback in government bond markets on pp 33-35.
9 Here, it is assumed that the yield on government bonds in the current setting might not be a suitable measure of an appropriate risk-free interest rate. In the calculation, it is assumed that, apart from the risk-free rate of interest, all other variables remain unchanged. An increase in the yields on government bonds resulting, for example, from a fairly strong cyclical recovery would impact on stock prices.
10 See also the section Greater differentiation in terms of international credit risk on pp 61-72.

Box 3.1

THE IMPACT OF MONETARY POLICY ON ASSET PRICES

The question of whether, and if so, to what extent, central banks' expansionary monetary policy at the beginning of the decade helped bring about the real estate bubble has generated a number of empirical and theoretical research papers.

During the US real estate boom, there was not only a steep rise in real estate prices but also a sharp increase in private indebtedness and a decline in risk premiums in the credit markets. One paper by a Bundesbank economist[1] looks into the influence of monetary policy on asset prices, households' and firms' balance sheets and risk premiums during this period. A vector autoregressive (VAR) model is estimated for the United States which includes not only macroeconomic variables (GDP growth, inflation and the Federal Funds rate) but also unobserved factors summarising over 200 financial market variables.[2]

The paper identifies a positive and persistent impact of expansionary monetary policy shocks (ie an unexpected reduction in the Federal Funds rate) on private indebtedness and asset prices over the past two decades. It also shows a short-term decline in risk premiums. Based on a historical decomposition, the contribution of monetary policy shocks to real estate price developments during the 2002-06 boom is estimated at around 5% to 30%, depending on the real estate price measure used. The contribution of monetary policy shocks to asset price movements during the boom can therefore be described as moderate. However, the paper also shows that policymakers' response to negative real and financial developments, and not only monetary policy shocks to real estate and credit markets, had an impact. The overall contribution of monetary policy to the real estate price bubble is likely to have been somewhat greater.

A theoretical study by a Bundesbank economist[3] likewise concludes that monetary policy cannot be seen as the main reason for sharply rising asset prices but can certainly contribute to such a development through feedback effects. This study, based on a dynamic stochastic general equilibrium (DSGE) model, examines, in particular, the influence of monetary policy on stock prices during the periods of sharply rising stock indices in the United States at the end of the 1980s and in the late 1990s.[4] During both periods, not only did stock prices go up, but also output, investment, consumption and hours worked, in conjunction with a fall in the Federal Reserve's deposit rates.

The model studies whether excessive expectations of future productivity could possibly be the cause of rising stock indices and ultimately of their collapse.[5] According to the structure of the model,[6] in the current period firms already adapt their production to expected productivity, especially by increasing the capital stock and labour demand. This leads to increased household consumption and investment and ultimately to rising firm values. These feedback effects enhance corporate balance sheets and thus make credit cheaper for firms. The marginal costs of production and prices fall. A central bank which focuses on the rate of inflation will lower the deposit rate, making it even cheaper for firms to borrow funds. A monetary policy oriented entirely to inflation which disregards asset prices can thus contribute to rising asset prices and increased lending. If, however, economic agents become convinced that the expected productivity increases will not occur, or only in part, adjustment effects will ensue. A variety of simulations support the assumption that an expansionary monetary policy can contribute to the rise of asset prices but is not the cause thereof.

However, a general distinction should be drawn between an observable asset price boom based on rational expectations held by the relevant economic agents and a bubble fuelled by irrational expectations. An assessment is usually only possible *ex post*. In the end, an expansionary monetary policy is, in and of itself, neither a necessary nor a sufficient condition for the development of a bubble or a boom. Nonetheless, monetary policy is certainly capable of contributing to asset price increases.

1 S Eickmeier and B Hofmann, Monetary policy, housing booms and financial (im)balances, Deutsche Bundesbank Research Centre, Discussion Paper, Series 1, No 07/2010. — **2** Asset prices, stock market indices, interest rates, monetary aggregates and balance sheet data of non-financial corporations. — **3** See M Kliem (2009), Modeling Stock Market Booms, mimeo, Deutsche Bundesbank. — **4** See L Christiano, C Illut, R Motto and M Rostagno (2008), Monetary Policy and Stock Market Boom-Bust Cycles, European Central Bank, Working Paper No 955. — **5** See C Wei Li and Hui Xue (2009), A Bayesian's Bubble, The Journal of Finance 64, No 6, pp 2665-2701. — **6** See B Bernanke, M Gertler and S Gilchrist (1999), The Financial Accelerator in a Quantitative Business Cycle Framework, Handbook of Macroeconomics, pp 1341–1393.

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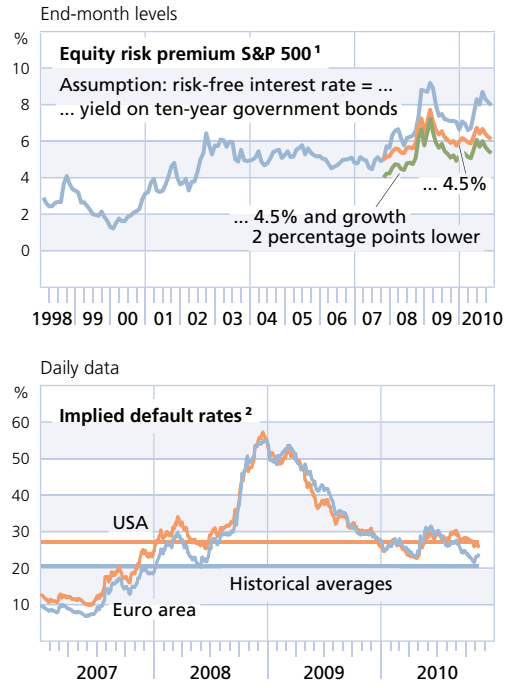
Chart 3.3

RISK PREMIUM IN THE STOCK MARKET AND IMPLIED DEFAULT RATES ON CORPORATE BONDS



Sources: Bank of America Merrill Lynch, Bloomberg, Thomson Reuters and Bundesbank calculations. — **1** Implied equity risk premiums, calculated using the residual profits method. — **2** Implied default rates and historical averages for non-investment-grade bonds with an average residual maturity of seven years in the USA and five years in the euro area.

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Risk aversion in corporate bond markets declining

In the corporate bond markets, the risk premiums in the particularly risky non-investment-grade segment imply default rates that roughly match the historical averages of both the euro-area countries and the USA (see Chart 3.3).[11] Risk aversion in the corporate bond markets appears to have continued to recede in the past few months. One sign of rebounding risk appetite in the corporate bond markets might also be seen in the fact that the issuance volume of bonds in the non-investment-grade segment has reached a new record high this year.

Still major concern about price losses

One indicator of investors' assessment of downside risks in the markets is the implied skew of the distribution of stock returns and risk premiums calculated from option prices.[12] The sharp negative fluctuations in the skew of the implied distribution of returns for the DAX 30 in this year show how, as seen by the market players, the probability of marked price falls has repeatedly surged (see Chart 3.4). The concerns of investors have likewise become greater in the corporate credit markets, as may be seen from the increase in the volatility skew for the iTraxx Europe credit default swap index. The differential between the implied volatilities of options with strike prices above and below the current level of the risk premiums has clearly increased since the beginning of the year (see Chart 3.4). Accordingly, hedges against a widening of the risk premiums in corporate credit markets are in heavy demand and thus relatively expensive. The results for the implied skew in the stock and the corporate credit markets are a sign of market players' uncertainty, but also of the fact that investors in the industrial countries are at least not entirely oblivious to the current risks.

11 The default rates refer to the average residual maturities of the corporate bonds combined in the indices, which are roughly seven years in the USA and around five years in the euro area. When calculating the implied default rates, it is assumed that investors demand compensation for the assumed risk in line with the long-term average.
12 The implied skew provides information on whether market players regard upward or downward movements in prices as more likely.

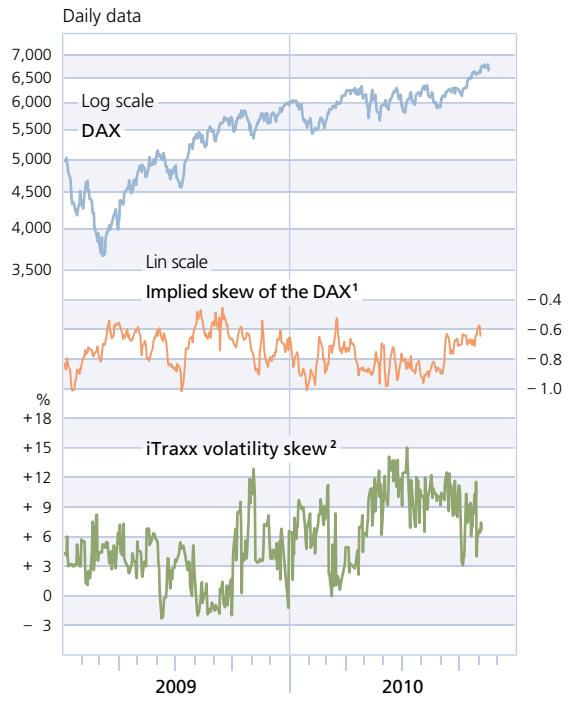
Increasing attractiveness of currency carry trades

Attractiveness of currency carry trades increases

Although risk aversion in the financial markets remained quite marked, it has eased noticeably since the insolvency of Lehman Brothers. Against this background, investors with greater risk appetite are increasingly likely to attempt to exploit not only national interest rate spreads but also the significant and widening spreads in the interest rate levels of individual currency areas. As a result, they influence asset prices in the investment countries. The level and trend of the (*ex ante*) carry-to-risk ratio of currency carry trades[13] suggest that, since the beginning of the year, investors have increasingly borrowed in the low-interest rate currency of the US dollar (funding currency) and invested the borrowed financial resources in high-yielding currencies, such as the Australian dollar, as well as in EMEs, such as Brazil, Indonesia and Mexico (target currencies) (see Chart 3.5). The risks stemming from currency carry trades for the currency areas involved are reflected, in particular, in a heightened susceptibility to marked exchange rate fluctuations as well as to asset price developments that are not justified by the fundamentals.

Chart 3.4

DOWNSIDE RISKS IN THE STOCK AND CORPORATE CREDIT MARKETS



Sources: Bloomberg, Morgan Stanley and Bundesbank calculations. — **1** Implied skew of the DAX 30 yields for a constant expectation horizon of six weeks; calculated from DAX index options. Low values signal a high risk of stock prices falling. — **2** Differential of the implied volatilities of options with a ratio of strike to spot prices of 80% and 130%. High values signal a high risk of widening spreads.

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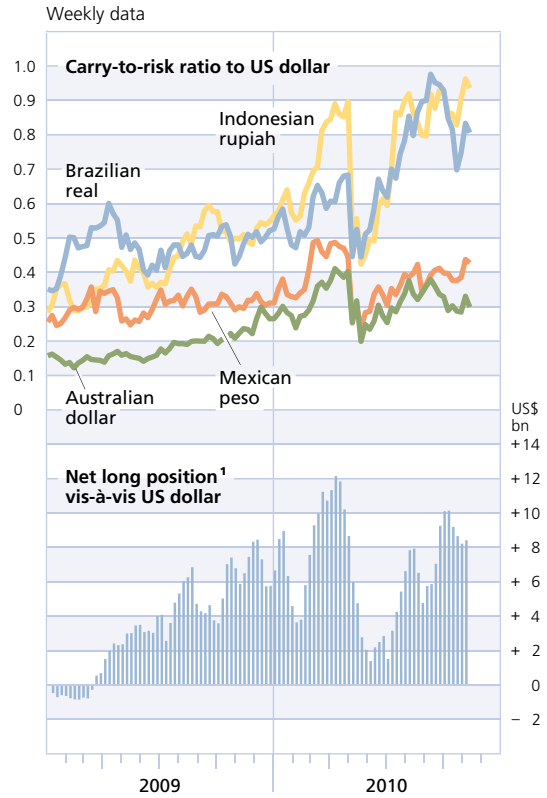
Indications of currency carry trades from BIS statistics …

The potential impact of currency carry trades on the global financial system is likely to depend, not least, on the volume of outstanding positions. This can be captured only with very little accuracy, however. Some clues are provided by the banking statistics of the Bank for International Settlements (BIS). In particular, changes in the net claims of reporting banks on offshore financial centres, in which mainly hedge funds and other speculative traders are domiciled, are likely to be due, at least in part, to currency carry trade activities. Since the beginning of the second quarter of 2009, net assets denominated in US dollars have shown a very marked increase of US$154 billion. Furthermore, the rise in net assets denominated in Japanese yen also points to increased activity.

13 In currency carry trades, the investor borrows in the currency of a country with low interest rates and invests these funds in the currency of a country with high interest rates. Accordingly, the interest rate advantage and the exchange rate developments expected by the investor (less the transaction costs) enter into the expected yield.

Chart 3.5

INDICATORS OF CURRENCY CARRY TRADES



Sources: Bloomberg and Bundesbank calculations. — **1** Position of non-commercial traders in high-interest-rate currencies on the Chicago Mercantile Exchange.

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… and from data on derivative positions

As currency carry trade positions can also be entered through derivative contracts, changes in the open net positions of speculative investors (non-commercial traders) on the Chicago Mercantile Exchange can likewise provide information on the volume of currency carry trade activities. Such data are consistent with the assessment made on the basis of the carry-to-risk ratio. Apart from the period of acute tensions in the European sovereign bond markets, speculative investors have in 2010 held marked net long positions in the Australian dollar and the Mexican peso against the US dollar.

Currency carry trades have self-reinforcing effects in some cases …

The (*ex post*) returns on currency carry trades depend not only on the interest rate spread but also, above all, on movements in exchange rates. The investment strategy is generally deemed to be advantageous as long as the existing interest rate advantage is not offset by a correspondingly high appreciation of the low-interest currency.[14] Owing to the significant depreciation of the US dollar compared with its level at the start of the year – which was unexpected given the (uncovered) interest rate parity – the return on US-dollar-based currency carry trades has, in fact, increased even further. It cannot be ruled out that at least part of the observed development was due to the build-up of currency carry trade positions. The increasing return could have attracted other investors and reinforced the currency movements.

… and may lead to exchange rate volatility

The pent-up potential for a setback for the currencies involved stemming from the build-up of currency carry trade positions could erupt suddenly and trigger considerable exchange rate volatility. Examples of the potential impact of a sudden reversal in capital flows due to carry trades are the sharp appreciation of the yen in October 1998 and the depreciation of the Icelandic krona at the beginning of 2006. Potential triggers for a closing out of the positions are an increasingly uncertain economic environment, a narrowing of (future) interest rate spreads that market players have failed to predict, and a decline in liquidity in the financial

14 Transaction costs are disregarded here.

markets. Seen in that light, unexpected steps taken by the central bank in the course of a future exit from the non-standard monetary policy measures might reveal vulnerabilities of the financial system to an unwinding of currency carry trades.

Heightened risk of price bubbles

The capital flows associated with currency carry trades also have an impact on asset prices in the currency areas involved and heighten, in particular, the risk of price bubbles in countries with high interest rate levels. Furthermore, the risks are made more acute by the fact that currency carry trades can impair the monetary policy transmission mechanism. A restrictive monetary policy tends to dampen domestic demand and thus counteract the formation of a bubble. At the same time, however, an associated widening of international interest rate spreads enhances the attractiveness of the currency carry trade strategy and thus increases the inflow of capital. A heightened susceptibility is likely to exist for EMEs, as their financial markets are less developed and also offer promising investment opportunities from the perspective of many investors.

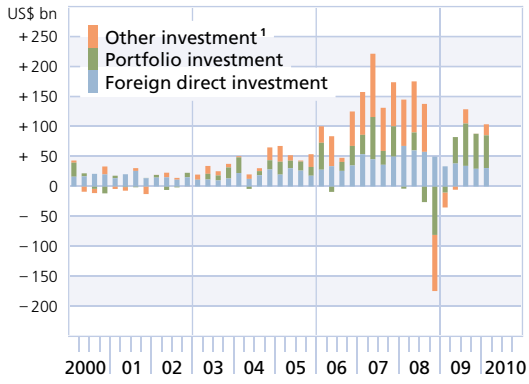
Strong capital flows into EMEs heighten risk of asset price bubbles

Capital flows into EMEs

Since the end of the Asian crisis, many investors have been increasingly returning to the EMEs. The main drivers behind this development are likely to be the more positive outlook for growth in the EMEs and the changed perception of the risk-return ratio in industrial countries compared with emerging markets. The combination of large interest rate spreads with the pent-up need for appreciation in a number of countries makes it appealing to pursue the above-described currency carry trade strategies in many EMEs. Since the second quarter of 2009, a strong pick-up in capital flows into EMEs has been observable. This has been driven mainly by portfolio investments in equity and debt securities. Previously, investors had withdrawn capital from EMEs on a massive scale in some cases following the insolvency of Lehman Brothers (see Chart 3.6).

Chart 3.6

GROSS CAPITAL FLOWS INTO THE G20 EMERGING MARKET ECONOMIES*



Sources: IMF, Thomson Reuters and Bundesbank calculations. — * Excluding China and Saudi Arabia. — 1 Financial and trade credits, bank deposits and other investments.

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No obvious signs of share price bubbles …

Following dramatic declines in the wake of the financial crisis, strong price gains have been observed again in the EMEs' stock markets recently. To assess whether markets are overvalued, relevant valuation ratios are used. Analysing the estimated price-earnings ratio does not yet suggest a general overvaluation in this context (see Table 3.1). It is possible that the

Table 3.1

EQUITY VALUATIONS IN THE EMERGING MARKET ECONOMIES (Z SCORE)*

Country	P/E ratio	P/E ratio (estimated)	P/B ratio
Argentina	0.0	.	1.4
Brazil	0.3	0.7	0.8
China	– 1.1	– 0.5	– 0.4
India	0.6	0.5	0.3
Indonesia	0.7	1.6	1.9
Korea	0.0	– 0.7	0.6
Mexico	1.6	1.6	0.4
Russia	– 0.9	– 0.9	– 0.5
Saudi Arabia	– 0.3	0.4	– 0.8
South Africa	1.1	0.1	0.2
Turkey	0.0	0.7	1.1

Source: Bloomberg and Bundesbank calculations (29 October 2010). — * The "z score" represents the deviation of the latest available value from the average of the period and is expressed as the number of standard deviations.

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incorporated earnings forecasts are too optimistic, which would mean that any possible overvaluation would not be identified.[15] Yet, similarly, a supplementary analysis of the price to book (P/B) ratio and the price-earnings (P/E) ratio based on the available profit statements does not unequivocally indicate that bubbles already exist in the stock markets of the countries in question.

… but sharp increase in real estate prices in some cases

Nevertheless, real estate prices have risen sharply in some EMEs. This development was also preceded by a sharp drop in prices during the financial crisis. There are various reasons why this price adjustment took place without turmoil in the national financial systems. For one thing, household debt is comparatively low in the countries concerned. For another, the historically high volatility of real estate prices has sensitised the authorities to asset price bubbles.[16] Growth in real estate prices in China, in particular, has attracted attention over the past few months. Following a slight decline in 2008 in the wake of the financial crisis, growth in Chinese real estate prices has picked up at a dynamic pace owing to monetary easing and the associated extreme expansion of credit as well as explicit support measures for the real estate sector (see Chart 3.7). After several months of falling prices, real estate prices rebounded beginning in June 2009. According to the official data, this development peaked for the time being in April 2010 with an increase of 12.8% on the year. Even though this national development on the Chinese real estate market remains within reasonable bounds given that incomes are also rising sharply, the price increase in some cities is probably being driven significantly by speculation. The authorities – not least owing to major concerns about political stability – have now taken measures to contain price rises and to protect the banking sector.[17] These measures appear to have had a dampening impact recently. Year-on-year price growth slowed progressively in the period from April to October to a current figure of 8.6%.

Possible consequences of a fall in prices

If there is a perceptible adjustment of property prices in China, the low loan-to-value ratios mean that it will probably have only a limited

15 In order to calculate the estimated P/E ratio, market watchers are surveyed on their profit expectations over the coming 12 months.
16 Strict regulations for real estate loans are designed to act as a buffer in the event of potential price adjustments, for example.
17 Lower loan-to-value ratios, higher lending rates for buyers of second homes, suspension of lending to buyers of third properties, extension of the holding period for tax-free sales from two to five years. By the end of 2010, 5.8 million units of "affordable housing" are scheduled to be built.

impact on the quality of the real estate loans on banks' balance sheets. However, loans to special-purpose vehicles (SPVs) also feature prominently in the loan portfolios of Chinese banks. These loans likewise depend on developments in property prices. The SPVs established by Chinese local government have invested, in particular, in infrastructure measures under the fiscal stimulus package. These loan-funded infrastructure projects (schools and bridges, for example) often generate no direct payment flows; their profitability is therefore difficult to assess. In such cases, the loans are often repaid by the receipts of local governments from the sale of land, which is state-owned in China. A sharp fall in land prices would therefore have a negative effect on local governments' income and thus on their ability to support the SPVs in servicing the loans. The Chinese financial system appears quite resilient on the basis of official data. Nevertheless, given the overall lack of sufficient data, it is very difficult to judge the potential level of future credit losses accurately.

Moderately rising debt …

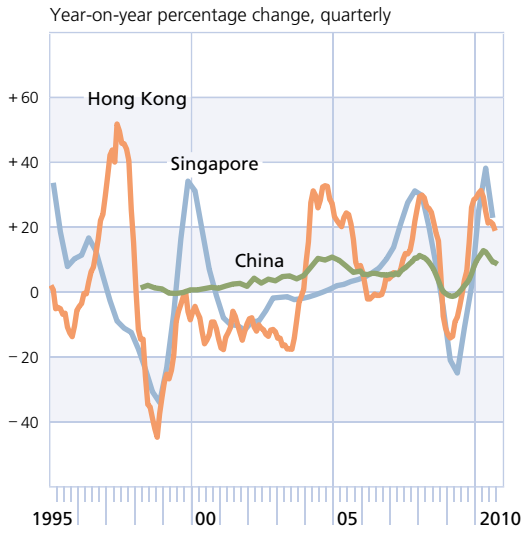
Asset price bubbles are deemed to be especially problematic if they are credit-financed, ie accompanied by sharply rising private sector debt. So far, no such development seems to be in the offing in the EMEs. Lending to the private sector has gradually recovered again in most of these countries following a slump resulting from the crisis. Nevertheless, credit growth has so far been well below its long-term average in many cases.[18]

… but major credit expansion in China

The most striking exception is the special case of China. In China, the fiscal stimulus programme was put into effect by means of an expansion of credit in the banking sector. As a result, credit growth had, at times, reached rates of up to 36% on the year by the end of 2009. Now that the stimulus is no longer in effect, year-on-year credit growth has slowed to around 20%.

Chart 3.7

REAL ESTATE PRICES IN ASIA



Source: Thomson Reuters.

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More intense competition and increased short-termism in refinancing

Incentives to use short-term refinancing

Whereas the risks of liquidity provision currently appear to be rather moderate overall with regard to asset prices in EMEs and industrial countries, the low-interest rate environment is having an adverse impact on the term profile of refinancing. Given predominantly

18 Basis for calculation: IMF data beginning 1 January 2003.

Chart 3.8

LIABILITIES OF THE GERMAN BANKING SYSTEM

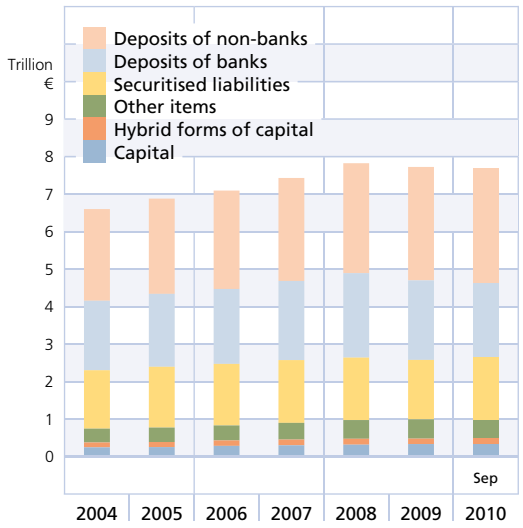
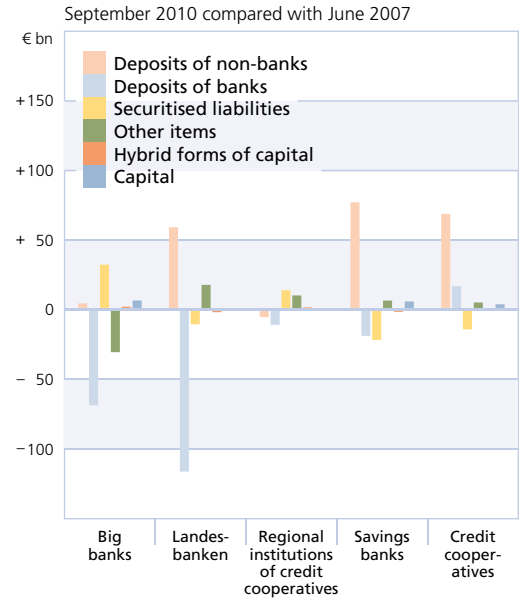


Chart 3.9

CHANGES IN REFINANCING BEHAVIOUR



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short-term refinancing, intermediaries remain vulnerable to changes in liquidity provision. This incites a spillover of individual banks' problems into the banking system as a whole, thus heightening the risks to systemic stability.[19]

Challenges of refinancing

Refinancing poses two challenges for banks. First, the high and still rising financing needs of governments, together with those of enterprises, could conflict with the banks' likewise major demand for short-term refinancing. Weaker banks, in particular, might find themselves facing intense competition for financial resources. Besides this quantity effect, there is also a risk-pricing effect. Markets call into question the value of assuming risks for banks in countries with high sovereign debt risk, thus intensifying market segmentation.

Shifts on the liabilities side for German banks

In the wake of the financial crisis, there was a shift on the liabilities side of German banks' balance sheets. This was reflected in a decline in deposits of banks and securitised liabilities from 51% in 2006 to 48% at the end of the reference period (see Chart 3.8). The decline in deposits of banks was most pronounced in the case of Landesbanken, followed by the big banks. By contrast, credit cooperatives recorded growth in this item (see Chart 3.9).

Increased importance of deposits of non-banks

At the same time, deposits of non-banks, which may be considered one of the more stable forms of refinancing, gained in importance. All categories of banks acquired more non-bank deposits, especially savings banks and credit cooperatives, whose business is

19 See also A Dombret, Achtung, Risiko!, Handelsblatt, 24 September 2010, p 72.

more heavily geared to the retail customer. As a result, these categories of banks were less dependent on securitised liabilities which they – unlike, in particular, the big banks – removed from their balance sheets. In the aggregate, these deposits currently account for 40% of total liabilities, compared with 37% prior to the financial crisis. All in all, this means that German banks have placed their refinancing on a broader footing to some extent. However, they still remain vulnerable to risks arising from market developments. Admittedly, banks cannot be expected to increase the non-bank share of their deposits even more quickly and substantially. Such structural changes on the liabilities side generally take place over the medium to longer term, especially as this would imply individual institutions and categories of institutions turning away from a wholesale-oriented business model towards one with a greater focus on retail. In addition to diversifying liabilities by using various types of refinancing, funding costs are an important indicator of banks' access to refinancing. Reductions in the euro-area main refinancing rate since 2008 have lowered the effective rates of interest for new business in deposits.

Decline in short-term issue yields sharper than for long-term yields

Securitised liabilities are another major component of refinancing which is conducted predominantly by means of debt securities. Given an expansionary monetary policy, the issue yields on debt securities declined across almost all maturity bands (see Chart 3.10), although they fell more sharply in relative terms in the short-term segment than over the long-term horizon. This meant that maturity transformation was more profitable, albeit at the expense of higher interest rate risks.

Chart 3.10

YIELDS ON DOMESTIC BANK DEBT SECURITIES

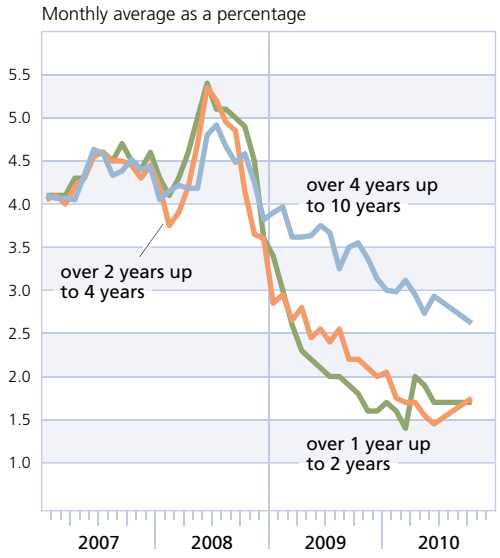

Chart 3.11

RESIDUAL MATURITIES OF OUTSTANDING DOMESTIC BANK DEBT SECURITIES

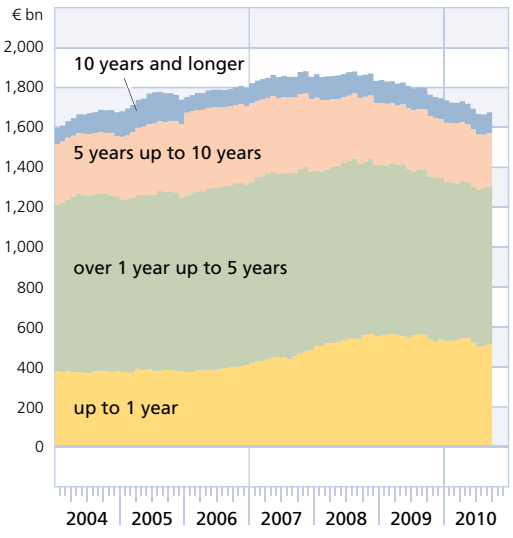

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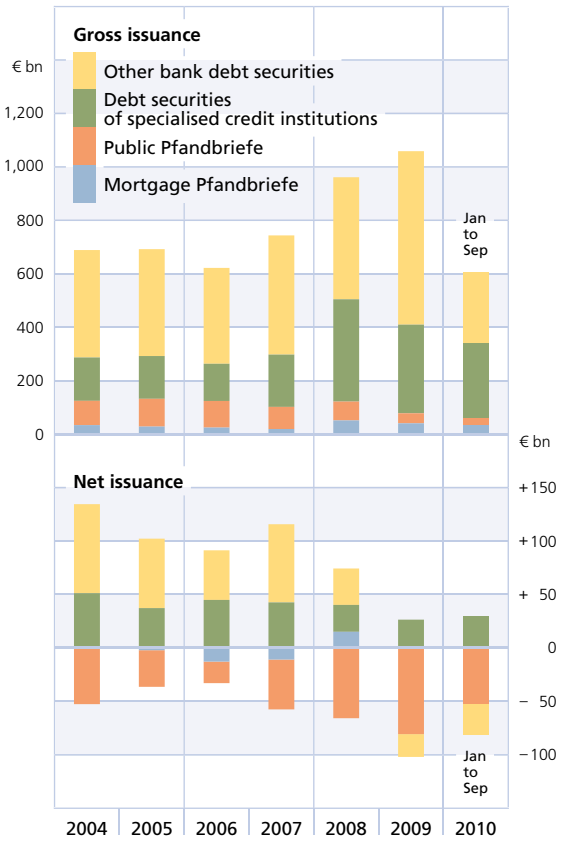
Chart 3.12

GROSS AND NET ISSUANCE OF DOMESTIC BANK DEBT SECURITIES



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Shorter-term refinancing

In the overall aggregate, the maturity structure of outstanding debt securities has become increasingly more short-term across all categories of banks (see Chart 3.11). The percentage of bank debt securities with a residual maturity of less than one year, which was stable at 22% for many years, was around 30% at the end of the period under review. Such a short-term bias makes refinancing vulnerable, not least because it increases the dependency on volatile market developments and makes it easier for systemic contagion processes to arise.

A number of banks with only limited access to capital market

The gross issuance volumes indicate that banks also had access to the bond market during the financial crisis (see Chart 3.12). However, the net issuance volume of public Pfandbriefe and other debt securities is declining. This development is probably in part a consequence of the general deleveraging process. However, it could also be an indication that at least some banks are able to use debt securities for refinancing only to a limited extent.

Financial institutions under continued funding pressure

Downward trend in German banks' refinancing requirements

The volume of German banks' maturing bank debt securities can be estimated on the basis of gross issuance figures for the first seven months of 2010. These figures indicate that the gross issuance volume is likely to be around €800 billion in 2010 (including securities of less than one year), which would be well below the 2009 level. Not including maturities of less than one year, the refinancing requirements for 2011 can be estimated at roughly €500 billion (see Chart 3.11).

No major problems so far for LCFIs

Large complex financial institutions (LCFIs)[20] have high refinancing requirements on the bond market in the short to medium term (see Chart 3.13). In total, they had to place a volume of approximately US$1,000 billion in 2010, US$300 billion of which was in the third

20 These 18 institutions were selected in accordance with four criteria: the extent of short-term liabilities, their importance in the OTC derivatives market, their ranking in international bond issues, and their status in prime brokerage business with hedge funds.

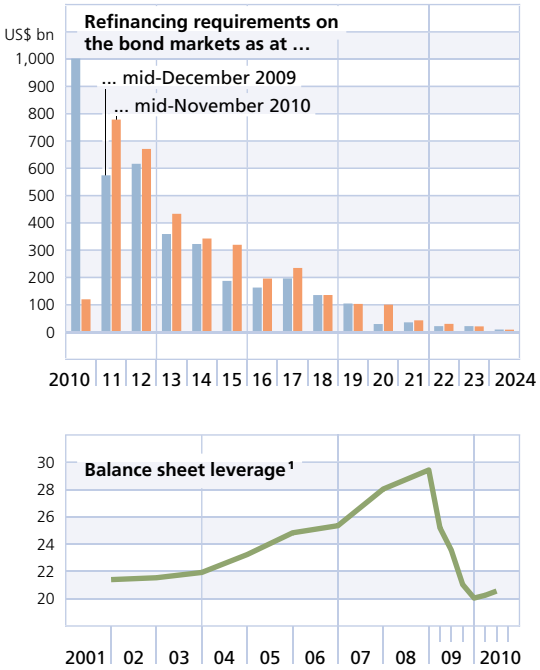
quarter alone. So far, LCFIs have managed to sell all issues without major difficulties.

Funding pressure still high

In 2011 and 2012, a high level of funding pressure is expected to persist, even if this, other things being equal, is likely to be around one-fifth lower than the record volume in 2010. In their new issues on the bond market, LCFIs have reduced the share of short-term refinancing somewhat compared with the peak of the financial crisis in favour of longer maturities. However, as funding pressure is still high, this is likely to contribute to no more than a relatively modest easing initially – especially as the sustainability of this move towards longer-term refinancing still has to be demonstrated in view of the renewed tensions during this year. One alleviating factor is that, in the case of euro-area banks, deposits have grown more quickly than lending over the past two years. The general shrinking of the balance sheets, clear deleveraging (see Chart 3.13) and an improvement in the quality of the assets might ease the funding pressure on LCFIs. Nevertheless, these processes are soon likely to reach their limits if the scope for lending (and the earnings outlook) is to be maintained.

Chart 3.13

SITUATION OF LARGE COMPLEX FINANCIAL INSTITUTIONS*



Sources: Bloomberg and Bundesbank calculations. — * Comprises the following institutions: Bank of America, Barclays, BNP Paribas, Citigroup, Crédit Agricole, Credit Suisse Group, Deutsche Bank, Goldman Sachs, HSBC, ING, JP Morgan Chase, Merrill Lynch, Morgan Stanley, Royal Bank of Scotland, Société Générale, UBS, Unicredit. — 1 Ratio of total assets to capital. From 2009, quarterly figures.

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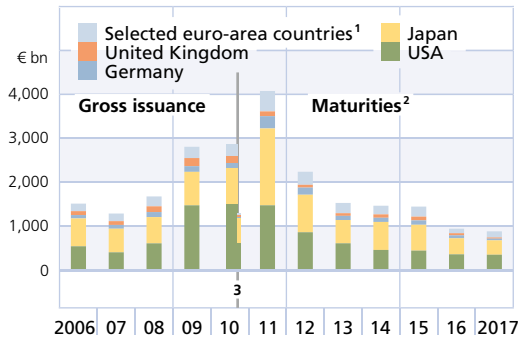
Refinancing needs of banks and governments may clash

Sharp increase in government issues

Banks' refinancing needs may clash with the increasing supply of government bonds. Since the outbreak of the crisis, public sector issues have soared. In the coming years, large volumes of sovereign debt will mature and will have to be refinanced (see Chart 3.14). The chart probably still understates government refinancing needs as it cannot include maturities of less than one year and governments will take up additional loans. Competition from governments could quickly and significantly impair banks' financing conditions, especially if market sentiment were to dim again, causing a shortage of liquidity in bond markets.

Chart 3.14

GROSS ISSUANCE AND MATURITIES OF GOVERNMENT BONDS



Sources: Bloomberg and Dealogic. — **1** Greece, Ireland, Italy, Portugal and Spain. — **2** Future issuance volume probably unterstated owing to the non-inclusion of maturities of less than one year and fluctuating fiscal budgetary balances. — **3** Gross issuance up to and including 15 November 2010; maturities from 15 November 2010.

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Regulation increases uncertainty surrounding investors' demand for bank debt securities

Future demand for bank bonds likely to be muted

There is uncertainty surrounding how future regulatory changes will impact on demand for bank bonds. The introduction of the new regulatory liquidity regime in the form of a short-term liquidity coverage ratio, which is currently under discussion, would make refinancing conditions more difficult for financial institutions as bank bonds would not be counted towards meeting these requirements because they may not be sufficiently liquid in a systemic crisis. As a consequence, demand for bank debt securities by credit institutions – so far the largest group of purchasers of such securities – might fall. Furthermore, the weighting factors for interbank liabilities and receivables are a key problem area for the longer-term net stable funding ratio, and this is taken into account by means of symmetric weighting. Even though this might heighten the funding pressure, the associated change in the composition of purchasers also has advantages from a financial stability perspective. For example, a lower degree of interlinkage among banks also tends to reduce systemic risk.

Return to more balanced refinancing advisable

Since the height of the financial crisis, the refinancing situation has improved, both for German banks and LCFIs. Nevertheless, it would be advisable for a non-negligible number of banks to return to a longer-term and more balanced refinancing structure.

Market risks of German banks still high in interest rate positions

Analytical use of banks' models

From an operational perspective, controlling market risks is one of the key tasks of banks' risk management. The instruments developed for this purpose are also of major relevance for macroprudential analyses and identifying risk. This applies to market risk stress tests, which allow sensitivity analyses with regard to crucial price risks. Risk-adjusted measures of profitability can also be determined, thus making it possible to ascertain whether a better trading result stems solely from greater risk-taking and should therefore be assessed critically from a financial stability standpoint.

Market risk potential fallen considerably

Market risks for German banks have fallen considerably since mid-2009. The pace of the decline slowed in the first two quarters of this year, however. This observation applies, firstly, to the market risk positions of large banks

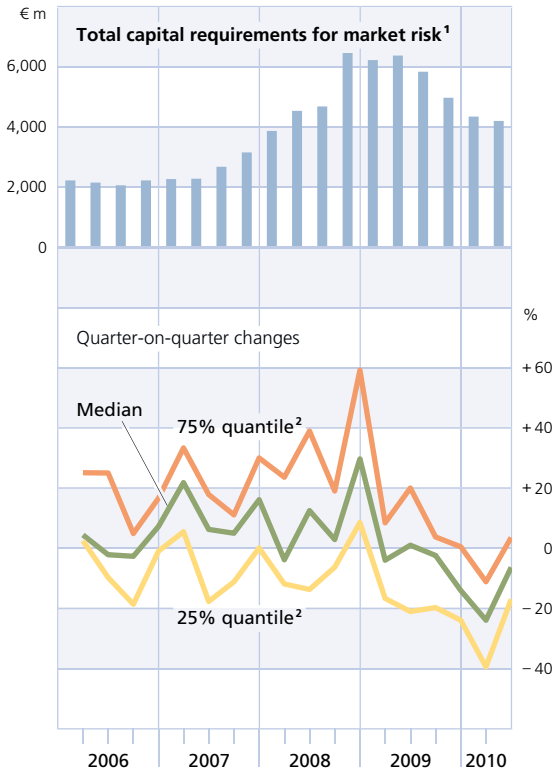
which are active in the market and which use a market risk model approved by the supervisory authorities. At the end of 2009, this category held just under 50% of the market risk positions of all institutions. Secondly, the market risk positions of the other trading-book institutions have also decreased. The capital requirements of the institutions with their own market risk models fell steadily by just over one-third between June 2009 and June 2010, with the majority of banks contributing to this development. Between the third quarter of 2009 and the second quarter of 2010, three-quarters of the banks showed a decline in capital requirements (see Chart 3.15). The capital requirements of those banks which use the standardised approach to calculate market risks from share and bond portfolios were 20% lower compared with the same period in the previous year.[21]

Proprietary trading benefiting from lower risk aversion

The decline in the average implied volatilities – which are currently significantly down on the year – on the stock market (-33.6% according to VDAX) and bond market (-22.7% measured by the Bund future) made a key contribution to this development. Added to this is the fact that some banks have further reduced their formerly significant credit trading positions. The decline in risk aversion in the money and capital markets, which is beneficial for proprietary trading, is undoubtedly also a result of the ongoing government support measures and the accommodative monetary policy stance. Comparing the current market risk potential with its level before the outbreak of the financial crisis nevertheless also suggests a waning underestimation of market exposures compared with that time.

Chart 3.15

MARKET RISKS IN THE TRADING PORTFOLIOS



1 Pursuant to Principle I/Solvency Regulation for banks with their own market risk model. — **2** Value undershot by 75%/25% of institutions.

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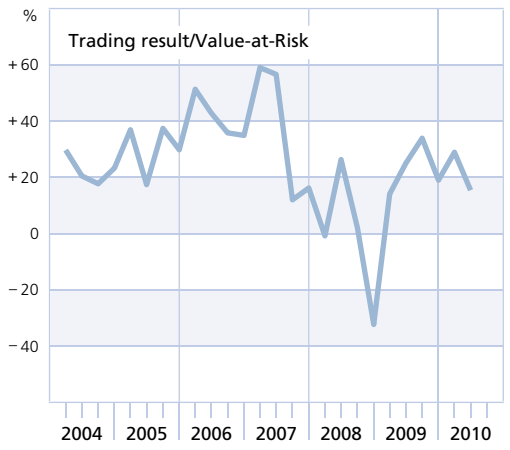
Market risk model problems mitigated somewhat

Another factor explaining the falling capital requirements of banks which are active on the market is that supervisory add-ons are now declining slightly. The supervisory authorities had raised these add-ons by over 60% in some cases, mainly because of the shortcomings

21 Institutions can either use standardised approaches prescribed by supervisory authorities to calculate the capital charges for their market risk positions or – following a suitability examination and supervisory approval – apply internal market risk models.

Chart 3.16

RISK-ADJUSTED TRADING RESULTS*



* Prudential information pursuant to Principle I/Solvency Regulation obtained from backtesting the market risk models developed by six banks. Unweighted quarterly averages.

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revealed in 2008 and 2009 by, for example, far too high a number of overshootings.[22] The forecasts of the models used by the banks were significantly more reliable last year. The number of overshootings for the surveyed banks in the 250 trading days prior to the end of the second quarter of 2009 fell from 69 to five in the same period of 2010, for instance. Nevertheless, this figure is now markedly below the figure to be expected on the basis of the model assumptions. This means that market risk has, if anything, been overestimated at times recently.

Risk-adjusted trading income recovered on average

The relation between risk-taking in proprietary trading and income generated has improved enormously for German banks since their dramatic trading losses in 2008. The indicator used for this estimate – the average risk-adjusted trading income of large market-active banks – stabilised at a normal level between the third quarter of 2009 and the second quarter of 2010 (see Chart 3.16). Unlike in the two years prior to the outbreak of the financial crisis, this development is not due to additional risk-taking. Rather, banks which are less apprehensive about the market have benefited from a sharp rise in the volume of international securities trading business. What is noticeable, however, is that the differences between the individual banks' results increased considerably in the first two quarters of 2010.

Market risk stress tests continue to show high interest rate risks

Lower interest rate risks are core result of market risk stress tests

In the Bundesbank's market risk stress tests, selected banks are annually prescribed extreme, but not implausible risk scenarios for changes in interest rates, share prices, risk premiums in the credit and bond markets, exchange rates and volatilities. In order to assess the capacity to bear the resulting losses in market value of all balance-sheet and off-balance-sheet positions, modified available capital (pursuant to section 10 of the German Banking Act) at the time of the shock is used as the reference variable. Following a sharp rise in 2009, interest rate risks in the current market risk stress test were declining at a high level among commercial banks and regional institutions, as well as among medium-sized and smaller banks. Share price risks rose slightly for both categories of

22 Pursuant to section 318 of the Solvency Regulation (Solvabilitätsverordnung), an overshooting has occurred if the (hypothetical) loss on an intra-day trading portfolio exceeds the value-at-risk calculated one day earlier. At a prescribed 99% confidence level, an average of 2.5 overshootings may be expected within one year (250 trading days). Supervisory add-ons can be imposed if a bank has recorded more than four overshootings during this period.

banks studied, however (see Chart 3.17). Credit derivative risks are still quite high, although there are enormous differences across the participating institutions. Exchange rate and volatility risks were, on average, of the smallest importance again. At times, however, distinct positioning was apparent regarding a depreciation of the euro against the US dollar.

Yield curve important for small banks

The picture gained from the market risk stress test of high, but latterly slightly lower interest rate risks is confirmed by the regular prudential recording of the Basel coefficients. This development is being supported by the current flattening of the yield curve. Furthermore, current research findings show the close relationship between the level of interest rate risk and the yield curve, particularly for savings banks and credit cooperatives.[23]

Declining risk diversification among banks active in the market

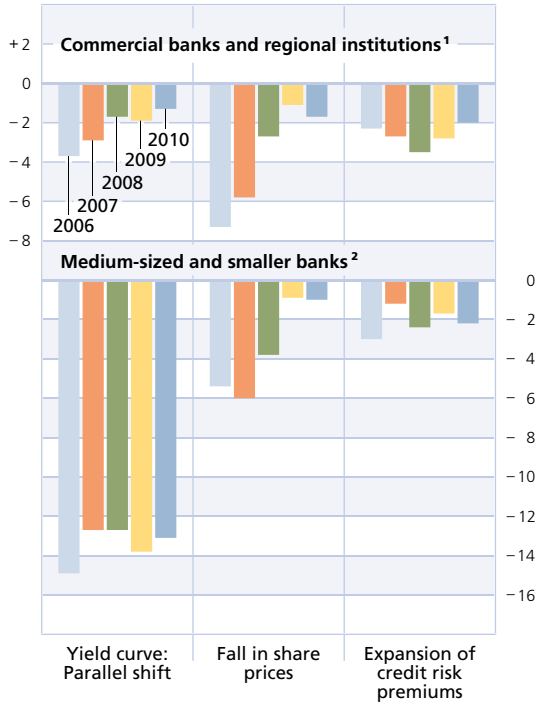
Similar reactions to sovereign debt crisis

The results made available each trading day by the large banks that are active in the market show a noticeable rise in the pairwise correlations since the end of April 2010. This development coincides with an extreme fall in government bond prices in a number of euro-area countries. The increased correlation thus indicates that the studied banks were affected in a similar way by the swelling crisis of confidence. There are two possible explanations for the correlations being higher than in the earlier escalations of the crisis in autumn 2007 and autumn-winter 2008. Firstly, behind the crisis in several euro-area countries is a very much more homogeneous portfolio of government securities than is the case for the structured

Chart 3.17

CHANGES IN MARKET VALUES UNDER SELECTED SCENARIOS* IN MARKET RISK STRESS TESTS

As a percentage of liable capital, weighted averages



* Each occurring intra-day; 31 March 2010, 31 March 2009, 31 March 2008, 31 May 2007, 31 March 2006. For a description of the risk scenarios, see Deutsche Bundesbank Financial Stability Review 2007, "Stress tests: methods and areas of application, pp 97 ff. — **1** 15 institutions. — **2** Nine institutions.

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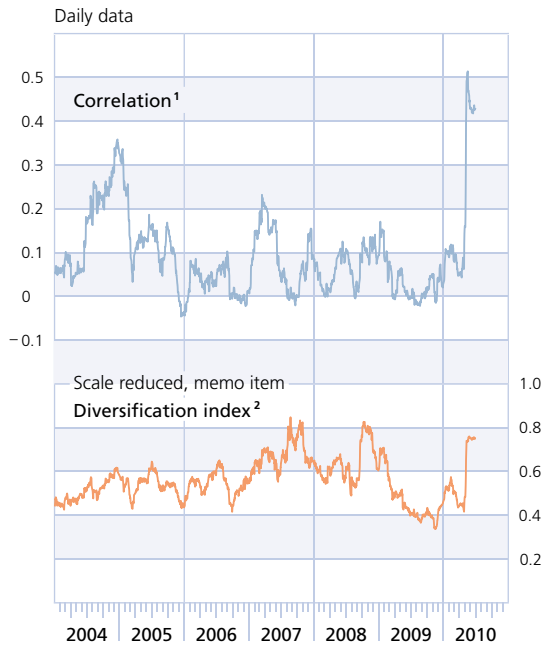
loan portfolio and parts of the real estate loan portfolio. While the rating downgrades in the markets for structured loans during the crisis were spread out over an extended period, thus lagging less transparent portfolio components, the downgradings for some euro-area countries occurred within a much shorter space of

23 See C Memmel (2011), Banks' exposure to interest rate risk, their earnings from term transformation, and the dynamics of the term structure, in Journal of Banking and Finance (to be published shortly). Further analyses, particularly concerning net interest income, can be found in the section Profitability buoyant on pp 83-86.

Chart 3.18

RELATIONSHIPS BETWEEN THE TRADING RESULTS OF GERMAN BANKS*



* Each based on daily data from seven institutions that use their own market risk model. — **1** Calculated as an unweighted mean of the pairwise correlations of the daily returns from proprietary trading over a moving 50-day window. — **2** Indicator of the degree of diversification of market risk within the German banking system. The maximum value of the indicator is one. A value of one denotes the absence of diversification; a value of zero denotes complete diversification.

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time. Furthermore, the liquidity of the government bond markets is very much higher than liquidity in trading in structured credit products. The mark-to-market valuation of this subportfolio is therefore reflected much more quickly and homogeneously in banks' daily trading patterns than is the more discretionary mark-to-model valuation for structured products.

Diversification index points to systemic risks

The diversification index, which is an indicator of the diversification of the banks' overall trading portfolio, likewise shows a clear increase, although it is less extreme than in the correlation values. The aggregate market risk positions of the banking sector thus indicate a heightened systemic risk of late (see Chart 3.18), as was the case when the crisis escalated previously.

No "all clear" concerning systemic risks

Endogenous adjustment processes

Systemic risks to the financial system arise from the fact that contagion and feedback effects set in motion a self-reinforcing mechanism, resulting in risks at individual institutions spreading throughout the financial system. Contagion channels may act directly, via contractual relationships between market players, or indirectly, for instance owing to a general loss of confidence on the part of investors.

Contagion via interbank linkages

Interconnectedness in the interbank market

The significance of contagion effects for the banking system stems in part from the considerable interbank linkages that exist via markets and payment systems. However, simulations for the German interbank market show that the impact of one or more bank failures is limited, although the extent of the contagion effects depends on the structure of the interbank market.

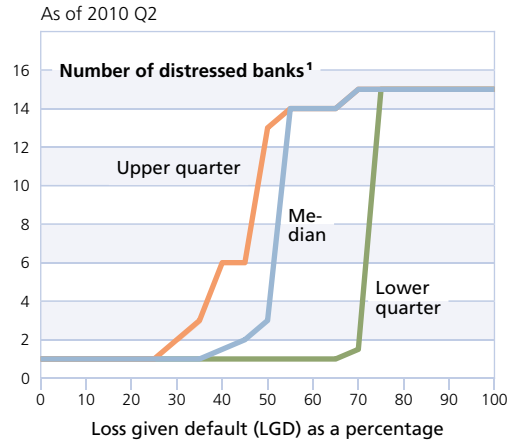
Bundesbank study: contagion not impossible

The Bundesbank has simulated how far the failure of a systemically important bank could lead to further failures. Direct contagion via credit risks on the interbank market is examined,[24] with each bank in turn being selected as the initially failing bank. The results of the

simulation are shown in Chart 3.19. The number of institutions affected increases depending on the assumed loss given default (LGD). At first, this increase is only moderate, but, from a loss rate of around 50% onwards, there is a steep rise, which levels off again with high loss rates, because then (almost) all the studied German banks are affected. If the loss rates are low, the contagion effects quickly dissipate again because many banks are still able to use their capital buffers to offset the necessary write-downs on interbank loans. The contagion paths are likewise relatively short in the case of very high loss rates because, as early as the first rounds, many institutions have to undertake write-downs which exceed their capital buffers. For loss rates in the median segment, by contrast, the system teeters over many rounds between a new equilibrium with a small number of failures and a new equilibrium with many failures. In such a situation, government intervention might well interrupt the contagion process at relatively low cost. It should be borne in mind, however, that the results of the simulation are strongly dependent on the assumptions made, especially on assumptions concerning the default criterion and the loss rate.

Chart 3.19

SIMULATED CONTAGION IN THE INTERBANK MARKET



1 Criterion for distressed bank: tier 1 capital ratio < 6%; comprises 15 German banks with an international focus. As a shock, it is assumed that each time one of the banks experiences an exogenous default.

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Consideration of the overall contagion effects

Market data-based approaches

Besides simulation studies, there is a range of approaches based on market data, which analyse, in particular, the extreme tails of the distribution of market prices.[25] In the more recent literature, mainly credit default swap premiums are used to measure the dependencies.

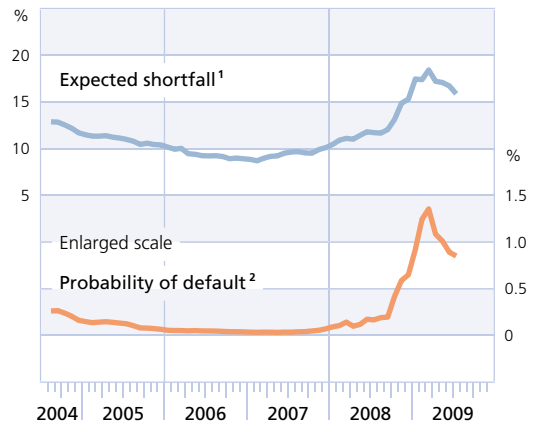
Identifiable strong impact of Europe and USA in credit default swap premiums

Using such an approach, the Bundesbank has investigated to what extent large banks and insurers in the German financial system are exposed to international contagion.[26] The analysis, which is based on premiums for credit default swaps, shows that such international connections exist. Among the three regions under consideration (Europe, the United States and Asia-Pacific), Europe and the United States have the biggest impact on the German financial system as stress events there have a major effect on the German system. By contrast, no

24 See also Excursus: Bundesbank instruments for analysing systemic risks on pp 55-58.
25 See K Bae, G Karolyi and R Stulz (2003), A New Approach to Measuring Financial Contagion, Review of Financial Studies, 16, pp 717-763, as well as G De Nicolo and M L Kwast (2002), Systemic Risk and Financial Consolidation: Are they Related?, Journal of Banking and Finance, 26, pp 861-880.
26 See also Excursus: Bundesbank instruments for analysing systemic risks on pp 55-58.

Chart 3.20

SYSTEMIC RISK



Sources: Moody's KMV and Bundesbank calculations. — **1** Expected shortfall in relation to the total liabilities of all banks of the studied system. — **2** The mean of the individual probabilities of default weighted by the total liabilities of the respective banks.

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significant impact could be observed for the Asia-Pacific region.

Stabilisation through SoFFin

It can be seen that the contagion effects have lessened with the establishment of the Financial Market Stabilisation Fund (SoFFin). Banks which were directly supported by SoFFin have stabilised to the greatest extent. By contrast, there is no demonstrable stabilisation effect in the case of insurers, even though this sector has at least benefited indirectly from SoFFin's support measures, for example, through the rescue of banks that have issued Pfandbriefe.

Contribution of an individual bank to systemic risk

Quantification of systemic risk …

The following section discusses the quantification of the overall risk as well as the contribution of an individual bank to this overall risk. The latter plays a key role, particularly with regard to adequate capital requirements for systemic risks. In the study of 66 large complex financial institutions (LCFIs) from 24 countries considered here, systemic risk is defined as the expected total loss if a systemic event occurs.[27] Chart 3.20 shows the timeline for the level of systemic risk. It is confirmed that systemic risks increase significantly in times of crisis. There is a marked rise in systemic risk in addition to the likewise increasing probability of individual banks defaulting.

… and the risk contribution of an individual bank

Chart 3.21 shows the contribution to systemic risk of three typical, representative institutions from the group of 66 banks. What is striking is the strongly incongruent timing of the risk contribution. By contrast, an individual bank's share in the total liabilities of the system fluctuates much less. Moreover, there is only a small degree of correlation between the contribution to systemic risk and the share of liabilities in the system as a whole.

CoVaR as a further approach

The CoVaR (conditional value-at-risk) approach is a further possibility of determining the contributions of individual banks to the systemic risk currently under discussion.[28] Using quantile regressions, this approach calculates the additional contribution of individual banks (or cate-

27 See also Excursus: Bundesbank instruments for analysing systemic risks on pp 55-58.
28 See T Adrian and M K Brunnermeier (2008), CoVaR, Federal Reserve Bank of New York, Staff Reports, No 348.

gories of banks) to total systemic risk. Applied to a system of 122 European financial institutions, this approach shows, *inter alia*, that only a low correlation between the value-at-risk of an institution and its systemic risk contribution can be observed. The results provide clues about the relevant determinants of the risk contributions (for example, size and financing structure) and can serve as a basis for a more effective macroprudential regulatory framework.

Excursus: Bundesbank instruments for analysing systemic risks

Bundesbank instruments

In recent years, the Bundesbank has developed various instruments for analysing systemic risk in the German financial system. Three of these instruments, the practical application of which was described in the preceding section, are explained in more detail below.

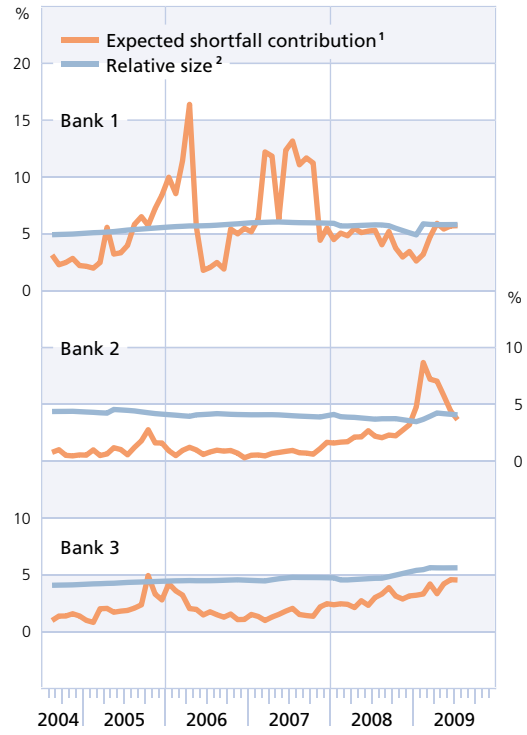
Contagion on the interbank market

Simulation study method

Many central banks pay a great deal of attention to possible contagion effects in the interbank market. The fundamental approach to determining contagion effects emerges from the literature.[29] First of all, a matrix of the interlinkages in the interbank market is set up or estimated. In principle, there are several methods available for determining these interlinkages. The Bundesbank model is essentially based on data from its credit register of loans of €1.5 million or more. Once it has been set up, the matrix of mutual claims simulates the impact that the failure of one or more banks would have. The assumed failure initially leads to losses at those banks that have granted a loan to the failing bank. These losses can then trigger more bank failures, which, in turn, can result in write-downs and loss provisions. This chain reaction comes to an end only if there are no new bank failures in one round, either because the remaining banks are able to use their own funds to offset the losses or because all the banks of the system have been affected.

Chart 3.21

RISK CONTRIBUTIONS OF THREE SELECTED BANKS



Sources: Moody's KMV and Bundesbank calculations. — **1** The expected shortfall contribution of a bank in relation to the expected shortfall of the studied system. — **2** A bank's share of the total liabilities of all the banks of the studied system.

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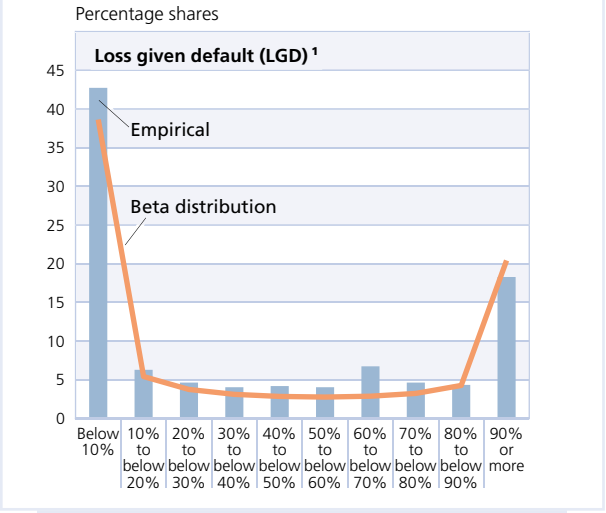
29 See C Upper (2007), Using counterfactual simulations to assess the danger of contagion in interbank markets, BIS Working Paper, No 234.

Chart 3.22

DISTRIBUTION OF THE LOSS RATES IN THE INTERBANK MARKET



1 Period from 1998 to 2008. 667 observations for loss rates for interbank loans.

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LGD as an important parameter

The loss given default (LGD) has a major impact on the results of the simulation study. For reasons of simplicity, a constant loss rate is often assumed, which is then varied in the different simulation runs, mostly from a very low value of 5% to a total loss of 100%. In actual fact, however, the loss is likely to vary greatly depending on the individual interbank relationships. In the case of secured interbank claims (provided the collateral can be realised without any large haircuts) the loss is likely to be low. By contrast, in the case of unsecured claims, the rate of loss will come close to a total of 100%, particularly if resolution costs are also included. Chart 3.22 indicates the LGD for German banks arising from exposures on the interbank market. The relative frequency of the LGD is shown as a ratio of the specific loss provisions made for interbank loans and the volume of interbank loans for which specific loss provisions have been made. The build-up of the probability mass at the edges suggests modelling the LGD as a random variable using, for example, a beta distribution, the density of which is likewise presented in Chart 3.22 for comparison.

Contagion effects as a whole

Econometric estimation of cross-border contagion

The approach presented here will be used to estimate to what extent systemic risks are transferred from the global financial system to the German financial system. The median of the premiums for credit default swaps of all the financial institutions of a financial system serves as a measure of the risk to a financial system. Alongside Germany, three financial systems are considered: Europe[30] (Eu), the United States (US) and the Asia-Pacific region[31] (AP). The relative change in the credit default swap premiums in Germany is explained by the relative changes in the credit default swap premiums in the other three regions with a one-day time lag. Furthermore, the relative change in the credit default swap premiums for non-financial corporations is incorporated as a control variable:

$$\Delta y_t^D = \alpha_0 + \alpha_1 \Delta y_{t-1}^{Eu} + \alpha_2 \Delta y_{t-1}^{US} + \alpha_3 \Delta y_{t-1}^{AP} + \alpha_4 \Delta iTraxx_t^{non-fin} + \varepsilon_t \quad (1)$$

where Δy_t^i stands for the relative change in the median of the credit default swap premiums of financial enterprises in region i, and $\Delta iTraxx_t^{non-fin}$ for the relative change in the iTraxx Non Finan-

30 Comprises the following countries: Austria, Belgium, Denmark, France, Greece, Iceland, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.
31 Comprises the following countries: Australia, Japan and Singapore.

cials, the index for credit default swap premiums for non-financial corporations. The variable ε_t is a disturbance term with time-variable variance δ_t^2 and models the unexpected change in the credit default swap premiums. Equation (1) relates to contagion in the mean of the credit default swap premium indices. Additionally, the potential volatility spillovers are taken into account. There is well-documented empirical evidence that major (upward and downward) fluctuations in financial time series tend to cluster, ie today's variance depends on yesterday's variance. A possible spillover of uncertainty (measured by volatility) is modelled in the following equation for the variance of the disturbance term:

$$\delta_t^2 = \exp(\theta_0 + \theta_1 X_{t-1}^{Eu} + \theta_2 X_{t-1}^{US} + \theta_3 X_{t-1}^{AP}) + \lambda_1 \delta_{t-1}^2 + \gamma_1 \varepsilon_{t-1}^2 \quad (2)$$

where X_t^i denotes the square of the unexpected relative change in the credit default swap premiums in region i. The unobserved variables X_t^i have been estimated from corresponding univariate equations for the three regions. In addition, in equation (2), lagged values of the variance δ_{t-1}^2 and the squared disturbance variables ε_{t-1}^2 have been incorporated, as is usual for GARCH approaches.[32] The results of the estimate are shown in Table 3.2 and were explained in the preceding section.

Table 3.2

EXTERNAL IMPACT ON CHANGES IN GERMAN FINANCIAL INSTITUTIONS' CREDIT DEFAULT SWAP PREMIUMS

Variable	German financial system as a whole	Private banks	Landesbanken	Insurers
$Europe_{(t-1)}$	0.20*** (4.988)	0.26*** (6.59)	0.12*** (3.246)	0.05** (2.145)
$USA_{(t-1)}$	0.13*** (6.376)	0.15*** (5.171)	0.13*** (6.581)	0.07*** (4.213)
$Asia\text{-}Pacific_{(t-1)}$	– 0.01 (– 0.528)	0.00 (– 0.129)	– 0.01 (– 0.397)	0.00 (0.377)
$SoFFin*Europe_{(t-1)}$	– 0.13*** (– 2.633)	– 0.13** (– 2.215)	– 0.09 (– 1.621)	0.08 (1.251)
$SoFFin*USA_{(t-1)}$	– 0.08** (– 2.271)	– 0.10*** (– 2.621)	– 0.11*** (– 3.747)	0.03 (0.818)
$SoFFin*Asia\text{-}Pacific_{(t-1)}$	0.01 (0.346)	– 0.04 (– 0.914)	0.05 (1.147)	0.00 (0.093)
$iTraxx\ Non\text{-}Financials_{(t)}$	0.21*** (13.65)	0.32*** (19.087)	0.11*** (6.45)	0.40*** (22.562)
Constant I	0.00 (0.91)	0.00 (0.98)	0.00 (1.07)	0.00 (– 1.48)
$Residual\_Europe^2_{(t-1)}$	26.28 (0.671)	20.69 (0.257)	– 4.29 (– 0.097)	30.94 (0.863)
$Residual\_USA^2_{(t-1)}$	16.01*** (3.834)	25.01*** (6.735)	– 72.74 (– 1.255)	25.63*** (5.056)
$Residual\_Asia\text{-}Pacific^2_{(t-1)}$	– 14.5 (– 0.302)	– 69.77 (– 0.910)	67.33*** (10.963)	5.14 (0.136)
Constant II	– 10.20*** (– 80.311)	– 9.85*** (– 73.919)	– 9.65*** (– 110.947)	– 9.44*** (– 12.916)
Observations[1]	1,397	1,397	1,397	1,397
Log likelihood	2,996.5	2,811.46	2,867.96	2,756.77
Wald χ^2 test	509.87***	3,741.57***	1,617.58***	1,324.31***

***/**/* denote significance at the 1%, 5% and 10% levels respectively. t-statistics are shown in parentheses. — **1** Period: 1 January 2005 to 18 May 2010.

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Quantifying the risk contribution

Modelling the financial system as a portfolio of banks

To determine the contribution to systemic risk, the relevant literature suggests modelling all of the credit institutions as a portfolio, the loss distribution of which describes the systemic risk.[33] A loss occurs if one or more institutions become insolvent. The book value of the debt is used as an estimated value of economic damage. Using credit risk model approaches, the three components of systemic risk that are generally recognised as essential can be con-

32 GARCH stands for Generalized Autoregressive Conditional Heteroskedasticity. See T Bollerslev (1986), Generalized Autoregressive Heteroskedasticity, Journal of Econometrics, 31, pp 307-327, and R F Engle (1982), Autoregressive Conditional Heteroskedasticity with Estimates of the Variance of United Kingdom Inflation, Econometrica, 50, pp 987-1007.
33 See N Tarashev, C Borio and K Tsatsaronis (2010), Attributing systemic risk to individual institutions, BIS Working Papers No 308.

sidered: the total liabilities of an institution, its links with other institutions, and its individual probability of default.

Expected shortfall as a measure of risk

The systemic risk is viewed as the expected loss in the case of a systemic event (expected shortfall). The systemic event is deemed to have occurred if the loss threshold, given as the value-at-risk of the system as a whole, is exceeded. The value-at-risk and the expected shortfall are calculated at the confidence level q. If q is fixed constantly at, say, 99.9%, there is a 0.1% probability that the systemic event will occur within one year.

Risk contribution of an individual bank

One method of distributing the systemic risk among the individual institutions consists in forming the partial derivations of the expected shortfall according to the liabilities of the respective institutions. As the expected loss and the loss contributions in the case of a systemic event cannot be represented in a closed formula, simulations are often used. Nevertheless, the simulation of rare events using traditional methods is very inefficient and prone to error. To mitigate these problems, the importance sampling algorithm or formula-based approximate solutions can be used (see Chart 3.21).[34]

34 See P Glasserman (2006), Measuring marginal risk contributions in credit portfolios, Journal of Computational Finance 9, pp 1-41, and M Pykhtin (2004), Multi-factor adjustment, Risk Magazine, 17, pp 85-90.

Credit risk between legacy problems and economic recovery

Credit risk within the financial system rose only moderately in many segments in the current year on the back of non-standard monetary and fiscal policy measures. In some capital market-oriented segments, credit risk even saw a decline. The vast majority of international and domestic enterprises proved to be robust, especially as measured by the severity of the recession in 2009. The risk inherent in loans to domestic households, too, appears moderate given the stability of their financial situation compared with other countries. Particular risks continue to exist, above all in the international context vis-à-vis the late-cycle and volatile commercial real estate sector. Moreover, corporate leveraged loans und securitisations will probably continue to have a negative impact, all the more as refinancing risks are on the increase. Extensive stimulus packages are currently limiting direct credit risks emanating from the sovereign debt crisis. However, there is an increased risk that repercussions in other sectors in the countries affected may indirectly impair borrowers' credit quality. Seen in that light, the persistently difficult environment could have a negative impact on the otherwise rather favourable outlook for credit risk.

German banks' foreign claims play an important role

Significant foreign claims vis-à-vis Europe

The balance sheet assets of German banks including their foreign branches and subsidiaries vis-à-vis foreign banks, enterprises and the public sector totalled just under €2½ trillion in the middle of this year. An overall view must also include counterparty risk arising from derivatives. The estimated value of these counterparty risks is calculated at €784 billion based on the reports on loans of €1.5 million or more submitted by large, internationally active banks.[1] The percentage of claims on foreign debtors arising from derivatives in total external assets thus stands at some 24%. The five euro-area countries that came under most pressure from the government debt crisis in the spring of this year – Greece, Ireland, Italy, Portugal and Spain – account for just under 16% of overall external assets, including securities exposures (see Chart 4.1). Counterparty risk exposure arising from derivatives varies widely from one region to another: it represents just over a quarter of all claims against the United Kingdom, but makes up only just over 12% for the five euro-area countries worst affected by the crisis.

1 This estimate is distorted upwards as replacement cost and add-ons exceed pure market values. However, trading book items are largely disregarded. See Instruction sheet for the reporting of large exposures and loans of €1.5 million or more pursuant to sections 13 to 13b, 14 and 20 of the German Banking Act (Kreditwesengesetz) as last amended in December 2009.

Chart 4.1

STRUCTURE OF EXTERNAL ASSETS BY COUNTRY*

As at June 2010

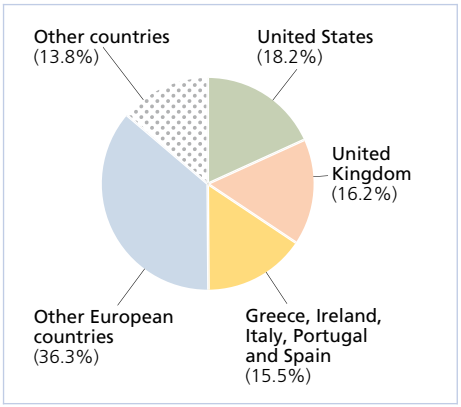
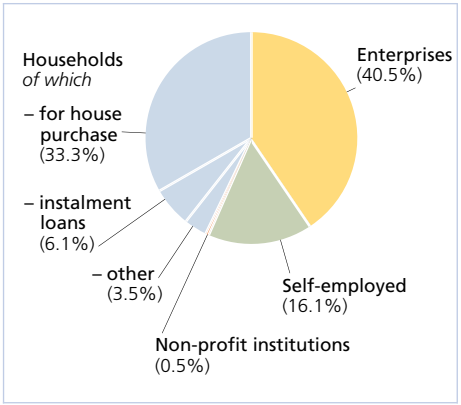


Chart 4.2

STRUCTURE OF DOMESTIC LENDING BUSINESS BY DEBTOR GROUP**

As at June 2010



* The external assets of German banks including their foreign branches and subsidiaries plus estimate of derivatives exposure according to the central credit register for loans of €1.5 million or more for 17 of the largest German banks with an international focus. — ** All German banks; excluding government and interbank loans.

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Foreign business remains at high level

Many years of strong growth in external assets came to a halt in the autumn of 2008. A comparison with domestic lending business shows that there has been a relatively stronger deleveraging process in external lending. The ratio of loan volumes to foreign non-banks to total lending to non-banks dropped by almost 4 percentage points from its high in October 2008 to just short of 21% at the end of 2009. Since then, foreign exposures have stabilised at this historically relatively high level, last falling below it at the end of 2006.

Slight increase in loans to households in domestic business

In domestic lending, the share of German banks' loans to enterprises (excluding government and interbank loans) fell slightly on the year to 40½% towards the end of the second quarter of 2010. Over the same period, loans to households – in particular instalment loans – rose slightly in percentage and absolute terms (see Chart 4.2).[2]

Recession causes rising losses

Portfolio quality has deteriorated less than anticipated

The German banking system's loan loss ratios largely reflect economic developments at the global and national level. Loss provisions and value adjustments for commitments rose sharply during the crisis – as measured by the overall customer loan volumes in the domestic and foreign portfolio – from a low level in 2008 (see Chart 4.3). In 2009, however, they were lower than during the pronounced stagnation phase in 2002. This indicates that the financial situation of German enterprises was robust at the onset of the crisis. At the current end, the

2 For an in-depth analysis of the risks arising from domestic lending business, see comments on pp 73-77.

interim statements posted by major banks with an international focus show that they had to make lower-than-expected risk provisions in the first half of 2010. However, this does not mean the all-clear can be sounded, as uncertainty regarding economic developments, especially abroad, is high.

Commercial banks and Landesbanken with largest increase in non-performing loans

The trend in non-performing loans was similar to those in loan losses. It is worth noting the differences between the various banking categories, however. While all banking categories experienced a significant increase in non-performing loans in 2009, only commercial banks and Landesbanken, whose portfolios contain more foreign exposures, were back at the highs of 2002 and 2003. Savings banks and credit cooperatives, by contrast, are a long way below their highs. The percentage of non-performing loans held by these banking categories is, however, larger in structural terms than at commercial banks and Landesbanken, which may be related to the fact that their portfolios contain a larger share of smaller loan exposures (see Chart 4.4).

Greater differentiation in terms of international credit risk

Negative environment in some countries

During 2010, the risks in connection with public finances in several euro-area countries came under the spotlight, with negative consequences for the credit risk environment. Moreover, the ongoing adjustment processes on the real estate markets and in the private sector of a number of countries will probably initially dampen their growth prospects. This environment could extend the process of dealing with the legacy of the financial crisis

Chart 4.3

LOSSES IN LENDING BUSINESS*

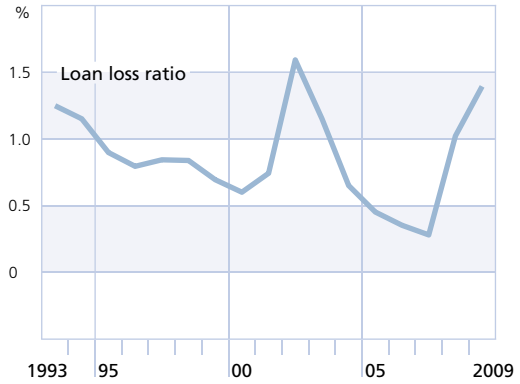
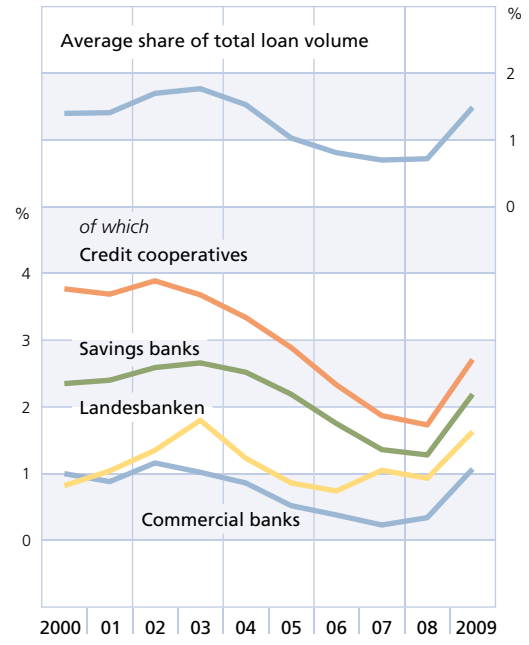


Chart 4.4

NON-PERFORMING LOANS**



* Write-downs and loss provisions by German banks for loans and value adjustments for commitments in lending business as a percentage of the volume of customer loans. — ** German banks' loans requiring specific loss provisions as a percentage of total loan volume.

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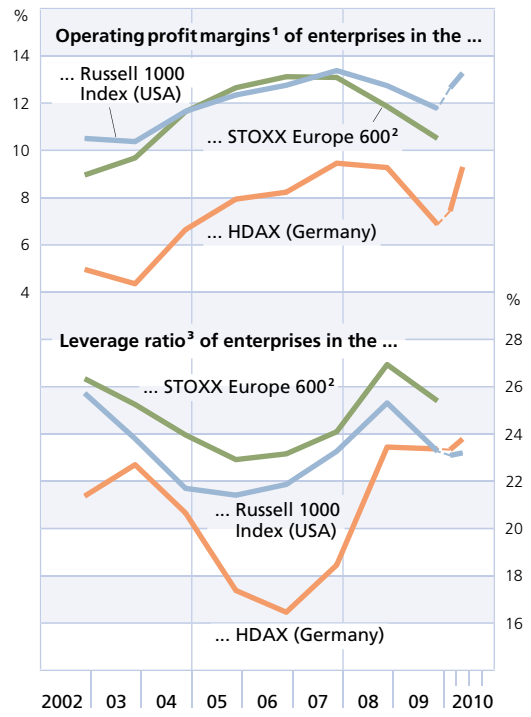
Chart 4.5

RISK FACTORS FOR THE CORPORATE SECTOR*



Sources: Bloomberg, Thomson Reuters and Bundesbank calculations. — * Median and annual data; 2010: quarterly figures. — **1** Ratio of EBIT to sales. — **2** For many of the STOXX Europe 600 enterprises quarterly data are not available. — **3** Sum of an enterprise's financial liabilities to its total assets.

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for some financial institutions. For instance, the credit quality of some corporate borrowers is low despite the otherwise significantly improved situation, and the same applies to important foreign commercial real estate markets such as those of the United States, the United Kingdom and Spain. Intermediaries are likely to face problems in the associated securitisation segments, too, particularly as refinancing needs will increase considerably over the next few years.

Corporate borrowers: default risks initially on the decline – individual problematic segments

Improved operating profit margins of enterprises active on the capital markets …

The balance sheets of enterprises active on the capital market in western industrial countries indicate a trend towards better fundamentals. Following the slump at the end of 2008, the average operating profit margins for US enterprises in the Russell 1000 and German enterprises included in the HDAX were almost back at the high levels of 2007 in the second quarter of 2010 (see Chart 4.5).[3] However, the data available for the STOXX Europe 600[4] indicate that European enterprises' operating profit margin has recovered much less in recent quarters.

… but doubts regarding further growth in corporate earnings

Despite the positive data on the earnings situation, there are doubts that corporate earnings will continue to grow apace over the next few quarters. Historically low price-earnings ratios may reflect concerns that the growth outlook could deteriorate, especially in the United States and several euro-area countries as well as in Asia. Weaker growth, in turn, is likely to limit the increase in enterprises' sales and earnings.

Overall financial situation of corporate borrowers active on the capital market improved

Greater profitability has tended to have a positive effect on the financial situation of corporate borrowers active on the capital market. Thus, enterprises in Europe and the United States are better able to meet interest pay-

3 According to data published to date, operating profit margins appear to have remained high in the third quarter of 2010. The Russell 1000 covers the 1,000 largest US companies by market capitalisation. The HDAX comprises the DAX (30), the MDAX (50) and the TecDAX (30).
4 The statistical problem with STOXX Europe 600 enterprises is that listed companies do not present quarterly data in all European countries.

ments out of cash flow from operations again. In addition, enterprises have lowered their debt burden from the high levels of 2008. In the United States, the average leverage ratio declined from the beginning of last year onwards, before stabilising in the second quarter of 2010. In Germany, by contrast, the leverage ratio did not change much after the end of 2008 (see Chart 4.5).

Default rates likely to decline further until year-end

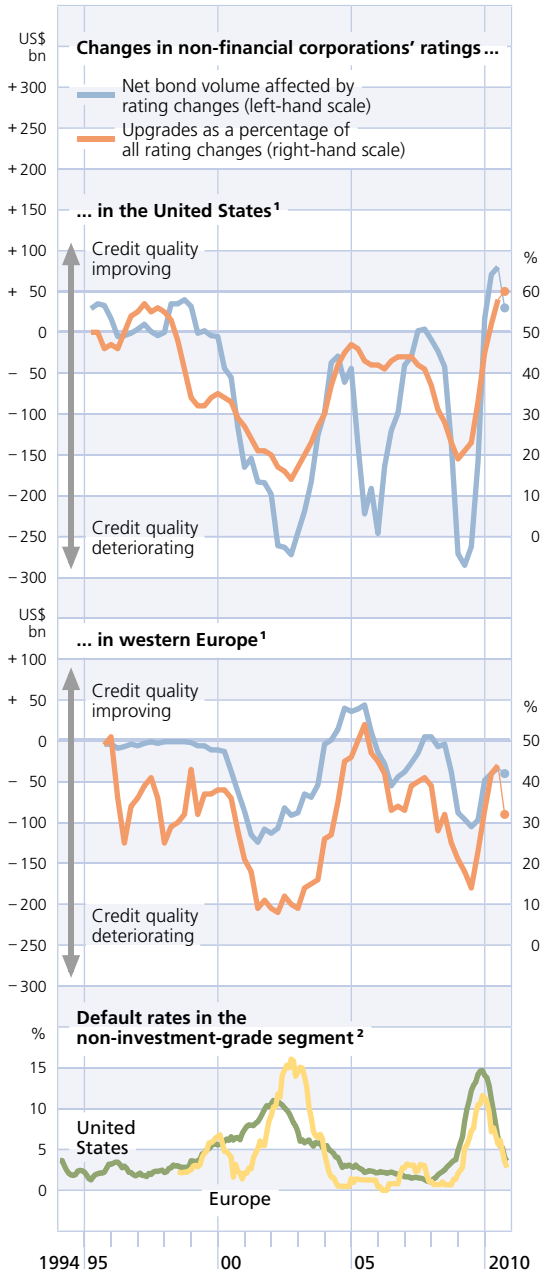
In line with the trend towards better fundamentals, defaults by corporates active on the capital markets declined perceptibly. The default rate for debtors with weaker ratings (for the preceding 12 months) has declined from the highs of November 2009 (USA: 14.7%, Europe: 11.6%) to 3.6% in the United States and 2.8% in Europe (see Chart 4.6). This is due in part to the economic recovery, but also to generally receptive corporate bond markets. Moreover, lenders have frequently tended to initially prolong maturing loans even where it looked as though the original loan terms might be breached. The downward trend in defaults in 2010 is likely to continue at least in the short term, thereby hurting banks less than in the past two years.[5]

Ratings improving from low level

Rating trends in 2010 are another indication that the credit quality of enterprises active on the capital market has improved. In the United States, upgrades as a percentage of total rating changes have risen to a high level, and in Europe, too, credit quality has stabilised (see

Chart 4.6

INDICATORS OF CREDIT QUALITY



Sources: Thomson Reuters, Moody's and Bundesbank calculations. — **1** Four-quarter moving average. ● = last updated: 2010 Q3. — **2** Moving average of the last 12 months in the non-investment-grade segment.

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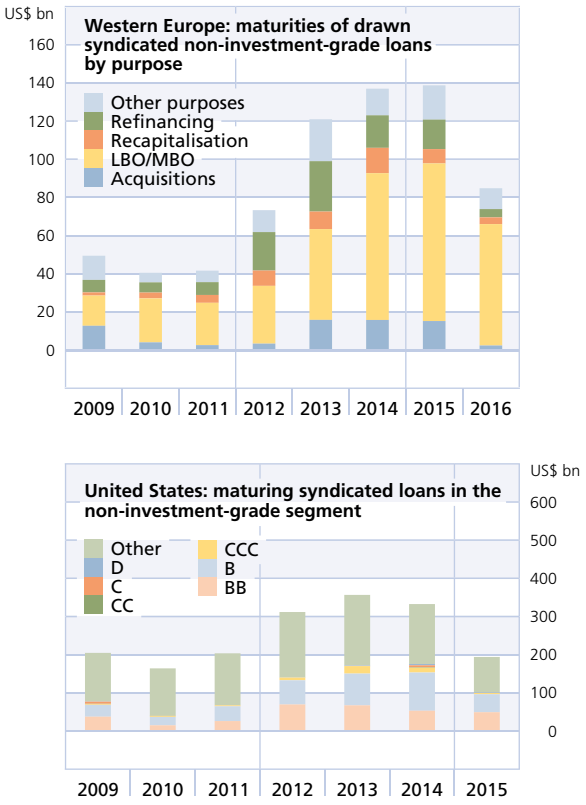
5 For the end of 2010, rating agency Moody's expects a default rate of 2.9% in the United States and 2.1% in Europe.

Chart 4.7

FORTHCOMING WAVE OF REFINANCING



Source: Dealogic.

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Chart 4.6).[6] Yet it should be noted that rating assessments are improving from a low level.

Refinancing risk places question mark over sustainability of the recovery

However, a renewed spike in defaults in the speculative borrowers segment cannot be ruled out given the high percentage of enterprises at severe risk of default and the fact that worldwide refinancing needs are set to increase in the medium term.[7] Syndicated loans, which in Europe especially can be attributed to, in some cases, highly leveraged corporate takeovers in the positive macroeconomic environment and extremely favourable financing conditions in the years 2005 to 2007, account for the bulk of the maturing loans of more than US$2 trillion up to 2014 (see Chart 4.7). Even in a scenario of a moderate economic upturn, their financial sustainability appears questionable.

Rating agencies' outlook is cautious

Refinancing risks are also reflected in rating agencies' expectations. Standard & Poor's (S&P), for instance, expects default rates to decline further until year-end. Nonetheless, defaults are expected to rise perceptibly again in Europe in the next one to two years. The somewhat more optimistic forecast by Moody's that the default rate will continue to decline beyond the year-end is subject, not least, to the proviso that enterprises' access to funding on the bond market or to bank loans does not deteriorate significantly.

Still heightened risks for the German banking system …

A large percentage of German banks' extensive corporate lending business to foreign debtors is conducted in a difficult environment. A considerable proportion of foreign business is with countries whose corporate sector has been particularly hard hit by the consequences of the recession and in which uncertainty about the future growth path is especially pronounced. Credit risks arise mainly from claims on debtors in the United States and the United Kingdom, which are by far the largest in terms of volume. In addition, foreign loans to enter-

6 Over a credit cycle, the percentage of upgrades in all rating changes is generally less than 50%, as the potential for very highly rated borrowers to improve is limited and when debtors do finally default, downgrades are usually carried out incrementally across several rating notches (downgrade bias).
7 In Europe, the percentage of enterprises with a CCC+ rating or lower recently reached a record high of 16.4%.

prises in several euro-area countries entail increased default risk given the large exposure to problem sectors.

… as a result of increase in non-performing loans …

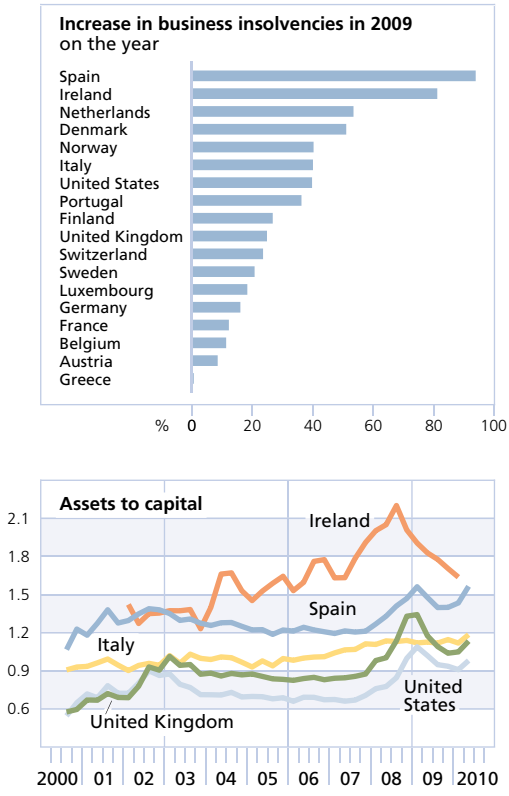
The increase in business insolvencies especially in 2009 and the concomitant rise in the number of non-performing loans to enterprises give an indication of the potential extent of credit defaults (see Chart 4.8). In Spain and Ireland, the credit quality of enterprises in the construction and real estate sectors in particular has deteriorated sharply. In the United States, too, defaults on loans to enterprises have risen. At the current end, both non-performing loans and write-downs on loans look set to improve. Nonetheless, the figures are still well above the average of the past ten years.

… and high debt burden for enterprises in individual countries

In some cases, the financial sustainability of the debt burden on enterprises is also worrying. The degree of leverage in the Spanish and Irish corporate sector remains elevated. Enterprises in Italy and the United Kingdom are in much better shape by this measure. Although some euro-area countries saw their enterprises' competitiveness improve last year given lower unit labour costs, the earnings prospects for enterprises remain difficult.

Chart 4.8

SITUATION IN THE CORPORATE SECTOR



Sources: Creditreform, national statistical authorities and Thomson Reuters.

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Income risks, which are a major factor in determining whether loans can be properly serviced, have therefore risen.

Commercial real estate: environment remains tense

Economic downturn continues to weigh on commercial real estate market

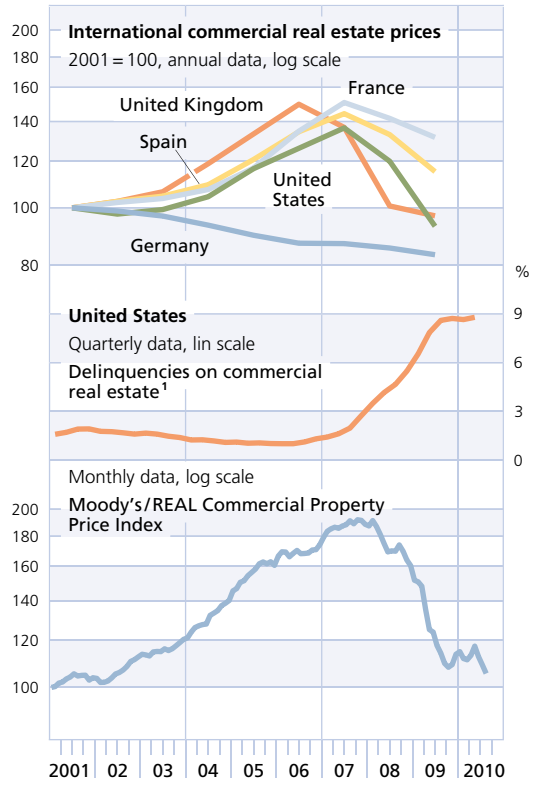
Historically, the commercial real estate sector displays comparatively high volatility, and is very sensitive to cyclical changes. Weakening demand for commercial property as a result of the economic downturn has resulted in rising vacancy rates and strong pressure on prices and rents in the United States and in Europe.

Marked increase in refinancing risks

Another major risk lies in the fact that some US$1.2 trillion in commercial real estate loans as well as roughly US$150 billion worth of commercial mortgage backed securities (CMBS) will mature in the period 2010 to 2012. A large proportion of these loans was issued during the boom. They typically have high loan-to-

Chart 4.9

COMMERCIAL REAL ESTATE



Sources: Federal Reserve, IPD, Moody's and Thomson Reuters. — **1** Commercial real estate loans past due by at least 30 days as a percentage of outstanding commercial real estate loans (volume).

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value ratios, and a large percentage of them are interest-only or partially interest-only loans. They must now be refinanced in a changed environment. The value of the portfolios is likely to have declined significantly in some cases as prices have fallen by around 40% from their highs in the United States and the United Kingdom. Moreover, banks have tightened their lending standards and will now probably only accept lower loan-to-value ratios. Given these considerable refinancing risks, many banks in the United States and Europe are evidently still tending to prolong existing loans or adjust credit terms.[8] In the short term, this will ease the burden on the financial system as write-downs will initially be avoided. These could, however, become necessary at a later date. Increased selling of commercial real estate as collateral is realised would, moreover, increase supply and could therefore trigger a fresh wave of price adjustments.

Signs of stabilisation on European commercial real estate markets

There are signs that individual sub-segments of the commercial real estate market in Europe are picking up, with rising transaction volumes and an incipient recovery in prices and rents. However, a rapid recovery to pre-crisis levels, which would enable the market to grow out of the crisis, is unlikely in the foreseeable future. Uncertainty regarding further economic developments given high unemployment and the fact that government austerity measures have already been announced in many countries are, moreover, still dampening demand for retail and office properties.

Ongoing downward trend in the USA

In the United States, prices for commercial property dropped significantly following a slight recovery in the second quarter and, at the end of August 2010, were 2.4% below their previous trough of October 2009 (see Chart 4.9). At the same time, vacancy rates in all segments of the commercial real estate market continued to rise steadily.[9] Consequently, the percentage of non-performing

8 According to the Senior Loan Officer Opinion Survey conducted by the Federal Reserve Board in April 2010, in the United States 42.9% of all respondent banks and 51.6% of large banks said that their use of loan prolongations on commercial real estate had increased somewhat over the past six months.
9 See Mortgage Bankers Association, Quarterly Data Book, first quarter of 2010.

loans also rose further to almost 9%, albeit with reduced momentum.[10]

Commercial real estate loans of considerable importance to banks worldwide …

Loans to finance commercial real estate represent a considerable proportion of banks' overall credit exposure in the euro area (11%), the United Kingdom (13%) and the United States (24%).[11] Commercial property therefore represents a risk segment in its own right for many financial systems. However, there are considerable differences among individual banks and foreign commercial real estate business is only significant for a small number of German financial institutions. Yet besides the direct risk of several German banks suffering losses on loan exposures, there are also indirect risks to the German financial system. This is because feedback effects in the countries worst hit by the drop in commercial property prices are also impacting credit quality in other segments there. Indirect risks include the crisis affecting open-end real estate funds, as evidenced by the fact that some funds have suspended redemptions for the last two years and three funds are in liquidation (see Box 4.1 on page 68).

… but risks to the German financial system manageable on the whole

According to a survey on commercial real estate lending which the Bundesbank conducted among 11 German banks, the overall loan volume was €324.6 billion in the first quarter of 2010.[12] This is 3¼ times these banks' tier 1 capital. The United States and the United Kingdom account for roughly 15.4% and just under 9% respectively of the surveyed banks' overall exposure. The maturity structure shows that some 68% of overall exposure will mature over the next four years. If loans are not prolonged, price adjustments are likely. However, more than 90% of the loans are not in negative equity and roughly 44% have a loan-to-value ratio of 60% or less. These exposures therefore have a large safety cushion against the possibility of falling commercial property values. More than half of mortgage loans have already been written down in response to a drop in the prices of the commercial property backing them. This figure stands at more than 51% for mortgage loans in the United States and just under 65% and more than 52% for UK and Spanish mortgages respectively. Risks to the stability of the German financial system therefore appear manageable.

Households and residential property: indirect risks owing to high leverage

Foreign households relevant to German financial system

Direct lending by German banks to foreign households is comparatively low. A deterioration in the fundamentals of foreign household sectors may, however, feed back to German financial intermediaries via several channels. For instance, German banks have large exposures to foreign banks, which in turn are exposed to risks from direct lending to domestic households. Moreover, ongoing deleveraging processes by household sectors, which are still highly indebted in many countries, may dampen growth prospects and therefore contribute to keeping credit risk for a broad range of balance sheet assets high. Some appreciable market movements in recent months in response to renewed signs of weakness in several

10 See Federal Reserve Statistical Release, Charge-off and Delinquency Rates on Loans and Leases at Commercial Banks.
11 See Deutsche Bank Research, Refinanzierungsrisiken bei Gewerbeimmobiliendarlehen [Refinancing risks for commercial mortgage loans], 23 April 2010, p 5.
12 When measuring their commercial mortgage portfolio, banks generally look only at the loan book.

Box 4.1

LIQUIDITY AND STABILISATION OF OPEN-END REAL ESTATE FUNDS IN GERMANY

Open-end real estate funds engage in liquidity transformation on a sizeable scale. In this sense, they fulfil one of the classic banking functions, without directly being a bank subject to monitoring by the banking supervisory authorities. However, they are regulated in Germany by the Investment Act (*Investmentgesetz*).

Their business model of a poorly fungible investment in the long term coupled with the obligation to redeem investor shares at any time makes them vulnerable to fluctuations in liquidity preferences, which particularly in times of crisis can rise sharply. This encourages herding behaviour, as does the anticipation of possible impairments in forthcoming reassessments of the value of a real estate portfolio.

Large-scale withdrawals, particularly by institutional investors, on the heels of the Lehman Brothers insolvency forced several German real estate funds to temporarily suspend the redemption of share units. This suspension limited a stronger outflow of funds in the ensuing years. Pursuant to section 81 of the Investment Act, however, this measure can only be imposed for a limited duration of two years at the most.

Whilst the liquidity situation has meanwhile allowed some real estate funds to resume the repurchase of share units and normal business activity, three real estate funds have recently had to announce the liquidation of their portfolio. A stronger market segmentation is thus becoming apparent. Funds with a preponderance of institutional investors are particularly susceptible to changes in liquidity preference. In contrast, funds with a broader distribution network and a stronger leaning towards retail investors have fared better.

Future new arrangements for the redemption of share units are likely to have a stabilising effect on real estate funds and investors alike. The government's draft Act to reinforce investor protection and improve the functioning of the capital market (*Gesetz zur Stärkung des Anlegerschutzes und Verbesserung der Funktionsfähigkeit des Kapitalmarktes*) includes *inter alia* a minimum holding period of two years; the aim is to align the fungibility of share units more closely with the liquidity situation of real estate funds. In this way, individual investors will be better protected against the negative repercussions of short-term capital withdrawals by other investors.

Some funds are discussing a possible conversion into REITS in order to defuse the liquidity problem. Their share units could then be traded on a secondary market like the stock exchange. Their yield would consequently fluctuate like that of corporate stocks.

The risks to financial stability emanating from open-end real estate funds currently appear limited overall. The true real estate price risk does not lie with the funds in their function as intermediaries, but rather with the investors. In addition, the affected funds have three years' time in which to realise the assets of their real estate portfolio. Pressure to sell will thus not bear down on them immediately. However, there is undoubtedly a reputation risk for banks which own companies that manage open-end real estate funds.

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important housing markets have clearly demonstrated that feedback loops between the financial markets and the economic environment remain a major risk factor for financial intermediaries for the foreseeable future.

Excesses in several foreign real estate markets …

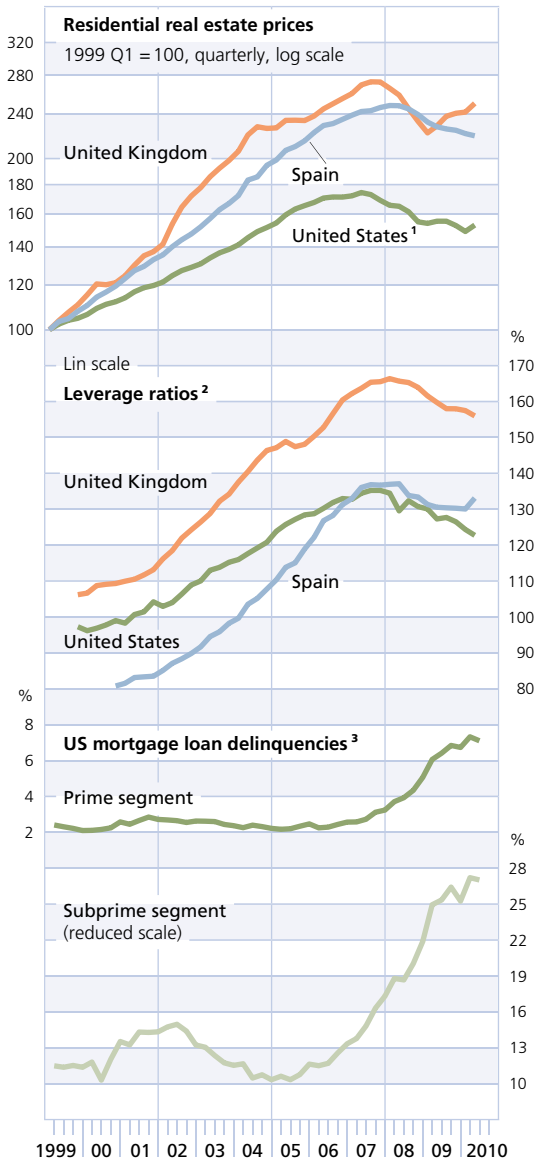
Against this backdrop, there are vulnerabilities, in particular vis-à-vis the United States, the United Kingdom, Spain and Ireland. Excesses on the domestic real estate markets of these countries have resulted in corrections (see Chart 4.10). However, the price adjustment achieved to date, the volume of problematic and defaulting loans and the resilience of the banking sector differ considerably from country to country.

… require many years of adjustments

In the United States, the housing market has already undergone a significant adjustment process. While house prices have fallen by more than 13% from their high in the spring of 2007 according to the broad FHFA index, the Case-Shiller index, which focuses more on the metropolitan areas that were particularly affected by the preceding boom and had peaked a year previously, suggests that house prices declined by as much as 30%. Notwithstanding the already sharp correction, considerable credit risk still emanates from this housing market segment. For instance, it is not clear whether the slight stabilisation of the housing market observed at the beginning of the year will continue once tax incentives are phased out – and in a still difficult economic setting. Loan delinquencies in the subprime sector peaked at 27% in June 2010, and a record of 7% was also recorded in the prime segment. At the same time, foreclosure rates in the two segments stood at 15% and 3% respectively. The prospects of a speedy recovery are damp-

Chart 4.10

SITUATION IN THE HOUSEHOLD SECTOR



Sources: Banco de España, BIS, Bloomberg, Eurostat, Federal Reserve, FHFA, Ministerio de Vivienda, Nationwide Building Society and Bundesbank calculations. — **1** Purchase-Only Index. — **2** Debt as a percentage of disposable income. — **3** Mortgage loans that are past due by at least 30 days as a percentage of outstanding residential real estate loans (number) in the respective segment.

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ened by considerable excess supply of housing. Many households' financial situation is difficult, partly because unemployment is running at close to 10% and many have seen the market value of their homes eroded sharply. The percentage of US homeowners suffering negative equity is roughly a quarter. Household leverage had risen from just under 100% of disposable income in 2000 to well over 130% in 2007. Since then, debt has been reduced, but only slowly (see Chart 4.10).

Spanish households remain financially vulnerable

In Spain, price adjustments on the real estate market started relatively late. The prices of residential properties, where there is considerable excess supply, have dropped by 12% from the high they marked at the beginning of 2008. Observers expect prices to fall significantly further. Demand is unlikely to recover anytime soon as Spanish households' financial vulnerability may be regarded as very high given leverage of more than 130% of disposable income and an unemployment rate exceeding 20%.

High household leverage in the United Kingdom

In the United Kingdom, a house price recovery set in at the beginning of 2009 following a massive correction; recently, however, prices have weakened. Further developments are fraught with a good deal of uncertainty. Unlike in the United States, residential property is in fairly short supply, which buoys prices. Unemployment of almost 8% at last count, which was significantly higher than before the crisis, and drastic austerity measures in the public sector are having a negative impact on incomes and make a sharp recovery unlikely, however. UK households are also very heavily leveraged – in 2008, debt as a percentage of disposable income peaked at more than 160%. There has been no significant deleveraging since then, which means that households remain very susceptible to a drop in income and capital or interest rate hikes.[13] To date, however, a combination of low interest rates and banks' willingness to defer payments or reschedule debt has limited credit default rates.

Securitisations: signs of stabilisation limited to sub-segments

The considerable deterioration in the credit quality of securitisations since mid-2007 is in part a reflection of the complacency with which loans were granted ahead of the financial crisis. Risk was passed on to other investors via the international securitisation markets. This resulted in high write-downs in the global financial system.

Securitised consumer and mortgage loans stabilise at low level

However, there are increasing signs of a stabilisation in individual sectors. In particular, delinquency and default rates on asset backed securities (ABS) collateralised by consumer loans fell, in some cases significantly, from their highs of the previous year. The situation is less clear-cut for residential mortgage backed securities (RMBS). While the downward trend in the credit quality of Spanish and UK RMBS has eased perceptibly, delinquencies by prime mortgage borrowers in the United States rose further – despite government support measures. Residential mortgage backed securities continue to feel the effects of high unemployment worldwide and stagnating real estate prices. Moreover, an unexpectedly sharp dete-

13 See Bank of England, Financial Stability Report, June 2010, pp 29-30.

rioration in the growth outlook of the countries in question could hurt mortgage borrowers' ability to service their debt.

Difficult situation in the area of CMBS and CLOs …

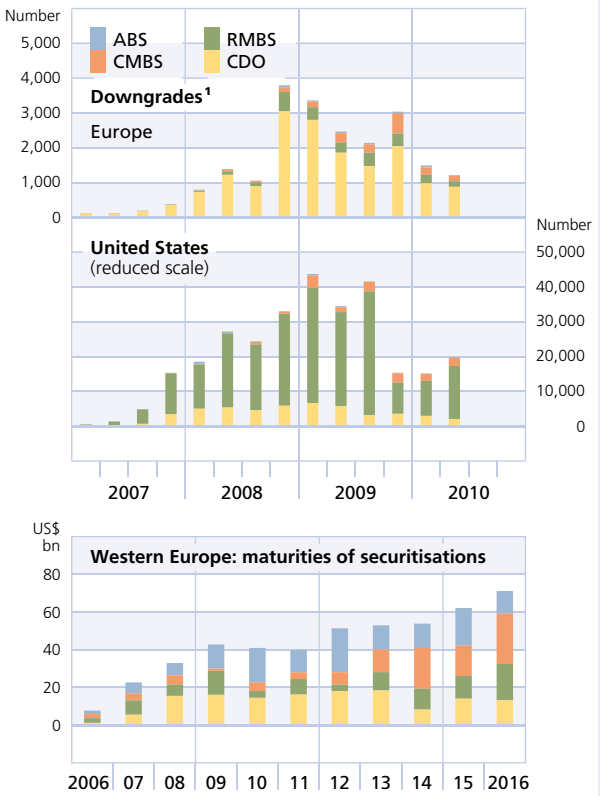
The situation for CMBS and collateralised loan obligations (CLOs), which were hit noticeably later by the effects of the financial crisis, remains tense. Delinquencies in the CMBS segment have continued to rise of late, and rating downgrades remained fairly high in the first half of 2010 (see Chart 4.11). Moreover, the percentage of severely distressed corporate loans in CLO portfolios fell only slightly.

… could worsen further over the next few years

Both product classes will face a considerable increase in refinancing needs over the next few years (see Chart 4.11). By 2014, more than US$200 billion worth of CMBS will mature worldwide; maturing CLOs will rise by a total of 60% over the next three years. The refinancing situation will be further aggravated by the slow momentum on the primary markets. In addition, the percentage of maturing loans securitised between 2005 and 2007, whose credit quality has come under particular pressure, will increase over the next few years. Against this backdrop, the risk of significantly rising default rates remains virulent.

Chart 4.11

SECURITISATION MARKETS



Sources: Dealogic, ESF and Bundesbank calculations. — **1** Sum of downgrades (number) by rating agencies Fitch, Moody's and S&P.

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German banks still have large holdings of structured products …

German banks' portfolios still contain substantial holdings of structured products. Looking at all banks in aggregate, the relative composition of risk positions has hardly changed since the end of 2009. RMBS still represented the largest single item as at end-June 2010 with a book value of roughly €82 billion (see Chart 4.12).[14] In addition, the portfolios contain mainly collateralised debt obligations (CDOs) – approximately €62 billion across the various sub-categories – and securitised student loans (just under €34 billion) as well as CMBS (some €22 billion).

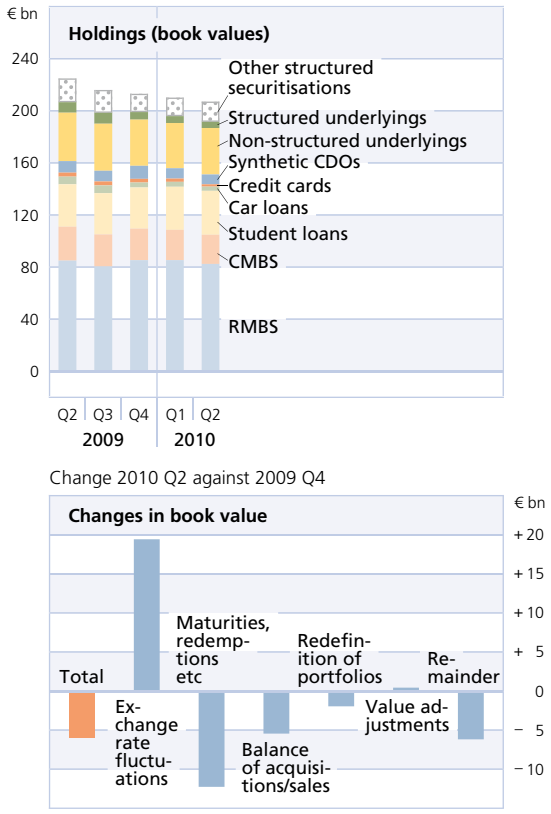
… but tendency points down

The overall volume of the portfolios has fallen slightly in recent quarters, which can be attributed to several, in some cases divergent, effects. Since the beginning of the year, this

14 The data reflect the holdings of 17 large German banks.

Chart 4.12

GERMAN BANKS' PORTFOLIOS IN SECURITISATION MARKETS



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has constituted in the main maturities, redemptions and amortisations – as debt instruments expired they were not replaced in full by new acquisitions. This tendency is likely to continue for the foreseeable future, which is reflected in the average expected weighted maturities of the tranches held. The transfer of parts of the ABS portfolios to the newly established resolution agencies or bad banks has also lowered holdings (-€3.8 billion). To date, this development has been counteracted mainly by exchange rate effects. These effects almost offset the reduction in the value of holdings as a result of maturing securities in the first half of 2010 (see Chart 4.12).

Trading activities have increased slightly

As a result of the slight recovery tendencies witnessed in several market segments in recent months, trading activity, too, has picked up somewhat. The net effect on overall holdings is not inconsiderable and also masks a good deal of heterogeneity at the individual bank level. However, this revival of market activity appears, to date, still to be limited to relatively highly rated instruments. The percentage of very highly rated paper in overall holdings has, however, declined significantly over the past six months.[15]

Upturn benefits domestic credit quality

In the current year, German banks' external lending activities played a larger part in risk-oriented analysis. Nevertheless, domestic loans remained most important in terms of quantity, accounting for a 78½% share of the overall credit portfolio. In the meantime, thanks to the sound position in which enterprises and households found themselves at the onset of the financial and economic crisis, and to the recent economic recovery, domestic credit risk is – considering the severity of the preceding downturn – showing signs of trends that are beneficial to the risk situation.

15 The percentage of AAA-rated tranches dropped from around 63% at the end of 2009 to roughly 54% at the end of June 2010.

Enterprises prove to be robust

Loans to enterprises remain highly important

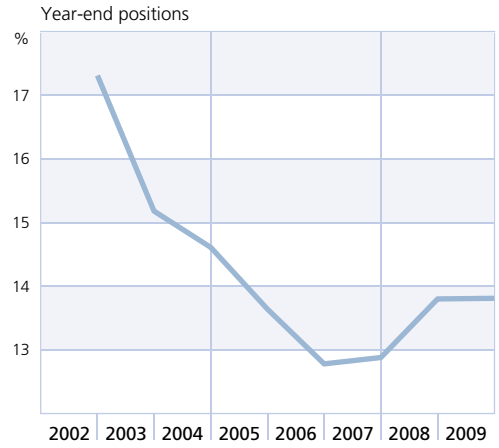
Loans to enterprises accounted for 40½% of total domestic lending (excluding government and interbank loans) in mid-2010. With that, despite the financial and economic crisis, their share almost matched that of two years ago. Prior to the last upswing, in 2005, with its strong investment momentum, the corresponding figure was only 36%.

Concentration risks as low as in previous year

Structural indicators that are important from both a micro and a macroprudential viewpoint include the single-borrower concentration of the large German banks. These show no changes in concentration risk compared with the previous year. As an average for this category of banks, loans to their respective 50 largest borrowers accounted for almost 14% of their volume of loans to non-banks (see Chart 4.13).

Chart 4.13

SHARE OF LOANS TO 50 LARGEST BORROWERS*



***** Measured against the loan volume of 16 major German banks with an international focus to domestic and foreign borrowers.

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Rise in corporate debt …

In 2009, corporate leverage (see Chart 4.14) rose from 162% of gross value added to just under 172% year-on-year, exceeding its high of 2002. This sharp increase is primarily the result of the pronounced, recession-induced decline in the gross value added of non-financial corporations by roughly 7%. Debt in absolute terms was slightly below the previous year's figure.

… not a sign of excessive debt momentum

From a financial stability perspective, this development needs to be assessed differently than, say, the situation during the cyclical high at the turn of the millennium. Corporate debt rose sharply then, too. However, the increase at that time was driven by strong upward debt momentum paired with substantial growth in gross value added. Whereas this can be interpreted in retrospect as an indication that the New Economy boom had led to excessive borrowing, paving the way for a subsequent impairment of financial stability, the current increase in corporate debt is merely a reaction to the severe slump in economic activity. Once gross value added significantly gathers pace as the economy recovers, debt growth is likely to decline again.

Rise in business insolvencies

Moreover, measured in terms of the steep decline in gross domestic product (GDP), there were relatively few business insolvencies (see Chart 4.15). In part, this is due to the favourable situation of enterprises when they entered the financial and economic crisis.[16] In 2009, the

16 See Deutsche Bundesbank, Financial Stability Review 2009, p 44.

Chart 4.14

FINANCIAL INDICATORS OF GERMAN ENTERPRISES

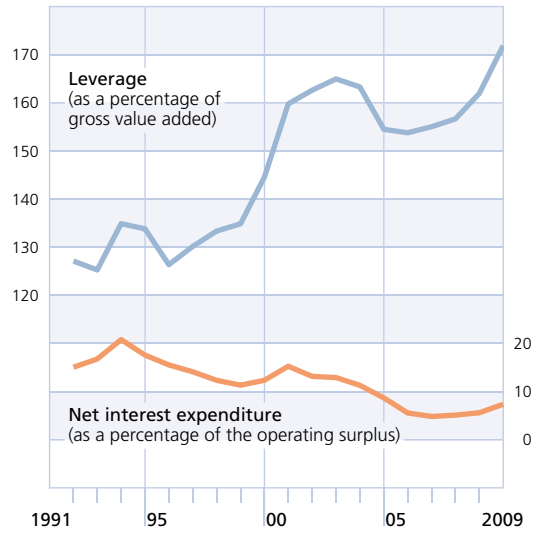
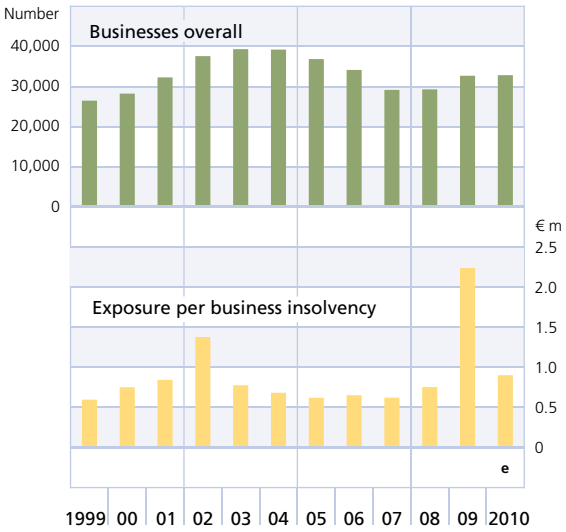


Chart 4.15

BUSINESS INSOLVENCIES



Sources: Federal Statistical Office and Bundesbank calculations.

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number of insolvencies was 11½% higher than the previous year's level. Although this was rather a sharp increase, it was less pronounced than in 2002, when economic output merely stagnated. Given that business insolvencies lag the economic cycle, a further rise is to be expected this year. In the first eight months, insolvencies were just less than ½% up on the year-earlier period.

Low-interest rate environment can prevent exit of uncompetitive enterprises

Because very few enterprises – measured in terms of the point in the cycle – exited the market last year, insolvencies did little to lower overall debt in the corporate sector. Seen in this light, the higher level of indebtedness expresses a reduced materialisation of risks. However, the medium-term risk situation of the corporate sector and, therefore, of the banks' credit book could also be negatively impacted if, in a low-interest rate environment, the market exit of enterprises which are uncompetitive in the long term were delayed. In such a case, exposures with heightened risks, which would have to be written down sooner or later, would remain on banks' balance sheets.

Interest burden as a percentage of operating surplus higher

According to the national accounts statistics, the corporate sector's net interest expenditure in 2009 was just under 7½% of the operating surplus (see Chart 4.14), compared with just over 5½% in 2008. This is the result, on the one hand, of higher net interest payments by enterprises. On the other hand, the operating surplus in the crisis-hit year of 2009 was significantly below the previous year's level, which is a reflection – as with value added – of the sharp slump in overall economic activity in the meantime.

After severe slump in group operating results, improvement since mid-2009

Both the impact of the financial and economic crisis on large listed non-financial corporations' financial situation and the recovery process that followed are reflected in their quarterly financial accounts, too. Measured by turnover, the operating result of nearly 70 DAX and MDAX-listed groups fell on average from just over 9% before the crisis to just over 5% in the second quarter of 2009. Since mid-2009, consolidated operating results have picked up again substantially. The financial situation of small and medium-sized enterprises (SMEs) probably did not deteriorate as strongly during the crisis as that of large enterprises, not least because many small firms are less integrated into the global economy than most big corporations.

Banks' perception of risk also improved

A similar picture of the corporate sector's financial situation is also reflected in the results of the Bank Lending Survey, the Eurosystem's quarterly survey among bank managers (see Chart 4.16), which reveal that, in 2009 in particular, the increased perception of risk was the driving factor behind the tightening of credit standards in corporate banking. This can be attributed to the rise in economic risks and in industry and firm-specific risks. However, the risk assessment for large enterprises was in some cases more strongly affected than that for SMEs, evidently because large enterprises were more strongly drawn into the maelstrom of the global recession. In the wake of the economic recovery, banks' perception of risk for loans to enterprises improved again of late.

Chart 4.16

PERCEPTION OF RISK* FOR LOANS TO ENTERPRISES

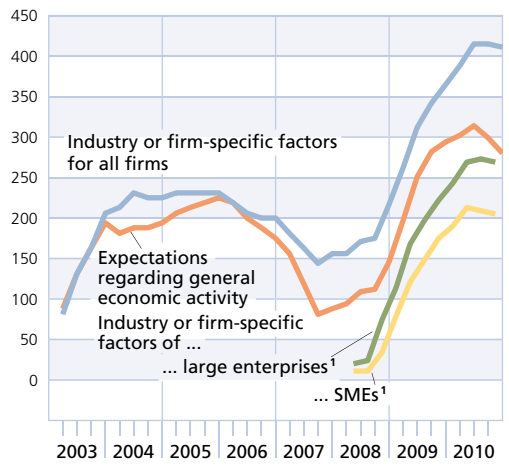
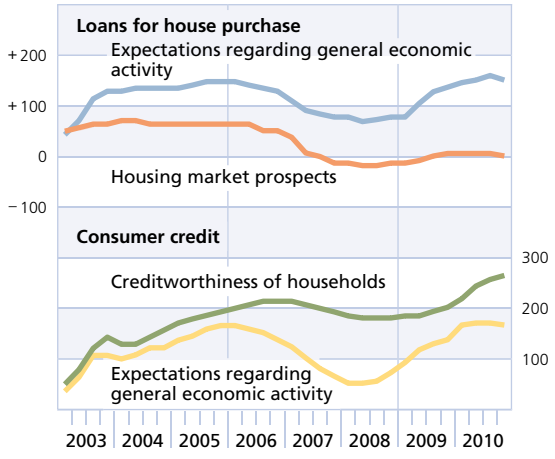


Chart 4.17

PERCEPTION OF RISK* FOR LOANS TO HOUSEHOLDS



Source: Deutsche Bundesbank, Bank Lending Survey. — * Cumulative balances of the sum of the responses "tightened considerably" and "tightened somewhat" and the sum of the responses "eased somewhat" and "eased considerably" to the question "Over the past three months, how have the following factors affected your bank's credit standards?". — **1** Levels not comparable with results for all enterprises.

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Chart 4.18

HOUSEHOLDS' FINANCIAL ASSETS AND LEVERAGE

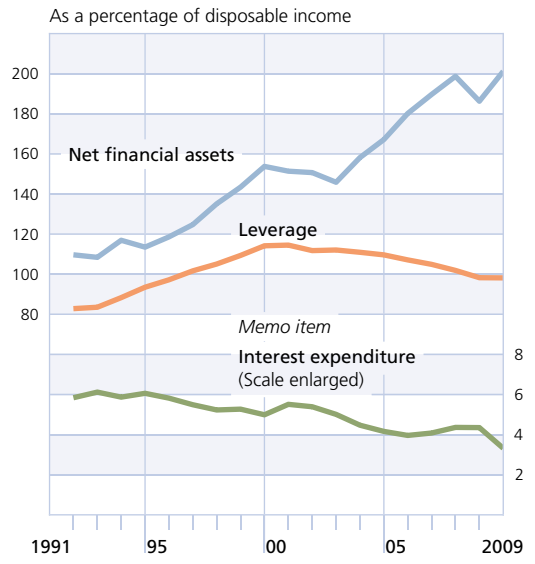
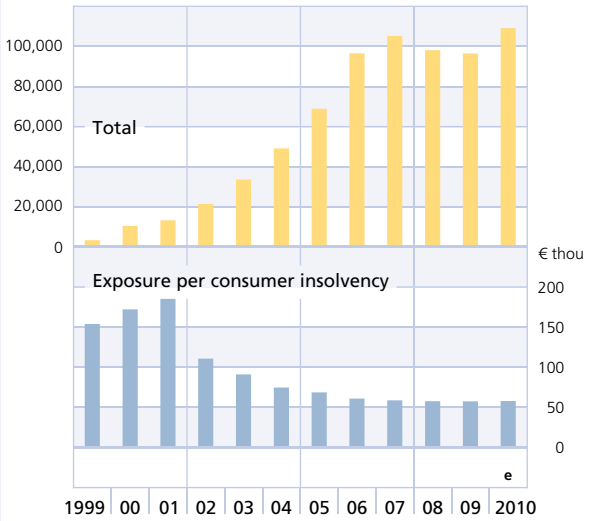


Chart 4.19

CONSUMER INSOLVENCIES*



* Sources: Federal Statistical Office and Bundesbank calculations.

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Households: financial situation remains relaxed

Household debt unchanged

At 43%, loans to households accounted for the largest share of domestic lending (excluding loans to government and interbank loans) as at mid-2010. Of this figure, 33% is for housing construction. Interest rates for such loans are largely fixed for a longer term. Household leverage was virtually unchanged at 98% of disposable income (see Chart 4.18).

Interest burden lower

From 4.4% in 2008, interest expenditure dropped to 3.3% of disposable income in 2009 (see Chart 4.18). Moreover, the financial situation of households benefited from the fact that the labour market remained fairly robust despite the sharp decline in GDP. However, households' disposable income according to the final expenditure concept used in the national accounts was down 1% in 2009 due to the recession.

Financial assets back at pre-crisis levels

Households' financial assets as a percentage of disposable income rose strongly in 2009, from 186% to 201%, virtually offsetting the decline during the financial crisis. The main reason for this was the favourable development in asset prices.

More restrictive credit standards in the wake of the crisis

In the Bank Lending Survey (see Chart 4.17), banks also provide information on the extent to which their credit standards for loans to households for house purchase were affected by the perception of risk relating to expectations regarding general economic activity and housing market prospects. The respondent banks reported that general economic risks had contributed to a tightening of credit standards since mid-2009. By contrast, banks'

perception of risk relating to housing market prospects scarcely influenced their credit standards during the crisis years in Germany.

Consumer credit risks have cyclical lag

Not until the second half of 2009 did the respondent banks consider households' creditworthiness to be the factor that drove the tightening of credit standards in the consumer loans segment. Thus, there was a marked increase in consumer insolvencies in the first eight months of this year. During this period, they were almost 11% up on the year. Apparently, many households of borderline creditworthiness were able to hold up initially and fell into private insolvency only recently (see Chart 4.19).

German real estate market free of price exaggerations

German real estate market free of exaggerations

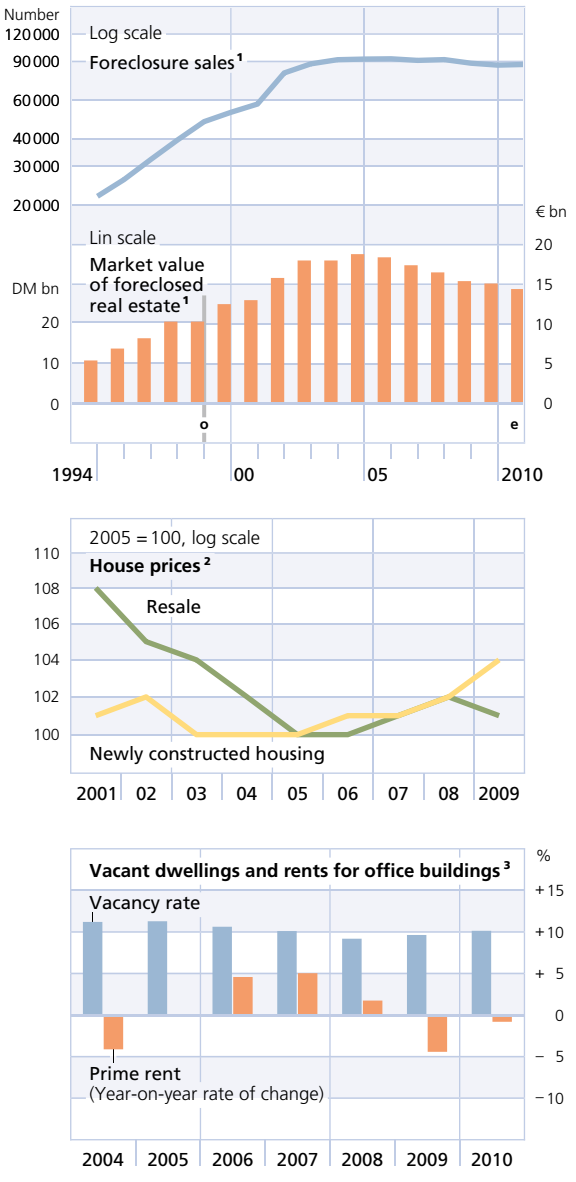
The German real estate market (see Chart 4.20) still appears to be free of price exaggerations. Credit risks in German commercial real estate and residential housing are contained. In 2008 and 2009, commercial property vacancies trended upwards and prime rents declined. However, this ought not to pose any great threat to financial stability, all the more as the situation is likely to relax as the incipient economic upswing unfolds.

German housing market stable

According to Bundesbank calculations, in residential housing, prices for newly constructed housing and properties for resale recently moved in opposite directions. On the whole, however, movement in prices was limited. The market value of housing sold in foreclosure sales declined slightly again in trend terms in 2009. The housing market in Germany is therefore stable.

Chart 4.20

REAL ESTATE MARKET IN GERMANY



1 Source: Argetra GmbH, Ratingen. — **2** Source: Bundesbank calculations based on BulwienGesa AG data for owner-occupied apartments and terraced houses. — **3** Weighted office area average in Berlin, Düsseldorf, Frankfurt am Main, Hamburg, Munich, Wiesbaden. Sources: Jones LangLasalle and Bundesbank calculations. — **o** Up to 1998, figures in D-Mark.

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Increases and differences in resilience in the German financial system

German banks' resilience has improved since the second quarter of 2009. Along with a slight calming of the risk situation, the stability of the German banking system has increased. The economic upswing as well as favourable refinancing conditions have paved the way for stable income in operating business. The credit cycle appears to have passed its nadir. Interest rate business will probably continue to contribute significantly to profits, though margins from maturity transformation are likely to shrink. In addition, German banks have successfully reduced their leverage ratios, although they have recently gone back up somewhat. On the whole, they appear to be well capitalised, even under stress conditions. Nonetheless, banks should use the favourable earnings situation to further strengthen their capital base. German insurance companies have benefited from favourable economic driving forces as well. They have increased their premium revenue and investment income, in some cases substantially. However, insurers must remain vigilant towards interest rate risk. A protracted phase of low interest rates, in particular, could lead to an erosion of earnings and could impair the long-term resilience of life insurance companies.

Banks using cyclical recovery

High default rates on loans in the 2008 Q4-2009 Q1 period

Countervailing factors have been affecting banks' resilience since 2009. The severe recession initially left deep marks in banks' balance sheets. High credit default rates, in particular, strained banks' capital adequacy. At the same time, institutions increasingly benefited from the emerging recovery in the financial markets and favourable refinancing conditions. The steep yield curve offered stronger incentives for maturity transformation.

Cyclical recovery is boosting operating business

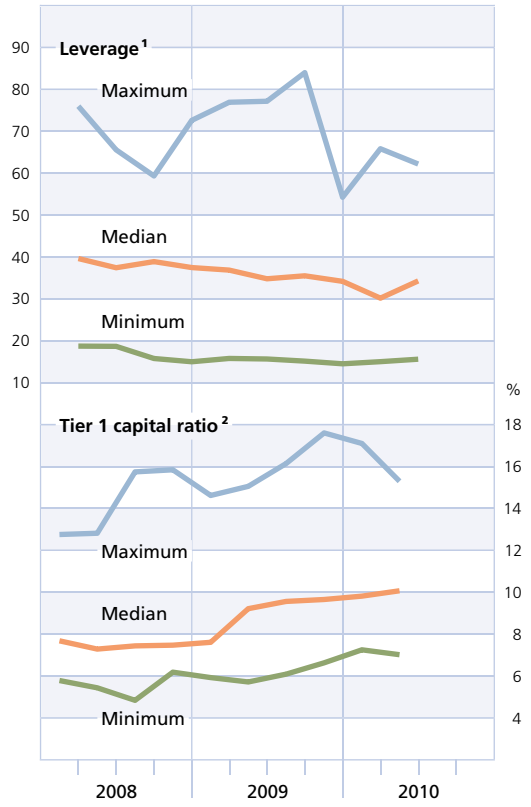
Alongside persistently low refinancing costs, the cyclical upturn this year has led to a revival in operating business. With a certain time-lag, this also appears to have carried over to lending, which had been in the doldrums thus far. Banks are likely to use borrowers' improved creditworthiness to further reduce their risk provisioning and to benefit from falling capital requirements. The favourable outlook in domestic business, therefore, points to a further strengthening of the German banking system's resilience.

New risks emanating from the international environment

By contrast, risks emanating from the international environment have recently risen. An increasingly volatile market environment could impair, above all, the profitability of banks with an international focus. In addition, interest rate risk is elevated. A look at the insurance sector shows that a sustained low-interest rate envi-

Chart 5.1

LEVERAGE AND TIER 1 CAPITAL*



* Covers 15 major German banks with an international focus. — **1** Total assets in relation to tier 1 capital. — **2** Tier 1 capital in relation to risk-weighted assets.

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ronment is not without risks. Long-run interest rates are a decisive factor in the investment of premium revenue. An erosion of interest income makes it more difficult for insurers to generate dividends that exceed the guaranteed return. There is also the danger that, in this situation, some insurance companies will invest increasingly in higher-yielding – but also riskier – instruments in order to fulfil their contractually agreed obligations.

Contracting balance sheets and higher tier 1 capital ratios

Lower leverage ratios

The leverage ratios of large German banks have fallen significantly over the past few years.[1] Average total assets are now about 36 times the value of tier 1 capital, or four points less than in early 2008. German banks' leverage ratios remain higher than those of large foreign banks, although the gap has narrowed in the past two years. However, it must be borne in mind that differences in leverage ratios may also be attributable to variations in accounting standards. In parallel with this development, the large German banks increased their average tier 1 capital ratio – in line with both a visible global trend and higher market expectations – by 2.4 percentage points to 10.4% between the first quarter of 2008 and the second quarter of 2010 (see Chart 5.1).[2]

Significant rise in tier 1 capital

From the beginning of 2008 to mid-2010, the highest-quality components of tier 1 capital (no deductions) rose by a net €32.6 billion. The paid-in capital was supplemented by €16½ billion in capital increases and €17.8 billion in deposits by silent partners. After suffering losses in 2008 and 2009, banks were able to retain earnings for the first time again in 2010. The corresponding value of disclosed reserves (which is largely determined by balance sheet losses and gains) thus once more made a positive contribution (of €1.9 billion net) to banks' tier 1 capital position. Government aid came to around €45 billion altogether, or around 2.8

1 This section looks at 15 major German banks with an international focus.
2 The Basel II capital framework was applied with binding effect for all banks for the first time in the first quarter of 2008.

percentage points of the current tier 1 capital ratio,[3] and thus considerably helped to stabilise the banking system. Following a period of heavy capital inflows, the overall pace of capital increase has subsided since the beginning of 2010 (see Chart 5.2). Deconsolidation measures and the outsourcing of business activities – partly as a result of conditions imposed by the EU – played a role in this development.

Reduction in business volume during the crisis

The improvement of banks' leverage and capital ratios was aided by declining business volumes. Share portfolios were cut back particularly sharply, with valuation adjustments also playing a role. Although some institutions curbed their lending, on the whole the loan portfolios of the majority of institutions proved to be stable. The feared credit crunch has not materialised.

Aggregate total assets back on the rise since 2010 …

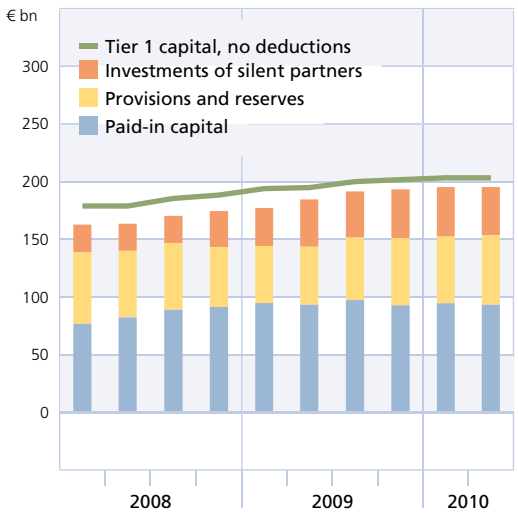
Since the beginning of 2010, developments in German banks' total assets have been fairly mixed. Some banks feel compelled to reduce the size of their balance sheets even further to comply with conditions imposed by the EU. Other institutions are expanding their business volumes again owing to the economic upswing. Total assets saw average growth of 10% up to mid-2010 but still remain below their levels of 2008. In terms of financial stability, the expansion of business volumes does not appear to present any problems, as it is not associated with the incurrence of new risks or any increase in risk-weighted assets (see Chart 5.3).

… but risk-weighted assets stable owing to restructuring …

Portfolio shifts are part of the reason why risk has remained limited amidst growing business volumes. For instance, the relative percentage of exposures to non-residents – especially interbank exposures – has fallen.[4] By contrast, the share of exposures to governments and the public sector has risen quite significantly on the year (see Chart 5.4). However, this is due in part to government guarantees for assets which were offloaded under restructuring programmes, and were thus not the result of active portfolio shifts.

Chart 5.2

KEY COMPONENTS OF TIER 1 CAPITAL



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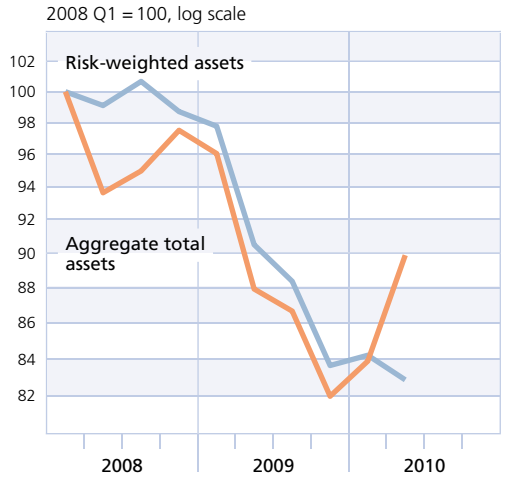
… and falling risk weights

The trend decline in risk weights also had a stabilising effect. The fall in risk weights in the sovereign portfolio since the beginning of 2010 is probably attributable to EU guarantees and Eurosystem buyback programmes follow-

3 This aid comprised crisis-related capital injections by the federal states in their role as shareholders (€16.2 billion) and assistance from the Federal Government through SoFFin (€28.9 billion).
4 For more information, see also Credit risk between legacy problems and economic recovery on pp 59-77.

Chart 5.3

CHANGE IN TOTAL ASSETS AND RISK-WEIGHTED ASSETS*



* Covers 15 major German banks with an international focus.

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ing on the heels of sharp rises in the risk profile in the preceding quarters. A noteworthy development is the distinct reduction in the probabilities of default (PDs) on exposures to banks in the first quarter of 2010, which reflects the recovery in the interbank market. The renewed increase in the second quarter of 2010, by contrast, probably owes something to rising doubts about the soundness of some EU member states' government finances and potential repercussions for the financial system. After growing distinctly in 2009, corporate PDs have largely stabilised.[5] Retail exposures (consumer loans and mortgage loans) have been evidencing a continuous decline in the median PD since as early as the second quarter of 2009. This exposure class was hardly affected by the recession in 2009.

Capital base resilient to stress

Stress scenarios simulate rating downgrade

The minimum required capital is the lower limit for the regulatory capital to be held by banks. In addition, banks maintain capital buffers so that they are sufficiently capitalised to withstand a crisis. Capital stress tests can be used to assess whether the banks' capital base is also adequate under an assumed stress scenario. The scenario analysis below simulates a rating downgrade of bank exposures by one notch in a moderate stress scenario and a downgrade by two notches in a severe stress scenario. Studies of banks' internal rating systems show that this roughly corresponds to an increase in PDs of 60% and 156%, respectively.[6]

Capital ratios robust on the whole

Taking the figures for the second quarter of 2010, the moderate stress scenario would result in a reduction of 1.2 percentage points in the tier 1 capital ratio on average. In the severe stress scenario, the decline would be double that amount. In both scenarios, all of the institutions under review would be able to fulfil the current minimum capital requirements, which call for a tier 1 capital ratio of at least 4%. Taking into consideration that the tier 1 capital ratio demanded by the markets is now closer to 6%, one of the banks would not meet the required level in the moderate stress scenario; this number would rise to two in the severe stress scenario. The results thus show that

5 For more information, see also Credit risk between legacy problems and economic recovery on pp 59-77.
6 In these analyses, the impact of the change in PDs is twofold. Firstly, risk-weighted assets increase in the numerator of the capital ratio. Secondly, the rise in expected losses lowers the tier 1 capital – either directly, through additional loss provisions that need to be build up, or indirectly, through capital deduction resulting from the comparison of expected losses and loan loss provisions which is required under Basel II.

banks, on the whole, have made significant progress towards improving their capital base; however, in some cases capital accumulation must be stepped up.

Credit cooperatives and savings banks adequately capitalised

Leverage ratio traditionally low among credit cooperatives and savings banks

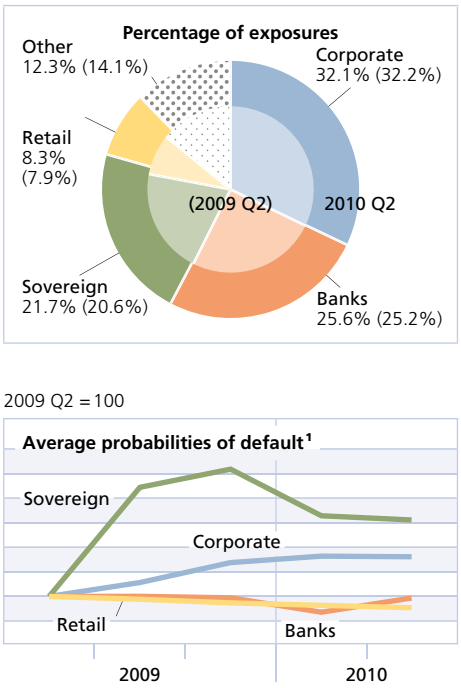
Credit cooperatives and savings banks have shown a high degree of continuity in their balance sheet structure and capital base. The leverage ratios of these two types of banks remained largely unchanged during the financial crisis. Total assets and capital have been growing continuously and *in tandem*. Both credit cooperatives and savings banks have, for a long time, had an average leverage ratio – calculated as total assets in relation to balance sheet capital – of 20 and have, therefore, had no reason to reduce their balance sheets.

Stable regulatory capital base for savings banks and credit cooperatives

The regulatory capital base for savings banks and credit cooperatives has proven to be continuously stable. The sum and composition of regulatory capital have remained largely unchanged. Roughly two-thirds are tier 1 capital. In the second quarter of 2010, both groups of institutions have added to their reserves and, on the whole, slightly increased their high-quality capital components (savings banks by 3.5%, credit cooperatives by 5.3%). The aggregate tier 1 capital ratios (savings banks: 9.8%, credit cooperatives: 9.9%) are testimony to the solid capital base of both savings banks and credit cooperatives.

Chart 5.4

EXPOSURE CLASSES AS A PERCENTAGE OF TOTAL EXPOSURES AND AVERAGE PROBABILITIES OF DEFAULT*



***** Covers 15 major German banks with an international focus. — **1** Impaired exposures which are regarded under Basel II as being in default are assigned a probability of default of 100%.

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Profitability buoyant

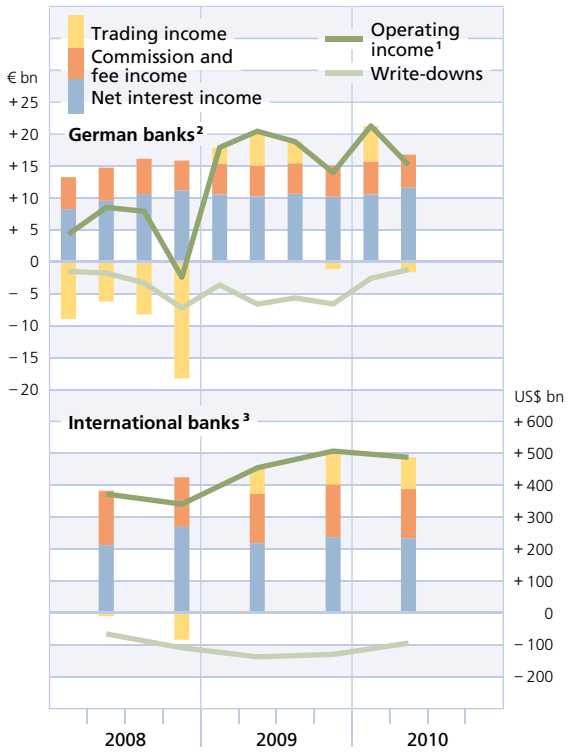
Improvement in earnings performance since 2009

The most severe recession in post-war history and the rapid recovery have determined economic events and thus the development of international banks' profitability.[7] Following considerable losses in 2008, the trading business of the major German banks developed

7 The reference group under review comprises 20 major international banks.

Chart 5.5

COMPONENTS OF OPERATING INCOME



1 Sum of net interest income, commission and fee income, and trading income. — **2** Covers 13 major German banks with an international focus. — **3** Covers 20 major international banks.

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positively in 2009, despite the recession (see Chart 5.5).[8] Proprietary trading benefited in particular from a temporary reduction in risk in money and capital markets, which was fostered by the global government support measures for the financial sector. It must be borne in mind, however, that the reclassification option for non-derivative financial assets adopted at the end of 2008 by the International Accounting Standards Board (IASB) protected banks from the otherwise mandatory realisation of losses according to fair value accounting methods. Net interest income, meanwhile, benefited from low refinancing costs and a steep yield curve. By contrast, commission and fee income fell slightly in 2009. However, the overall favourable trend in operating income was offset by a considerable rise in loan losses, albeit to a lesser extent than expected given the severity of the economic downturn.

Trading business volatile as of late

In 2010, these trends reversed themselves somewhat. Due to a renewed rise in uncertainty in the financial markets, the volatility of the trading income of the major German banks increased (see Chart 5.6). The gap in individual institutions' trading income widened again, too. While stock and credit markets recorded clear gains in 2009, lately markets have tended to move sideways amidst increasing volatility. Some German banks were particularly affected by the escalations in individual euro-area countries.[9] Hence, German banks' recent aggregate trading results underperformed by international standards. In the meantime, positive revaluations of liability-side positions in trading business had a calming effect.

Interest rate business increasingly heterogeneous

Owing to persistently low short-term interest rates and the favourable trend in the volume of customer deposits, interest rate business continued to be a major source of income. At the current end, sustained margin pressure caused by increasing competition for customers has begun to put a strain on the net interest income of some German banks under review.

8 The following remarks refer to 13 major German banks with an international focus.
9 Since German banks are relatively active in the affected regions compared with banks from other countries, the turmoil in those regions is affecting the banks' trading book positions accordingly.

Nevertheless, the interest margin, on aggregate, has risen by nearly one-half since early 2008 (see Chart 5.7). At a current average value of 0.8%, it is closing the gap to the international average of 1.4%.

Improvement in commission and fee business

Demand for bank services recovered due to the favourable economic trend in Germany, enabling commission and fee income to rebound from its decline in 2009. Generally higher returns from customer credit and securities transactions were contributing factors. The large German banks – especially those active in investment banking – generated high commission and fee revenues from underwriting activities in the first half of 2010. The global volumes of issues and transactions have remained well below their pre-crisis levels. Nevertheless, with the gradual recovery in global capital markets the outlook for commission and fee income appears to be stable (see Chart 5.8). The overall positive picture, however, is dampened by developments at some banks, which experienced somewhat lower commission and fee business. This is particularly true for banks currently under restructuring. In some of those cases, expenses for guarantees granted during the financial crisis meant an additional strain on income.

Decline in write-downs

After high loan losses in 2009, a decline in risk provisioning led to a favourable trend in write-downs in the first half of 2010. The major banks thus seem to have passed the bottom of the credit cycle.[10] However, this statement is not unconditionally true. Whereas some of the

10 However, it cannot be ruled out that write-downs may once again rise slightly in the fourth quarter of 2010 since the need for write-downs tends to peak in the last quarter of the year owing to audits of annual accounts.

Chart 5.6

TRADING INCOME AND STOCK MARKETS

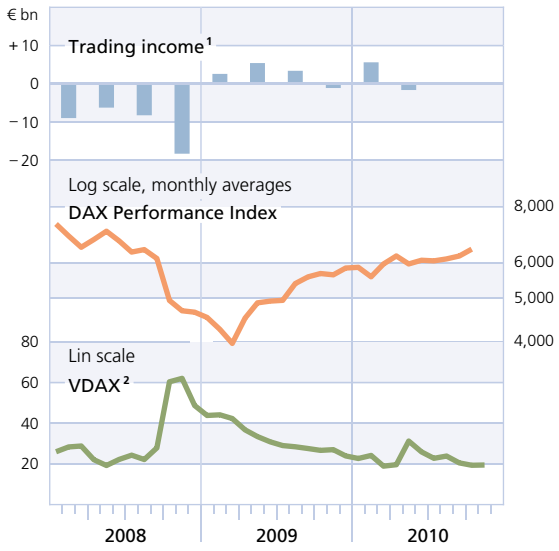
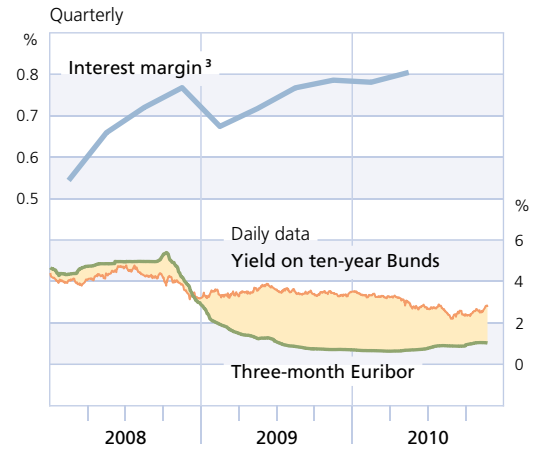


Chart 5.7

INTEREST MARGIN AND YIELD CURVE



Sources: Bloomberg and Bundesbank calculations. — **1** Covers 13 major German banks with an international focus. — **2** DAX Volatility Index. — **3** Net interest income in relation to total assets. Covers 13 major German banks with an international focus.

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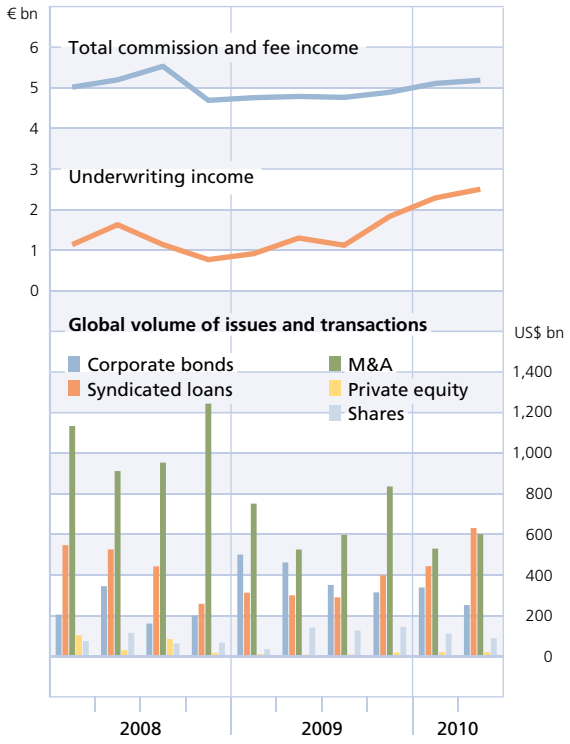
Chart 5.8

COMMISSIONS AND FEES,* CAPITAL MARKET ISSUES AND CAPITAL MARKET TRANSACTIONS



Sources: Bloomberg, Dealogic and Bundesbank calculations. — * Covers 13 major German banks with an international focus.

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institutions have benefited greatly from the cyclical recovery, others have continued to suffer under the strains gripping the international real estate markets. Individual institutions have even had to expand their risk provisioning in this area.

Credit cooperatives and savings banks report stable earnings

In the case of credit cooperatives and savings banks, for which there are no intra-year earnings' data, net interest income, which already rose by around 9% a year earlier, is likely to have contributed to solid income revenues (see Chart 5.9). Unlike in the case of the major institutions, the savings banks and credit cooperatives sector was less affected by loan losses in 2009. However, as loan losses typically lag the cycle, it remains to be seen whether sizeable corrections may be necessary for 2010.

Not all banks able to use earnings environment; outlook uncertain

In summary, the earnings situation in the German banking sector continued its stable development compared to 2008. The trends at the level of individual institutions, however, were very heterogeneous. Especially the earnings of those banks currently under restructuring seem to have underperformed lately. The decline in operating income seen in the second quarter of 2010 is a sign of an increasingly uncertain profitability environment. Trading business is likely to be particularly affected by this development in future. Lending business, by contrast, is likely to generate positive stimuli, provided that the favourable economic trend in Germany continues. This is indicated at least by the slight increase in the lending volume in connection with diminishing domestic credit risk. Commission and fee income, too, is likely to continue to grow in parallel with the overall economic recovery. Given a potential flattening of the yield curve and associated rising refinancing costs, interest margins will probably tend to narrow in future. In order to better gauge the future development of the different income components of German banks relative to the macroeconomic environment, the next section sketches the potential effects on profitability of various risk scenarios.

Macro stress tests show downside risks are manageable

Currently good earnings situation in banking sector …

The steep yield curve, in combination with the currently positive cyclical trend, is having a favourable impact on banks' earnings at present. For one thing, maturity transformation is a lucrative source of income in banks' interest rate business. For another, the cyclical recovery is causing credit risk to diminish, which is making itself felt in smaller loan losses. Moreover, banks' commission and fee business is also benefiting from the favourable economic situation.

… yet potential risks through changes in the yield curve or cycle

The current interest rate constellation, however, also harbours risks. Institutions have an incentive to strongly expand their maturity transformation activities. This raises the threat of considerable reductions in earnings if the yield curve should flatten again. In conjunction with a (not very likely) economic downturn, such a risk scenario would put the German banking system to a stiff test. The potential impact of a macroeconomic crisis is studied below with the aid of empirically-based scenario analyses.

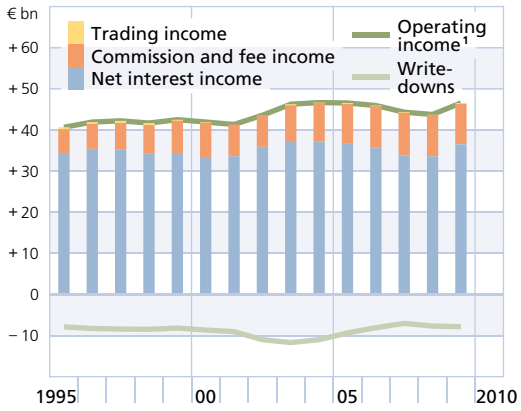
Rising earnings risks in interest rate business

Greater interest rate risk for small and medium-sized banks

Since the second quarter of 2009, banks have been distinctly expanding their net interest income owing to the steep yield curve. At the same time, however, institutions are facing an increased interest rate risk. This applies particularly to smaller and medium-sized institutions. Larger banks, by contrast, have for several years now hardly encountered any interest rate risk from maturity transformation.[11] Banks that are less active in conventional interest rate business are, however, also seeing the effects of higher interest rates at the short end of the yield curve on the expenditure side. For weaker institutions, in particular, this could make it more difficult to build up the necessary capital buffers.

Chart 5.9

COMPONENTS OF OPERATING INCOME OF CREDIT COOPERATIVES AND SAVINGS BANKS



1 Sum of net interest income, commission and fee income, and trading income.

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Two yield curve scenarios in 2011

This section uses a scenario analysis to show how changes in the interest rate configuration impact German banks' interest income and expenditure. Two scenarios for 2011 are studied. In the baseline scenario, consensus forecasts are used to model interest rate move-

11 In order to hedge against such risk, larger institutions use hedging transactions or an alignment of the durations of assets and liabilities as part of risk management (asset-liability management).

Table 5.1

SCENARIOS FOR THE YIELD CURVE AND GROWTH OF REAL GROSS DOMESTIC PRODUCT

%

Year	Baseline scenario	Risk scenario
	Three-month rate	
2010	0.80	0.80
2011	1.42	2.00
	Ten-year Bund	
2010	2.82	2.82
2011	3.05	2.55
	Rise in yield curve	
2010	2.02	2.02
2011	1.63	0.55
	Growth of real gross domestic product	
2010	3.33	3.33
2011	2.02	– 4.00

Table 5.2

RESULTS OF THE SCENARIOS FOR THE YEAR 2011

Percentage of total assets

Item	Interest income	Interest expenditure	Net interest income
	Large banks		
Baseline scenario	2.27	1.60	0.67
Risk scenario	2.50	1.82	0.68
2010	2.37	1.64	0.73
	Small and medium-sized banks		
Baseline scenario	4.02	2.37	1.65
Risk scenario	3.90	2.42	1.48
2010	4.08	2.46	1.62
	Banking system as a whole		
Baseline scenario	3.00	1.93	1.07
Risk scenario	3.09	2.08	1.01
2010	3.08	1.99	1.09

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ments. The risk scenario assumes a flattening of the yield curve. It is assumed here that, owing to the rising demand for secure forms of investment and to low inflation expectations, long-run interest rates fall.[12] At the same time, short-run interest rates rise owing to an increase in risk premiums on the money market. For 2010, for which income figures were not yet available at the time of calculation, the currently unknown values of the yield curve are replaced by consensus forecasts (see Table 5.1).[13] The bank-specific variables are assumed to remain constant vis-à-vis 2009 across the forecast horizon (2010 and 2011).[14] The results of the scenario analysis, which are derived from the averages weighted by total assets, are summarised in Table 5.2.

Stable interest margin in the baseline scenario

The good net interest income forecast in this analysis for 2010 is attributable to the persistently steep yield curve. Smaller and medium-sized banks are the prime beneficiaries of this development. Another key factor is the persistence of income from existing business. Based on the consensus forecasts of market participants for 2011, therefore, the interest margin – calculated as the weighted average across all banks – will fall only slightly despite a flatter yield curve. All in all, in the baseline scenario, the result is an estimated €1½ billion decline in aggregate net interest income, which corresponds to a reduction of around 2%.

Decline in net interest income of 8% in risk scenario

If the yield curve flattens notably, as assumed in the risk scenario, the interest margin of the small and medium-sized banks falls significantly compared with the baseline scenario. Viewed across the entire banking system, such a flattening of the yield curve would cause an estimated decline in aggregate net interest income of around €7 billion or just under 8% (see Chart 5.10).

Large banks less affected by changes in the yield curve

The interest income and expenditure of large banks react similarly to interest rate changes at

12 Long-run interest rates are modelled by the return on ten-year Bunds; short-run interest rates are modelled by the three-month Euribor.
13 The values correspond to the simple average (over the quarters) of the respective median quarter forecasts of market watchers (source: Bloomberg).
14 This assumption does not have a major impact on the results since most of the bank-specific effects are already explained by the dynamic model term.

the short end of the yield curve, while developments at the long end are virtually irrelevant to this category of banks (see Box 5.1 on pages 90 and 91). For this reason, changes in the yield curve, on balance, have only a modest impact on the profitability of these institutions. This is mainly because the large institutions are increasingly moving away from maturity transformation activities.

Commission and fee business cyclically driven

Two scenarios for economic developments in 2011

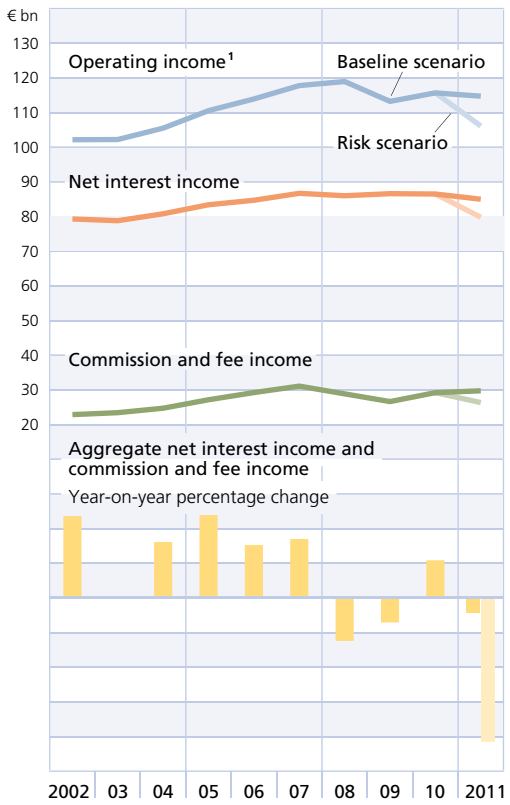
Empirical studies show that economic developments have a significant effect on banks' commission and fee income. In the scenario analysis, real gross domestic product (GDP) is assumed to grow by 3.3% in 2010. Two scenarios are defined for the growth of real GDP in 2011. The baseline scenario is based on the current economic forecasts of the International Monetary Fund (IMF) and assumes that real GDP will grow by 2% next year. The risk scenario, by contrast, assumes a drastic slump, in which economic output falls by 4% (see Table 5.1).

Stable commission and fee income in baseline scenario, 10% decline in slump

Owing to the favourable economic situation in 2010, it will probably be possible to improve commission and fee income in comparison with the 2009 result. At 0.37%, this year's commission and fee margin is slightly higher than its average of the past ten years. Should the forecasts for German economic growth in 2011 prove to be true, a slight increase in the commission and fee margin to 0.38% can be expected. However, if total economic output slumps by 4% as assumed in the risk scenario, aggregate commission and fee income can be expected to fall by just under 10% in 2011.

Chart 5.10

NET INTEREST INCOME AND COMMISSION AND FEE INCOME



1 Excluding trading income.

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This would put the German banking sector's commission and fee margin for the coming year at 0.33%.

Trading income as a source of uncertainty

Heterogeneity between small institutions and large banks

On the whole, net interest income and commission and fee income have proved to be quite stable income components. If the economy were to slump and the yield curve were

Box 5.1

FORECAST MODEL FOR NET INTEREST INCOME AND COMMISSION AND FEE INCOME

The following models show how interest expenditure, interest income and net fees and commissions react to changes in the macroeconomic environment. The annual financial statements of German banks for the period 1995 to 2009 are used together with information drawn from the data schedule (*Sonderdatenkatalog*) pursuant to the Audit Report Regulation (*Prüfberichtsverordnung*).

Three models are estimated. The dependant variable (Y) alternatively expresses interest expenditure, interest income or net fees and commissions, each defined as a ratio of total assets. The estimated dynamic panel models with fixed effects have the following structure:[1]

$$Y_{i,t} = \alpha + u_i + \beta_1 Y_{i,t-1} + \sum_{j=1}^{k} \lambda_j \omega_{j,t} + \sum_{j=1}^{l} \gamma_j x_{j,i,t} + \varepsilon_{i,t}$$

The placeholder ω stands for macroeconomic determinants. To analyse the impact of changes in the yield curve on banks' interest expenditure and interest income, the three-month Euribor and the yield on ten-year Bunds are incorporated into the model.[2] For the estimation of net fee and commission income, real GDP growth is included as a relevant variable since net fees and commissions generally benefit from a positive economic environment. The model also takes into account various bank-specific control variables (x). Unobserved fixed effects are modelled by the institution-specific constant u_i. To take due account of different business models, a separate estimation is conducted for large banks.[3]

The regression results are shown in the tables below. As expected, net fee and commission income reacts positively to stronger GDP growth. For smaller and medium-sized banks, it is clear that interest income and interest expenditure re-

ESTIMATES OF NET COMMISSION AND FEE INCOME IN RELATION TO TOTAL ASSETS

Variable	Small and medium-sized banks	Large banks
Lagged term	0.4066*** (0.082)	0.6722*** (0.045)
GDP growth	0.0112*** (0.004)	0.0040** (0.001)
Capital ratio	0.0544*** (0.019)	0.0144** (0.006)
Provision ratio	0.0032 (0.006)	0.0013 (0.008)
Size	– 0.1544 (0.124)	– 0.0372** (0.014)
Constant	3.14 (2.386)	0.9651** (0.373)
Observations	33,018	266
Banks	3,437	24
Within R^2	0.195	0.730

***/**/* indicate significance at the 1%, 5% or 10% levels respectively. Robust standard errors are given in parentheses.

1 The coefficient of the lagged endogenous variable tends to be underestimated due to the correlation with the invariant part of the error term. To assess the robustness of the model, other estimates were conducted using, for example, the corrected LSDV estimator of Bruno (2005), which produces qualitatively identical results. See G Bruno (2005), Approximating the bias of the LSDV estimator for dynamic unbalanced panel data models, Economics Letters, Vol. 87, No. 3, pp 361–366. — **2** The three-month FIBOR was used prior to 1999. — **3** This is an unbalanced panel of 24 large German banks. —

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act positively to interest rate hikes, although interest expenditure reacts more strongly to short-term rates and interest income is more sensitive to changes in the long-term rates. For large banks, changes at the long end of the yield curve affect neither their interest expenditure nor interest income. This reflects the fact that these institutions are tending to withdraw more and more from an extensive use of maturity transformation.[4]

A number of bank-specific control variables are incorporated in addition to interest rates and real GDP growth. The funding gap is defined as the difference between customer loans and liabilities to customers, expressed as a percentage of total assets. This reflects the part of the bank's refinancing requirement which is not covered by deposits. The size of the credit institution is measured using the natural logarithm of total assets. The equity ratio is incorporated to serve as a measure of risk aversion.[5] To control for credit risk, the loss provision ratio is used, which is calculated as the percentage of loan loss provisions and value adjustments for commitments in lending business to customer loans. Owing to the risk premium, interest income correlates positively with credit risk. A positive relationship between net commissions and credit risk is expected in the theoretical literature, as it can be worthwhile for banks to expand their lending while accepting greater risk, and to generate more commission and fee income through the resulting customer loyalty (cross-selling).[6] The loan ratio is a measure of a bank's business orientation, however. The greater the orientation to customer loan business, the higher is the relative income generated by interest business.

ESTIMATES OF INTEREST INCOME AND INTEREST EXPENDITURE IN RELATION TO TOTAL ASSETS

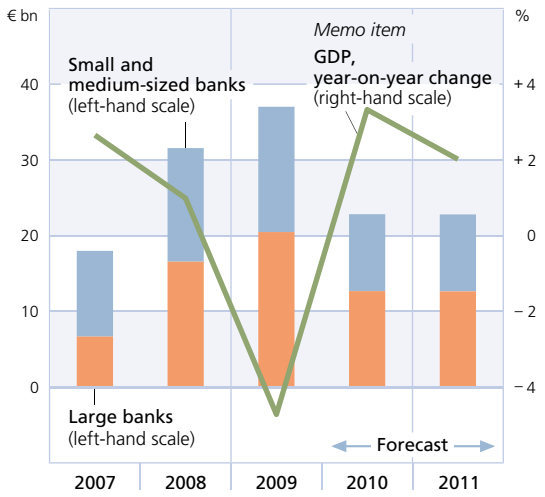
	Small and medium-sized banks		Large banks	
Variable	Interest income	Interest expenditure	Interest income	Interest expenditure
Lagged term	0.4198*** (0.039)	0.5174*** (0.023)	0.5363*** (0.089)	0.4737*** (0.086)
Three-month interest rate	0.0825*** (0.009)	0.1887*** (0.004)	0.3679*** (0.04)	0.3768*** (0.033)
Ten-year Bund rate	0.3282*** (0.031)	0.1205*** (0.014)	0.0317 (0.085)	– 0.01182 (0.073)
Size	– 0.2192*** (0.057)	– 0.1061*** (0.031)	– 0.4688** (0.194)	– 0.4069** (0.162)
Equity ratio	0.0137 (0.011)	– 0.0167*** (0.005)	– 0.0967** (0.042)	– 0.1649*** (0.031)
Customer loan ratio	0.0115*** (0.001)	. .	– 0.0029 (0.003)	. .
Funding gap	. .	0.0039*** (0.001)	. .	– 0.0045** (0.002)
Provision ratio	0.0109 (0.009)	. .	– 0.2065 (0.134)	. .
Constant	4.6547*** (1.206)	2.2864*** (0.637)	13.4627** (5.12)	11.7434** (4.278)
Observations	33,018	33,018	266	266
Banks	3,437	3,437	24	24
Within R^2	0.594	0.667	0.782	0.782

***/**/* indicate significance at the 1%, 5% and 10% levels respectively. Robust standard errors are shown in parentheses.

4 See C Memmel (2011), Banks' Exposure to Interest Rate Risk, Their Earnings from Term Transformation, and the Dynamics of the Term Structure, Journal of Banking and Finance (to be published shortly). — **5** See J Maudos and J Fernández de Guevara (2004), Factors Explaining the Interest Margin in the Banking Sector of the European Union, Journal of Banking and Finance, Vol. 28, No. 9, pp 2259–2281. — **6** See S Cosci, V Meliciani und V Sabato (2009), Banks' Diversification, Cross-Selling and the Quality of Banks' Loans, The Manchester School, Vol. 77, pp 40–65.

Chart 5.11

LOAN LOSSES



Sources: IMF and Bundesbank calculations.

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simultaneously to flatten, aggregate earnings from these business areas could be expected to fall by around €9½ billion, which corresponds to a decline of just over 8% (see Chart 5.10). The large degree of heterogeneity in the individual results is worth noting. Whereas a flattening of the yield curve does not appear to represent a major threat to large banks, it could be a severe test of resilience for smaller and medium-sized banks, which are generating more and more of their income from maturity transformation. For large banks, income risks are more likely to be found in volatile trading business, as the significant slump in earnings in 2008 showed. At that time, the proprietary trading of big banks alone sustained losses of over €15 billion.

Lending business not without risks

Loan losses in 2011: €23 billion in baseline scenario, €35 billion in slump

Last year's slump in economic activity led to a perceptible rise in loan losses, although losses in 2009, at around €37 billion, were smaller than originally feared. For 2010, around €23 billion worth of loans will probably have to be written down. The cumulative losses of the two years, at €60 billion, will thus be well below the upper margin of the original forecast (€50 billion to €75 billion).[15] The baseline scenario projects an aggregate need for write-downs of likewise around €23 billion for the year 2011 (see Chart 5.11). If, however, contrary to expectations, the cyclical recovery should not be of lasting duration, the losses could be much higher. In the risk scenario, ie assuming an economic slump of 4%, aggregate write-downs are expected to total around €35 billion, which would be roughly €9 billion higher than the average of the past five years.

Stable sources of income are key to resilience

Historically speaking, write-downs in lending business are much more volatile than earnings from interest rate business and commission and fee business, and thus entail greater uncertainty. Nevertheless, the potential impact of a flattening yield curve should not to be disregarded. Although the all-time low in the interest margin from 2008 would not be undershot in the risk scenario, such a slump in earnings would still have clear ramifications for internal capital formation, which will gain in importance particularly with regard to fulfilling the new Basel capital requirements. While credit cooperatives and savings banks traditionally focus on conventional interest rate business,

15 See Deutsche Bundesbank, Financial Stability Review 2009, pp 59-60.

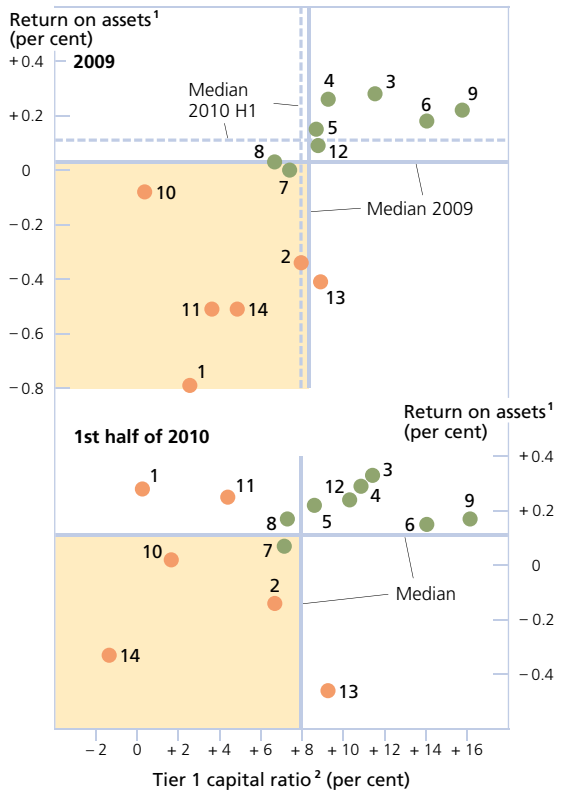
large banks are much more heavily dependent on growth in commission and fee business and trading business. Especially volatile trading business, in which future trends are very difficult to gauge, can thus cause strains.

Greater resilience

In summary, it may be stated that the resilience of German banks has significantly improved in the last one-and-a-half years. Institutions' balance sheets are more resilient than in 2008, and banks are increasingly benefiting from the recovery in their operating business. Despite this positive news for the banking system as a whole, the unevenness of trends among institutions should not be overlooked. A cross-sectional view reveals a split between those banks whose resilience has developed positively and those whose capital adequacy, after deducting capital assistance, appears to have remained weak. To make matters worse, the latter group of banks is often forced to contend with lower profitability, although some of them have seen their profit situation improve in the current year. The split between the two groups of institutions over time is shown by Chart 5.12. The north-east quadrant represents the group of well-capitalised and highly profitable institutions. This contrasts with the south-west quadrant, which contains weakly capitalised institutions with low profitability. Despite all the progress already achieved, the German financial system still faces the challenge of ensuring the long-term resilience of all institutions.

Chart 5.12

RETURN ON ASSETS AND TIER 1 CAPITAL RATIOS*



***** The banks represented by the red dots received capital assistance. — **1** After-tax income in relation to total assets. — **2** Excluding capital assistance.

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Insurance companies: bridging higher premiums and low interest rates

Insurers have benefited from economic upswing

In 2009, German insurance companies were able to benefit from the economic upswing and increased both their premium revenue and investment income, in some cases substantially. A protracted phase of low interest rates could, however, impair their resilience if investment income is no longer sufficient to make agreed guaranteed payments to policyholders.

Improved operating performance in 2009

Higher premium income in primary insurance

In 2009, German primary insurers were able to expand their premium income by around 4% year on year to just over €171 billion, compared with premium growth of around 1% in 2008. This increase in premium income was due to additional revenue generated in life insurance (around 7%) and health insurance (around 4%). Premium income in non-life insurance remained virtually unchanged on the year.[16] The slightly better economic outlook in the second half of 2009 is likely to have contributed to the boost in premium revenue. In addition, the household savings ratio remained high, at just over 11%.

Marked increase in single premiums

German life insurers, which occupy a key position in the German primary insurance sector owing to their high premium and investment figures, generated just over €81 billion in premium income in 2009.[17] The gain of approximately 7% in premiums was primarily due to an increase in single premiums of almost 60% to around €20 billion. Measured in terms of the total premium amount, the volume of periodic premiums fell by about 16%.[18] The rise in single premiums and the simultaneous fall in periodic premiums signify a continuation of the preceding year's trend. Evidently, customers are still noticeably reluctant to conclude insurance contracts with a longer-term premium payment obligation. The growth in premium income *per se* points to greater resilience on the part of life insurers. However, in terms of single premiums, these companies are still operating in an increasingly volatile line of business. Minor changes – for example, in the interest rate environment or profit participation – can lead to strong fluctuations in single premiums.

New provisions for capital redemption operations

Germany's Federal Financial Supervisory Authority (BaFin) has responded to these developments: in September 2010, it published a collective decree (order on capital redemption operations)[19] and a circular (providing advice on single premium life insurance and capital redemption operations)[20] with the aim of protecting existing customers and safeguarding the companies' liquidity.[21] In future, insurers will have to ring-fence cover assets for capital redemption operations if this business accounts for at least 3% of the cover assets as a proportion of the cover pool. If assets need to be ring-fenced, the companies will be required to maintain a special liquidity plan. Moreover, the term of the policies must be stipulated in advance.

Higher net return on investment

There was a noticeable improvement in investment income in 2009. Whereas insurance companies achieved a net return on investment of 3.54% in 2008, this figure climbed to 4.17% last year.[22] The significant increase in the return can be explained mainly by declining

16 See German Insurance Association (Gesamtverband der Deutschen Versicherungswirtschaft e.V. or GDV), Statistical Yearbook of German Insurance 2010, September 2010.
17 Excluding Pensionskassen and pension funds. In 2009, these German life insurers generated around 47% of the premium revenue of all German primary insurance companies. They hold about 63% of total capital investments. See BaFin, Kapitalanlagen der Erstversicherer – 2. Quartal 2010.
18 See GDV, Statistical Yearbook of German Insurance 2010, September 2010.
19 See BaFin, Sammelverfügung vom 07.09.2010 – Anordnung zu Kapitalisierungsgeschäften.
20 See BaFin, Rundschreiben 08/2010 (VA) – Hinweise zu Lebensversicherungen gegen Einmalbeitrag und zu Kapitalisierungsgeschäften.
21 Capital redemption policies are structured in the same way as conventional endowment life insurance policies but without a risk component. The calculation involved is based solely on the interest rate and costs; biometric data are not included.
22 See GDV, Statistical Yearbook of German Insurance 2010, September 2010.

write-downs on investments. However, the sustainability of this trend remains to be seen. The sharp downturn in 2008, in conjunction with the pronounced upswing in 2009, is a reflection of heightened volatility in investment income.[23] In view of the current low level of interest rates, it would seem reasonable to suppose that the net return is likely to fall again in 2010.

Little change in capital investments

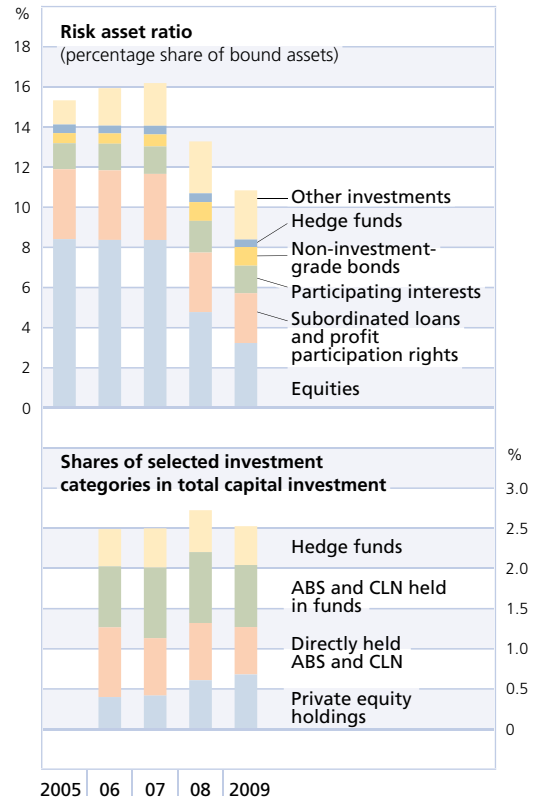
A higher return on investment could also be the result of assuming greater risks. There have, however, recently been only minor changes in the investment portfolio of German life insurance companies. In 2009, German life insurers committed around €707 billion to investments. Since 2003, the investment portfolio has changed distinctly with regard to bonds and equities.[24] The percentage of bonds has risen from around 80% (€491 billion) to just over 87% (€616 billion).[25] Loans and Pfandbriefe account for the largest share of this figure, at a current level of around €363 billion (59% of all bonds). Although German insurance companies also hold claims on their books vis-à-vis euro-area countries that have come under pressure in the financial markets, the available data on German insurers' financial strength suggest that potential losses are manageable. The volume of equities has declined from just over 9% (€56 billion) to approximately 3% (€23 billion).[26]

Further fall in risk asset ratio

Developments in the risk asset ratio as well as in the shares of selected investment categories are not suggestive of increased risks. On the contrary: the risk asset ratio dwindled further, to a level of only 10.8% in 2009. Following a slight rise in 2008, the shares of selected investment categories in total capital investment drifted back down to their previous level of 2½% (see Chart 5.13).

Chart 5.13

GERMAN LIFE INSURERS' CAPITAL INVESTMENTS



Source: BaFin.

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23 In 2008, life insurers benefited from being able to avoid extraordinary write-downs by applying section 341b of the German Commercial Code (Handelsgesetzbuch) and valuing investments according to the moderate – rather than the otherwise usual strict – lower of cost or market principle. See Deutsche Bundesbank, Financial Stability Review 2009, p 65.
24 In 2003, the investment volume amounted to approximately €610 billion.
25 Bonds comprise mortgages, loans, Pfandbriefe, government bonds, corporate bonds, bonds held in funds, subordinated loans and profit participation rights, overnight money, time deposits and fixed-term deposits as well as other types of bonds.
26 Equities held directly or via funds. See GDV (www.gdv.de).

Box 5.2

MODEL CALCULATION OF THE IMPACT OF A PROTRACTED PHASE OF LOW INTEREST RATES ON THE RESILIENCE OF LIFE INSURANCE COMPANIES

This box examines, on the basis of models, how falling interest rates and a subsequent sustained low-interest rate environment impact on life insurers' resilience. For this purpose, developments in the bonus and rebate provisions, which originate principally from investment income and serve to finance policyholders' profit participation shares, are simulated. A reduction in the bonus and rebate provisions as a result of an erosion of investment income would weaken life insurers' capital base as parts of the provisions are recognised as own funds. The diminished capital base would reduce the companies' resilience.

Insurance companies grant their customers a profit participation share in the form of the current return. This consists of the maximum technical interest rate, the direct credit amount and the current surplus. These components of profit participation are guaranteed for the future when laid down in a declaration. In addition, insurers may grant their customers maturity bonuses as well as participation in the valuation reserves; these arrangements are payable at maturity and are not guaranteed in advance.

On a market average, the current return is 4.19% (2009: 4.25%) across all tariffs and generations at present. In 2009, the average guaranteed return in German life insurers' portfolios amounted to around 3.36% (2008: 3.40%).[1]

The model used here determines the point at which the bonus and rebate provisions would be depleted for three different low-interest rate scenarios.[2] The withdrawal and allocation amounts are calibrated in such a way that the trends in the bonus and rebate provisions can be approximated. The buffer for profit participation is exhausted when the bonus and rebate provisions are completely depleted. Insurance companies would ultimately be forced to live from their assets and to tap into further own funds if investment income were to fall short of the profit participation level beyond this point in time. If the volume of own funds has contracted significantly owing to the decline in the bonus and rebate provisions, it is possible that the solvency ratio may decrease perceptibly even before the provisions are completely depleted.

Allocations to the bonus and rebate provisions generally originate from investment income (less the guaranteed return), the risk result and other earnings, less the direct credit amount.[3] The model makes the very restrictive assumption that allocations result only from the net return on investment.[4] The hypothetical assumption that there are no alternative sources of income was chosen intentionally in order to represent an extreme risk scenario. As a result, the allocations to the bonus and rebate provisions are probably systematically underestimated. Pursuant to the Minimum Allocation Regulation (*Mindestzuführungsverordnung*), insurers must transfer at least 90% of their investment income (less the guaranteed return) to the bonus and rebate provisions.

In the model, profit participation is composed of the maximum technical interest rate and the current surplus. It is assumed that the companies do not distribute any additional surplus funds, such as maturity bonuses or participation in the valuation reserves, as of the year 2010. As a result, the withdrawals from the bonus and rebate provisions are probably also systematically somewhat underestimated. As the policyholders' guaranteed return is taken directly from investment income, only the current surplus is withdrawn from the bonus and rebate provisions. If, however, investment income is no longer sufficient to cover the guaranteed return in the scenarios, then the shortfalls are also withdrawn from the bonus and rebate provisions.[5] Developments in the bonus and rebate provisions can thus be modelled as

$$RfB_t = RfB_{t-1} + Z_t - A_t,$$

where RfB_t represents the bonus and rebate provisions at time t and, correspondingly, RfB_{t-1} represents the bonus and rebate provisions at time t-1. Allocations to the bonus and rebate provisions at time t are given by Z_t, while withdrawals at time t are given by A_t. In 2009, the aggregate bonus and rebate provisions of all German life insurers amounted to around €55 billion.

Three scenarios for developments in the net return on investment are examined. Scenario I assumes that, as of the year 2010, the net return follows the declining yield trend in Japanese ten-year government bonds from the year 1995 onwards. A very severe scenario was chosen intentionally in order to simulate a protracted phase of low interest rates which would be critical for insurers.[6] The time series minimum level of 99 basis points was selected as the lower bound. In scenario II, the net return follows the yield trend in outstanding public debt securities with a residual maturity of over nine years and up to and including ten years. This scenario makes sense as life insurers have large holdings of public debt securities in their portfolios. The mini-

1 The current maximum technical interest rate of 2.25% applies only to new contracts. Contracts with a guaranteed technical interest rate of 4% at present still make up almost 30% of the industry's portfolio. Thus, the average guaranteed return is falling only gradually. See Assekurata, Marktstudie 2010: Die Überschussbeteiligung in der Lebensversicherung, January 2010. — **2** The model uses aggregated data. Conclusions regarding specific life insurers are not possible owing to insufficient individual data. — **3** The risk result is the difference between calculated risk costs and actual risk expenditure. Other earnings consist mainly of the cost result. — **4** Sufficient data on the risk result and other earnings are not available. The direct credit amount was also disregarded as it applies imperatively only to contracts concluded before 1994 and is offered only rarely nowadays. — **5** Pursuant to section 56a (3) of the Insurance Supervision Act (Versicherungsaufsichtsgesetz), insurance companies are entitled, with the supervisory authority's consent, to draw on the bonus and rebate provi-

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mum level of 99 basis points chosen in scenario I was used as the lower bound. Scenario III assumes that the net return follows its own trend. Here, too, the lower bound was defined as 99 basis points.

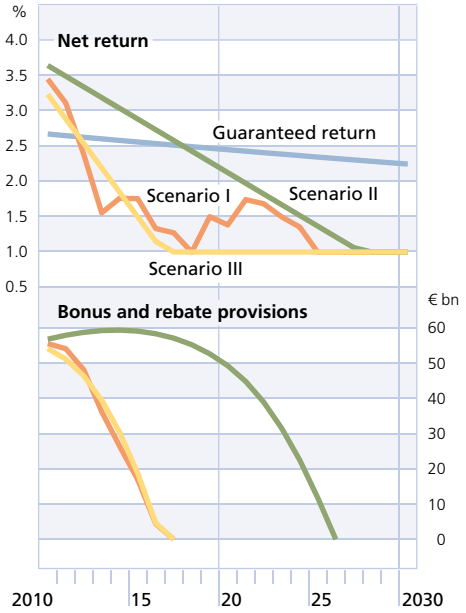
The allocations to the bonus and rebate provisions originate, as already explained, from the net return on investment less the guaranteed return. Whereas the net return is earned on the entire investment portfolio, the model calculation assumes that the guaranteed return, on average, is paid only on about 80% of the investment portfolio. Therefore, a net return on investment which is lower than the guaranteed rate of interest can still be enough to cover the guaranteed return. It is assumed that the companies allocate only the minimum amount of 90% of investment income to the bonus and rebate provisions as of the year 2010. If the guaranteed return should exceed the assumed net return on investment, then the shortfalls are withdrawn from the bonus and rebate provisions, and there are no more allocations.

That part of the current return which exceeds the guaranteed return – the current surplus – is withdrawn from the bonus and rebate provisions. In the model, insurers continuously reduce the current return, as it is assumed that investment income is eroded. The lower limit is the level of the guaranteed return. Once this level has been reached, there are no more withdrawals from the bonus and rebate provisions as the current surplus is zero. However, if necessary, shortfalls in the guaranteed return are still withdrawn from the provisions.

The adjacent chart shows the developments in the net return on investment and the bonus and rebate provisions in the different scenarios.[7] It also projects the developments in the guaranteed return, extrapolated for the entire investment portfolio. Once the net return falls below the level of the guaranteed return, funds are only withdrawn from the bonus and rebate provisions, and the provisions gradually shrink. In scenarios I and III, this already occurs in the year 2012. In scenario II, the net return does not fall below the level of the guaranteed return until the year 2018.

The "Japan scenario" (scenario I) and scenario III constitute the most severe scenarios, as the extreme assumptions applied mean that the bonus and rebate provisions are already totally depleted in the year 2017. The life insurers' capital base would then be weakened, as the total depletion of the bonus and rebate provisions would diminish own funds.

NET RETURN ON INVESTMENT AND BONUS AND REBATE PROVISIONS IN THREE SCENARIOS



In scenario II, this point in time is not reached until the year 2026. However, owing to the extreme assumptions, the real critical point may be expected to occur later than suggested by the model-generated time path. Although the insurance companies could apparently cope with a pessimistic scenario in the medium term, the result should nevertheless serve as a warning that the bonus and rebate provisions could possibly be depleted. If the net return on investment were to remain below the level of the guaranteed return beyond this point in time, life insurers would have to use more own funds, which would further undermine their resilience.

sions in exceptional cases to avoid an imminent emergency in the interests of the policyholders, provided that such amounts have not already been earmarked for profit shares. Furthermore, they may use the provisions to offset unforeseeable losses under insurance contracts with profit participation rights if these losses are attributable to a general change in circumstances. They may also use the provisions to increase the cover pool. — **6** BaFin assumed, amongst other things, a qualitatively similar scenario in its forecast for guaranteed interest rates in life insurance produced in the autumn of 2009. See BaFin, Annual Report 2009, April 2010. — **7** One reason why the net return trend (scenario III) is depicted by a steeper downward curve than the yield trend in outstanding public debt securities (scenario II) is that the calculation for the net return trend was based on a shorter reference period with lower values.

Performance of the largest German life insurers

The overall operating performance of the 15 largest German life insurers presents a similar picture to the market as a whole, although there are perceptible differences between the individual companies.[27] Most providers were able to raise their premiums in the past year, in some cases even well above the market average. The increase in premium income was primarily a result of additional revenue generated in single premium business; it was thus possible to offset the decline in periodic premiums. Some providers also experienced a fall in premiums, however. The change in premiums ranged from around -3% to almost +19%. The values achieved in terms of the net return on investment ranged between 3.1% and 5.1%, with most companies generating a return above the market average.

Phase of low interest rates could jeopardise resilience

Interest rate risk is the greatest risk for life insurers

In general, interest rate risk constitutes the greatest individual source of risk for life insurance companies. It is the risk that, in the event of unfavourable market developments, income from investments may no longer be sufficient to make agreed guaranteed payments to policyholders and to fulfil any additional profit participation commitments. This risk grows considerably if funds are continuously invested in a low-interest rate environment.

Decline in bonus and rebate provisions

When interest rates recede and a sustained low-interest rate environment ensues, the bonus and rebate provisions (which serve to finance policyholders' profit participation shares) shrink, as they originate principally from investment income. If there is a reduction in investment income, withdrawals from the bonus and rebate provisions could exceed allocations. If the bonus and rebate provisions were to shrink, this would weaken the life insurers' capital base as parts of the provisions are recognised as own funds. Furthermore, policyholders' profit participation shares would be at risk. The most important adverse effect of the diminished capital base, however, would be to reduce the insurance companies' resilience.

Model calculation of developments in bonus and rebate provisions

Box 5.2 presents a model calculation in which the developments in the bonus and rebate provisions are simulated for various low-interest rate scenarios. In the model, the withdrawal and allocation amounts are calibrated in such a way that the trends in the bonus and rebate provisions can be approximated. When the bonus and rebate provisions are totally depleted, there is no longer a buffer for profit participation. If, in this situation, investment income were to remain lower than the profit participation level, the companies would ultimately be forced to plunder their assets and to tap into further own funds.

Three low-interest rate scenarios

Three low-interest rate scenarios are analysed in the model calculation.[28] In the two most severe scenarios, the bonus and rebate provisions would already be exhausted in 2017; in the less severe scenario, in which the net return on investment follows the trend in long-dated public debt securities, the bonus and rebate

27 The companies' size was measured according to their premium revenue. As in previous years, in 2009 the 15 largest companies generated around 65% of the total premium income in life insurance. They regularly account for almost 70% of all investments undertaken by German life insurers.
28 For details of the scenarios analysed, see Box 5.2 on pp 96-97.

provisions would not be completely depleted until the year 2026. Life insurers' capital base would thus be undermined as the reduction in the bonus and rebate provisions would eat into own funds. The model calculation shows, however, that insurance companies could apparently also cope with a pessimistic scenario in the medium term. Moreover, owing to the extreme assumptions made, the real critical point may be expected to occur later than suggested by the model-generated time path. Nevertheless, the result should serve as a warning that the bonus and rebate provisions could possibly soon be depleted. The situation would become difficult if the net return on investment were to remain below the level of the guaranteed return beyond this point in time.[29] In this case, the life insurance companies would have to use more own funds, which would further undermine their resilience.[30]

Possible adjustment measures by insurers

Insurers can respond to this development. First, they could reduce profit participation to a greater extent than assumed in the model. The critical point would thus be pushed back. Some life insurers may, however, also be tempted, for competitive reasons, to maintain the current return at a higher level for longer. Second, they could increase the net return by switching to higher-yielding investments. Another potential strategy would be duration extensions on the assets side. The risk with this is that, if interest rates were to rise, the insurers could dispose of this paper only at a loss or would have to accept lower interest income over an extended period of time. Another conceivable approach would be a maturity-matched hedge for long-term obligations insofar as appropriate hedging instruments are available.

29 Whereas the net return on investment is earned on the entire investment portfolio, the guaranteed return is paid on a smaller scale. Therefore, a net return on investment which is lower than the guaranteed rate of interest can still be enough to cover the guaranteed return. For more details, see Box 5.2 on pp 96-97.
30 A planned legislative amendment ought to alleviate the situation. It will stipulate that, in future, funds can be held temporarily in the bonus and rebate provisions for five years rather than three years without tax drawbacks. As the funds will thus be credited to policyholders at a later time, the companies will be able to use them as own funds for longer.

Enhancement of the regulatory and institutional framework

The international regulatory response to the current crisis is broad-based. In this section three areas will be described and assessed in more detail. The first is the strengthening of the individual banks and includes the treatment of systemically important financial institutions (SIFIs). The most important component in this respect is international agreement on the main elements of future capital and liquidity standards (Basel III). SIFIs will in future be subject to stricter regulation and supervision, which includes greater loss absorbency. The second area, developing a macroprudential approach to analysis, regulation and oversight, is intended to support the early identification of systemic risks, also in hitherto opaque segments of the financial sector, including the OTC derivatives markets. The EU has set up its own institution with responsibility for macroprudential oversight, the European Systemic Risk Board (ESRB), which will take up its duties in January 2011. Potential instruments for macroprudential steering comprise, for instance, time-varying capital buffers for banks. In the third area, improving the rules for managing distressed banks, dedicated insolvency legislation that is internationally compatible and grants supervisors powers to intervene early is intended to allow a credit institution to exit the market in an orderly manner.

Financial sector reforms broad-based

Vast transfer of risk triggered by government interventions in the financial system ...

Since the crisis began, the serious disruptions in the functioning of the financial system have repeatedly necessitated government intervention in the financial sector. The resulting vast transfer of risk from the private to the public sector confirmed or even exceeded latent expectations that the state would support the financial sector in the event of a crisis.

... encourages moral hazard

The asymmetric distribution of opportunities and risks at the expense of society at large provides an incentive to take excessive risks (moral hazard) and undermines market discipline. This underlying pattern of misguided incentives was characteristic of the run-up to the crisis, and was further encouraged by a lack of transparency and by inadequate risk premiums in a favourable macroeconomic setting. In the further development of the rules for the financial system, efforts must be made, not least, to break this pattern and reduce the lack of transparency.

Reform agenda addresses three different areas

The objective of the broad-based financial sector reforms is therefore to correct misguided incentives in order to reduce the financial sector's susceptibility to systemic crises and limit the costs of potential crises.[1] To this end,

1 See, in particular, the FSB's progress reports on the reform process at www.financialstabilityboard.org.

the international reform agenda is being instituted in three different areas: first, the financial institutions, markets and products themselves; second, the financial system as a whole (this approach is new); and third, arrangements for managing any crises.

First, strengthen the resilience of financial institutions, …

The microprudential component of the reforms is intended, in the classical tradition of banking supervision, to strengthen the resilience of financial institutions and align their incentive structure with the requirements of a stable financial system. One of the cornerstones of the new regulatory framework was laid in September 2010 when the new capital rules (Basel III) were adopted and international liquidity standards for banks were agreed for the first time. It is now essential to transpose these standards into European and national law and consistently apply them worldwide according to the agreed timetable.

… introduce special rules for systemically important financial institutions …

Special rules for financial institutions which enjoy an implicit government guarantee owing to their systemic importance are designed to limit the risks incurred by these banks on the one hand and their possible impact on the financial system on the other.[2] This group of institutions will be subject to more intensive supervision and, in the medium term, to more stringent regulation, the purpose of which is, not least, to internalise negative externalities that they might generate. These include the advantage of lower refinancing costs as a result of an assumed government guarantee. However, the new rules for SIFIs still need to be specified.

… and improve corporate governance

Corporate governance shortcomings at financial institutions were reflected in inadequate risk management and poorly designed compensation practices, and in both cases resulted in misguided incentives to take excessive risk. Financial institutions are currently revising their compensation systems by applying international remuneration standards, in particular with regard to methods for taking account of the risks incurred when determining variable wage components. The risk management issue also includes the importance that investors attach to credit rating assessments. Investors have to make decisions on the strength of their own analyses; the objective therefore must be that ratings are used in a responsible manner.

Second, monitor the resilience of the financial system as a whole, …

The second – and most innovative – approach in further developing the framework for the financial sector is macroprudential oversight and policy. The idea behind this approach is that the financial system as a whole is more than the sum of its parts.[3] Thus, the aim of macroprudential oversight is to identify reliably and in good time patterns and developments, risk concentrations and transmission channels which could jeopardise stability. To this end, relevant data have to be acquired on actors in the financial system which up to now are not regulated. The key criterion for subjecting institutions to reporting requirements is the nature of the business they conduct and their role within the financial system. Such a data collection exercise requires institutions to be

2 Systemic importance can result from the size of financial institutions, the degree of their interconnectedness with other market participants and/or the lack of substitutability of these service providers and the services they supply. See IMF, BIS, FSB, Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instruments: Initial Considerations. Report to the G20, October 2009.
3 See Deutsche Bundesbank, Financial Stability Review 2009, pp 69-83.

registered, notably including those in the shadow banking system.

… curb cyclical developments …

Macroprudential oversight also monitors cyclical developments in the financial system, which means that it could at the same time serve as the analytical basis for curbing excessive lending by way of regulatory instruments. For some time now, a number of emerging market economies have used microprudential instruments for macroprudential purposes, such as variable lending limits to steer the real estate market. The use and the possible design of such instruments for industrial countries are currently the subject of intense debate.

… and improve the infrastructure

Last but not least, a reliable infrastructure is essential to the resilience of the system as a whole. International efforts are currently rightly concentrated on derivatives trading, which until now has been conducted almost exclusively over the counter. The standardisation of contracts is a prerequisite for settlement through central counterparties, which will, it is hoped, become the standard procedure, as well as trading on electronic trading platforms or exchanges.

Third, revise rules for dealing with a crisis to make them incentive-compatible

The third area that is addressed by the international reform agenda will come into play when individual institutions or the financial system as a whole have shown themselves not to be sufficiently resilient and a crisis situation needs to be dealt with. Owing to the interconnectedness of the financial sector, the insolvency of one financial institution can cause direct losses at other banks and lead to serious disruptions to the financial system and the economy as a whole, not least because of spillover and negative confidence effects. Standard bankruptcy proceedings tend to be protracted. Thus, the banking industry needs its own restructuring and insolvency procedures which allow public authorities to intervene well before insolvency occurs. Credible procedures of this kind also defuse the problem whereby support for SIFIs is expected if a crisis strikes.[4] There is international consensus that national resolution procedures should, to the extent possible, be compatible at an international level to enable the orderly resolution of cross-border financial institutions.

Extension of the institutional framework

Besides these necessary reforms of the regulatory framework for the financial sector, the EU and a number of non-EU countries have also rightly set institutional reforms in motion. The establishment of the ESRB gives macroprudential supervision in Europe an institutional framework. The creation of the three European supervisory authorities represents a degree of enhanced financial sector integration which, just a few years before the crisis, probably no one would have anticipated.

International cooperation important

In terms of implementing the reform agenda, the countries of the G20 and the EU as well as other countries with important financial sectors now find themselves balancing international agreements against the particularities of their national financial systems and competition among financial centres. On no account should such vying for position be engaged in at the expense of financial stability, not least given the close interconnectedness in the international financial system. From the Bundesbank's viewpoint, the aspects of particular importance

4 See Deutsche Bundesbank, Financial Stability Review 2009, pp 78-79.

with regard to the further development of the financial system's regulatory framework are the punctual introduction, worldwide, of the new capital and liquidity regime, the elaboration and subsequent use of the internationally agreed concept on dealing with SIFIs, and rigorous macroprudential oversight. Further measures would then be a more restrained use of ratings, remuneration systems in the financial sector which are fully consistent with the objective of financial stability, and the international harmonisation of accounting standards. The further development of the regulatory framework must not result in activities being transferred from areas of the financial system that are to be more stringently regulated to the shadow banking system.

Basel III main components for more robust financial institutions

Strengthen stability of individual institutions

The required strengthening of the financial system starts with the robustness of the individual institutions. Of central importance is the Basel III framework.[5] Its new capital rules are geared explicitly to enhancing banks' loss absorbency capacity. Furthermore, the liquidity rules – introduced in this form for the first time – address a core problem of the crisis. Given that the financial sector has not yet fully recovered, it appears reasonable to combine the undoubtedly much-needed tightening of rules with generous transitional periods. Supplementary regulations concerning the treatment of SIFIs are aimed, among other things, at offsetting the advantage of an implicit guarantee of future bail-outs and ensuring an orderly market exit, also in the event of insolvency.

Banks must meet stricter capital and liquidity requirements

New minimum capital ratios

When agreement was reached in September 2010 on the package of measures known as Basel III, a core element of the much-needed regulatory reform was adopted.[6] To strengthen their resilience, credit institutions must hold more and better-quality capital in future. The new prudential regulations provide that common equity must be gradually increased to 4½% of risk-weighted assets by end-2014. To this is added a capital conservation buffer of 2½%, which will be phased in from the beginning of 2016, so that the total common equity requirements (core tier 1 capital) will ultimately amount to 7%. All told, minimum tier 1 capital will rise from 4% to 8.5%, and minimum total capital from currently 8% to 10½%. The gradual changeover to the new requirements will be completed by the beginning of 2019, while certain exceptions will apply until the end of 2022. Moreover, the Basel III framework provides that, according to national circumstances, national supervisors may additionally introduce a countercyclical capital buffer,[7] particularly when they identify excessive credit growth. The stability-promoting effect of the Basel III framework is based not only on higher minimum capital requirements but also, in particular, on the stricter definition of capital which focuses on loss absorbency capacity in times of crisis. The banking system's need to adapt to the new capital requirements is to a large extent due to this narrower definition.

5 The Heads of State or Government of the G20 endorsed the Basel III rules at their summit in Seoul. See The G20 Seoul Summit, Leaders' Declaration, 12 November 2010.
6 See BIS press release of 12 September 2010
7 See also the comments on pp 118-120.

Further regulatory adjustments apply to limits for mortgage servicing rights, deferred tax assets and investments in financial institutions. However, a transitional period of several years will apply to these deductions and prudential filters.

Increase capital backing for trading book

In parallel with the tightened capital rules described above, higher trading book capital requirements are also being introduced[8] as a consequence of high trading book losses in recent years. Thus, account is also being taken of the fact that, on the whole, the riskiness of the assets held in the trading book was not adequately measured. One reason for the lower capital requirements for the trading book in relation to the banking book is a high rate of turnover, making the realisation of substantial price losses less likely. However, the assumption of permanent high market liquidity proved to be flawed in the crisis.[9] Even without any changes in the portfolio, banks are required to meet tighter capital requirements in future, as the reported values of a financial institution's risk-weighted assets will increase following the reform. Therefore, banks with extensive trading activities will be particularly affected. One side-effect of the higher capital backing for the trading book could be that banks' investment divisions might generate lower earnings, leading, in turn, to lower performance-related pay.[10]

Some adjustments have already been made

German credit institutions have already strengthened their core capital base in response to the crisis, and have thus already made some necessary adjustments. In this context, it should also be borne in mind that the market in general and rating agencies in particular autonomously impose – sometimes more stringent – demands on banks which are active in the capital market, and that banks voluntarily hold higher capital buffers in accordance with their business model. Moreover, part of the adjustment has already been made by reducing assets. Nevertheless, German banks will need substantial amounts of additional capital. Given the long transitional phase, much of the capital is likely to be formed through earnings retention (see Chart 6.1). However, additional external funding will also be necessary at many institutions. The hybrid forms of capital used to date will lose some of their importance due to the focus on core tier 1 capital. Yet new forms of hybrid capital may gain in importance, since they are designed to absorb losses in the event of a crisis.[11]

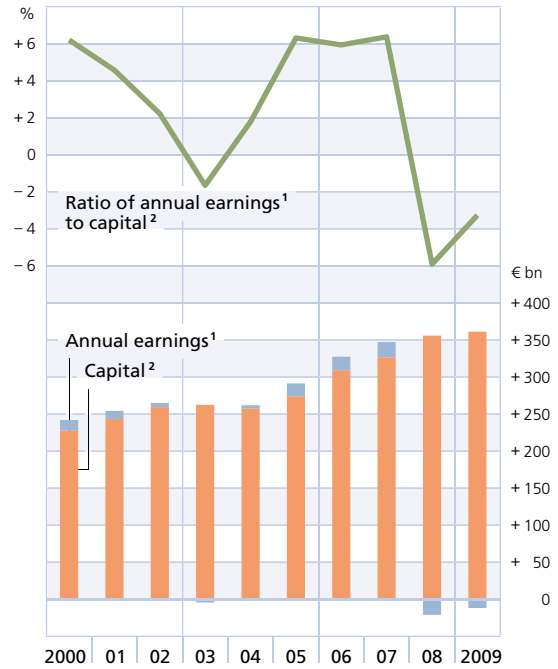
Leverage ratio as backstop

The regulatory capital ratios refer to risk-weighted assets which, on the whole, are considerably lower than the total assets. In order to limit the absolute level of leverage, the Basel III capital requirements are supplemented by a non-risk-based leverage ratio. This regulatory indicator will be introduced, first, for the purpose of observation. During this so-called parallel run period, a tier 1 leverage ratio of 3% will be tested until end-2017 and be corrected as and when necessary. Having an average leverage ratio of about 5%, the German banking system as a whole does not seem to be substantially affected by the introduction of a leverage ratio limit. Nevertheless, individual banks and groups of banks are very

8 These were resolved in 2009.
9 The Basel Committee on Banking Supervision is currently discussing combining the trading and banking books.
10 In this respect, risk control measures and internal capital allocation by banks are crucial, as traders may have an incentive to keep their absolute compensation constant, encouraging them to take additional risks.
11 See also the comments on pp 107-110.

Chart 6.1

POSSIBILITY OF CAPITAL FORMATION THROUGH EARNINGS RETENTION*



* Historical representation of hypothetically possible capital formation assuming the complete retention of all earnings generated by banks in Germany. — **1** Upper limit for earnings retention. — **2** Subscribed capital, reserves, less reported loss, including fund for general banking risks.

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heterogeneous. Being subject to different accounting rules, banks may report significant differences in leverage ratios despite conducting identical underlying business activities. For this reason, differing international accounting standards restrict the accurate comparison of leverage ratios and their suitability as supervisory tools. Therefore, the international harmonisation of accounting standards is necessary to ensure that the leverage ratio really does perform its desired function as a backstop to prevent possible regulatory arbitrage instead of itself becoming a primarily binding restriction.

Liquidity standards: liquidity coverage ratio for short-term liquidity …

One important reason for the magnitude of the financial crisis was excessive maturity transformation. Sometimes long-term claims were refinanced through very short-dated money market paper. The crisis then spread rapidly, not least, through the money market. These insights are reflected in two new approaches to regulating liquidity within the Basel framework. The first approach, the liquidity coverage ratio (LCR), addresses the possibility of contagion via the money market. Compliance with the LCR is intended to ensure that enough highly liquid assets are held to cover 30 days of net cash outflows. This will be achieved largely in that interbank claims are no longer eligible for inclusion, giving the banking industry a considerable need to adjust. Against this backdrop, the LCR will initially be introduced only as an observation ratio in 2011; it will not be introduced with binding effect until 2015. This makes it easier to correct the rules in the event of undesired developments. However, the planned preferential treatment of government bonds is already raising questions. For example, structurally strong demand by banks for government bonds makes it easier to finance budget deficits, which is worrying from a political point of view. Not least for this reason, private sector debt securities of high quality and liquidity, such as Pfandbriefe and highly rated corporate bonds, for example, will – under certain criteria and subject to appropriate haircuts where necessary – also be eligible for inclusion in the LCR.

The second ratio, the net stable funding ratio (NSFR), is designed to prevent excessive matu-

… and net stable funding ratio for structural liquidity

rity transformation. Using a complex calculation procedure, the maturities of assets and liabilities are compared; the assets and liabilities are also weighted by quality. Compliance with this ratio is facilitated, however, by the higher capitalisation of banks. Moreover, different strategies are open to banks in adjusting to the new rule. For instance, they could issue more debt securities with longer maturities or prolong the maturity of deposits received. On the assets side, banks could, above all, purchase greater volumes of higher-quality paper (including government bonds) and increase their cash holdings. In focusing on maturity transformation, this regulatory initiative deals with a key economic function of the banking system. The planned longer transitional period until the NSFR becomes binding at the beginning of 2018 is therefore appropriate. During the observation phase beginning in 2012, experience can be gathered on the basis of which corrections can be made, if necessary.

Consolidation in banking sector

The planned transitional periods for the capital and liquidity regulations correspond roughly with the length of an economic cycle. It is to be assumed that particularly banks active in the capital markets will make their adjustments much more quickly with a view to counterparties, rating agencies and other market participants. On the whole, the amount of adjustment needed varies within the banking sector. Banks with a sustainable business model will be able to comply with the new rules without any great difficulty.[12] In other cases, new sustainable structures will have to be found. In this connection, Basel III may help accelerate this process. Not least, much-needed consolidation within the banking sector could also play a part in strengthening financial stability.

Special rules to apply to SIFIs in future

More intensive monitoring of SIFIs

It must become possible for insolvent banks to exit the market without putting the functioning of the financial system at risk. In exiting the market, however, banks that are systemically relevant and therefore essential to the smooth functioning of the financial system would cause high costs – for other market participants as well as for society at large; this justifies their being given special treatment.[13] This is where, in a first step, microprudential oversight is called upon to ensure through closer supervision that the regulatory requirements are observed, and that deficits are identified and remedied as early as possible. Moreover, it seems appropriate that this group of banks should be subjected to more rigorous reporting requirements in order to improve transparency for business partners and to obtain data for macroprudential oversight purposes. Among other things, information on interconnectedness with other market participants might also be useful.[14]

Capital surcharge to correct misguided incentves

If a bank's systemic importance makes its market exit appear unlikely, at least from its counterparties' perspective, the motivation to achieve this status is considerable. In principle, such an actor enjoys implicit, premium-free insurance protection, which often leads, among other things, to more favourable refinancing conditions. This, in turn, constitutes a competitive advantage and is conducive to further growth. This misguided incentive has to be

12 For a simulation of the macroeconomic effects of the Basel III capital requirements, see Box 6.1 on pp 108-109.
13 See FSB, Reducing the moral hazard posed by systemically important financial institutions, FSB Recommendations and Time Lines, 20 October 2010.
14 See also the comments on pp 120-122.

Box 6.1

SIMULATION OF THE IMPACT OF THE BASEL III CAPITAL REQUIREMENTS ON GERMANY

The new, more stringent capital requirements for banks (Basel III) will make a significant contribution towards raising the resilience of individual credit institutions. Higher minimum capital ratios and the tighter definition of core tier 1 capital based more strictly on banks' loss absorbency capacity necessitate adjustments in the banking industry. Banks have already strengthened their capital base, also in anticipation of stricter requirements. In order to quantify further changes in the banking sector and to approximate the possible impact on the real economy, the Deutsche Bundesbank has simulated the development of key variables.[1] In the benchmark scenario, all banks have core tier 1 capital ratios of 7% and total capital ratios of 10.5%; they thus comply exactly with the new requirements.

First of all, the adjustment of assets (total assets, total loans and risk-weighted assets) and capital (tier 1 capital and total capital) is estimated on the basis of a change in the regulatory capital ratio. This is done with the aid of a panel regression, in which the main target variable is the deviation from the target capital ratio and the dependent variable is one of the capital or asset variables. In addition to adjusting their balance sheet variables, banks may also respond to more stringent rules by widening their interest margin.[2] This would enable them to accumulate additional capital from retained earnings. The effect on the interest margin is modelled using a time series regression in which the average interest margin is regressed on the capital ratio as well as on other variables.[3] The estimated coefficients are used to determine the adjustments in the banking sector. The adjustment path for the interest margin is then fed into the Bundesbank's macroeconomic forecast model in order to simulate the impact on gross domestic product (GDP).

The simulated results are to be interpreted as deviations from a *status quo* prior to amendments to banking regulation (baseline scenario). The baseline scenario represents economic developments in the absence of further crises, where stricter capital rules would be of no benefit. The values shown here are, therefore, purely a result of the regulatory framework. The benefits of a better capitalised banking system would have to be considered in an overall assessment.[4]

The simulation study shows that German banks have a considerable need for core tier 1 capital. All in all, based on the assumptions made, the German banking sector would have to increase its core tier 1 capital by around €50 billion on the end-2009 level by the year 2018 in order to comply with the required minimum capital ratios. The individual banks' expected need for capital varies significantly and, on aggregate, appears to be rather low in the case of savings banks and credit cooperatives, for example. Moreover, this need can largely be met by retaining earnings. The adjustments in line with the new ratios, however, are not likely to occur solely with regard to capital. The simulations show a simultaneous decline in the credit volume by 3% over the response period up to the year 2018, as well as a sharper decrease in risk-weighted assets. This is a reflection of the fact that adjustments typically occur more via securities holdings and external assets than via the loan portfolio.[5] The interest margin goes up by around 50 basis points, which signifies only a relatively small rise in financing costs for enterprises and households. The simula-

1 The assessments are based methodologically on the interim report of the Macroeconomic Assessment Group (MAG), a joint working group of the Basel Committee on Banking Supervision (BCBS) and the Financial Stability Board (FSB), published in August 2010. — **2** The interest margin is defined here as the difference between the average deposit rate and the average lending rate. The extent to which the interest margin is widened will actually be strongly influenced by the degree of competition. — **3** All variables are used in the first difference. — **4** See the report of the Long-Term Economic Impact Group, a working group of the BCBS, published in August 2010. — **5** This does not yet take into account the fact that the relative cost of capital for securities and loans has tended to shift in favour of loans owing to the greater collateralisation of the trading

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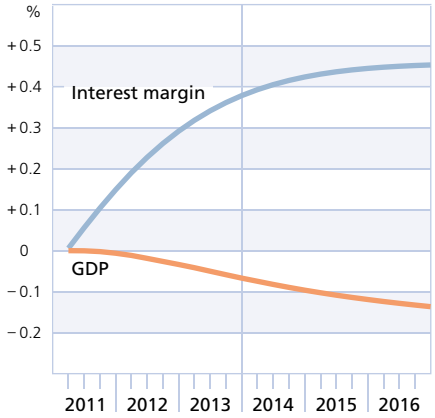
tion study reveals a maximum negative deviation of GDP from the baseline of 0.1% for the 2011-16 period; the cumulative deviations amount to around 0.4%. When interpreting the results, it should be borne in mind that, in the past, banks have additionally maintained a safety margin which, in terms of size, was geared towards their business model. Given the higher regulatory capital ratios that will apply in future, the size and form of capital that the markets will demand for such a safety margin remains to be seen.

Models must always make simplifying assumptions. Owing to non-modelled factors and structures, the study may overestimate or underestimate actual costs.[6] Given the entire banking sector's simultaneous need for capital, weakly capitalised banks, in particular, may find it more expensive to raise additional capital.[7] This could lead to larger interest margins and could, ultimately, have an adverse effect on the real economy. At the same time, the risk premiums on banks' shares and bonds are likely to decline in future as a result of greater capitalisation. Furthermore, banks will re-optimise their portfolios in response to the new regulatory requirements: for example, there has been a shift in the relative cost of capital for assets in the trading book and assets in the banking book in favour of the latter.[8] In addition, banks' portfolios currently contain securitisations with extremely high risk weights; a reduction in these assets could ease the pressure on tier 1 capital. A further positive aspect is the availability of alternative sources of funding. German enterprises are predominantly financed through internal funding (around 70%); the remaining 30% is external funding and includes bank loans.[9] An expansion of internal funding could also be a relevant alternative for small and medium-sized enterprises (SMEs). Moreover, SMEs are often customers of savings banks and credit cooperatives, which have a fairly small need for adjustment to meet the new requirements. Large enterprises, by contrast, generally also have direct access to the capital market. They may also benefit if the syndicated loan market recovers in a more stable financial environment.

Based on the results of the simulation and taking additional factors into account, the measures taken to ensure greater stability in banking and in the financial system as a whole are not likely to place a lasting strain on the real economy.

SIMULATED ADJUSTMENT PATHS FOR THE INTEREST MARGIN AND GDP

Deviation from the relevant baseline



book. — **6** In addition to factors that are not considered, econometric estimations are also subject to model and statistical uncertainty, which must be taken into account when interpreting the results. — **7** Particularly banks which are active in the capital market are likely to rapidly implement the new regulations, while others will make use of the envisaged transitional periods and will accumulate capital primarily from retained earnings. — **8** The capital relief afforded by portfolio adjustments was also observed during the transition from the Basel I to the Basel II regulatory regime. — **9** See the Bundesbank's financial accounts, average for the years 2000-07, and Deutsche Bundesbank, Monthly Report, October 2010.

counteracted. The G20 summit in Seoul in November 2010 concurred with the view taken by the Financial Stability Board (FSB) and the Basel Committee on Banking Supervision that, over and above the Basel III requirements, global SIFIs must have greater loss absorbency.[15] This additional loss absorbency capacity can be achieved in various ways, taking internationally harmonised guidelines into account. One conceivable option are capital surcharges, which can take the form not only of tier 1 capital but also hybrid capital forms (see Box 6.2 on pages 112 and 113). The amount of the additional required loss absorbency of a SIFI should be based on its contribution to the risk of the financial system as a whole. Consideration should also be given to an additional burden from bank levies, which could also be endowed with a similar steering effect. Compared with such a bank levy, however, additional capital requirements would have the advantage that they do not withdraw funds from the banking sector. The costs arising from both measures counteract the refinancing advantage described above. Important details of the concept for handling SIFIs are to be specified next year.

Scope for national solutions subject to international peer review

In addition to more intensive supervision and to the measures designed to increase loss absorbency, effective reorganisation and resolution procedures[16] and a more resilient infrastructure[17] are indispensable in preparing the financial system for any problems arising at SIFIs. In the United States, the financial reform that was passed in July of this year in response to the financial crisis also restricts banks' business activities.[18] Thus, in the style of the Glass-Steagall-type banking system concept, banks with insured deposit business are permitted, after a transitional period, to conduct proprietary trading in selected securities only, and otherwise only in connection with client business or for hedging purposes. Investments in hedge funds and private equity companies are permissible to only a very limited extent, and riskier derivatives transactions are to be outsourced to subsidiaries. Other countries, too, are considering similar structural interventions as possible elements of a concept for dealing with SIFIs. Structural requirements such as direct size limits for banks are not, however, measures that can be carefully targeted. Moreover, as interventions in market activity that are hard to justify, they are undesirable strategies for political reasons, too. The FSB's SIFI recommendations endorsed by the G20 countries provide that national policies towards global SIFIs are to be subject to an international peer review under the aegis of the FSB in order to ensure that the problem of SIFIs is effectively contained and that this group of banks competes on a level playing field.

Corporate governance shortcomings necessitate correction of misguided incentives

Insufficient control by supervisory boards, shareholders, auditors and supervisory authorities

Not least of all, the crisis revealed weaknesses in corporate governance arrangements in the financial sector. The failure of internal and external control mechanisms at SIFIs gives particular cause for concern from the point of view of stability. Existing corporate governance rules

15 See The G20 Seoul Summit, Leaders' Declaration, 12 November 2010.
16 See also the comments on pp 126-129.
17 See also the comments on pp 131-134.
18 Dodd-Frank Wall Street Reform and Consumer Protection Act.

often did not have the intended effect. Neither the control by the supervisory or administrative bodies nor by shareholders prevented financial institutions from taking on excessive risk. This may be due to the fact that some members of supervisory or administrative bodies were poorly qualified,[19] but also to shareholders' apparently low incentives to carry out a thorough risk control as well as to inadequate shareholder empowerment. Insufficient disclosure practices at many banks made it difficult for shareholders and external observers alike to adequately assess the risk situation. In addition, auditors failed to insist on an appropriate representation in management reports of potentially lethal liquidity risks as a result of, in many cases, very short-term funding models. Against this backdrop, it would be desirable in the long run if banking supervisors were less dependent on audit reports, although this is not readily possible owing to the lack of alternatives. Furthermore, supervisory authorities failed to review the suitability of existing corporate governance arrangements in the face of financial innovations and the rapid developments in financial sector business models.

Inadequate risk management

Deficiencies became evident in banks' internal risk management, too. The practice whereby many banks relied on credit ratings awarded by rating agencies – particularly for structured products – instead of carrying out their own analyses needs to be corrected (see Box 6.3 on page 115). In many cases, inadequate bank-wide risk management resulted in not all the main risks being captured, or not always being adequately quantified. This may also be due, in part at least, to insufficient knowledge at banks about their own corporate structures which, as a result of mergers and takeovers, can sometimes be extremely complex. The duty to draw up restructuring and resolution plans could counteract this problem.[20] Nor were, in a number of cases, the existing information systems suitable as a means of identifying and adequately reporting risk concentrations. It is worrying to note in this context the finding by the Senior Supervisors Group that hardly any progress had been made by the end of 2009, in particular in the area of firm-wide risk management, which would help bolster credit institutions' resilience.[21] The Minimum Requirements for Risk Management (*Mindestanforderungen an das Risikomanagement* or MaRisk), which German banking supervisors have already revised, will be developed further as the work of international banking supervisory bodies on the subject of risk management continues.[22]

Remuneration systems and reforming them

The incentives emanating from compensation systems were unsuitable as a means of preventing excessive risk-taking in the financial sector. It was with a view to correcting these misguided incentives that the FSB developed, in 2009, principles for sound compensation practices and implementation standards,[23]

19 In Germany, the supervisory board's duty to monitor and the requirements of its members were supplemented in stock corporation legislation by the Act Modernising Accounting Law (Bilanzrechtsmodernisierungsgesetz), which entered into effect in 2009. Moreover, section 36 (3) of the German Banking Act (Kreditwesengesetz), which was inserted in 2009, stipulates that the members of an administrative or supervisory board must be reliable and have the expertise necessary for their activities.
20 See also the comments on pp 126-129.
21 See Senior Supervisors Group, Risk Management Lessons from the Global Banking Crisis of 2008, 21 October 2009. The Senior Supervisors Group is a body of ten supervisory authorities from seven countries, including Germany's BaFin.
22 For information on changes to date, see Deutsche Bundesbank, Amendments to the new EU Capital Requirements Directive and the Minimum Requirements for Risk Management, Monthly Report, September 2009, pp 63-78.
23 See FSB, Principles for Sound Compensation Practices, 2 April 2009, and Implementation Standards, 25 September 2009.

Box 6.2

NEW FORMS OF CONTINGENT CAPITAL

If a systemically important financial institution encounters severe problems or if there is a systemic financial crisis, it is usually the taxpayer who has to bear the losses when a recapitalisation is conducted using public funds. Mechanisms that automatically raise an institution's capital ratio – and thus its resilience to losses – when certain conditions arise, for example by mobilising additional capital, could increase the currently insufficient liability of the private sector, which receives profits but does not always have to bear losses in full. The various types of such stabilisation mechanisms that are currently under discussion differ in terms of their form, the timing of the capital increase and their triggering mechanism. What they all have in common is that they effectively create hybrid forms of capital, featuring characteristics of both equity capital and debt capital. These new hybrid forms of capital differ from traditional convertible bonds in that the conversion does not take place as a result of an option being exercised, but, rather, the occurrence of pre-defined conditions makes conversion mandatory.

Subordinated debt forms the basis for most of these types of mechanisms. When the mechanism is triggered, the subordinated debt is either converted into equity or is written off at a certain percentage rate. Those types of mechanism that are, from the outset, more oriented towards equity capital are both a kind of contractual margin call[1] and a form of capital insurance.[2] The pre-defined point of conversion is either when the institution concerned comes under stress but nevertheless has a realistic chance of overcoming the difficulties (going concern) or when the institution goes into liquidation or avoids insolvency through an injection of public funds (gone concern). Whether an institution is considered to be under stress can be determined on the basis of certain rules, eg according to whether a set capital ratio is undershot, or by the level of certain market prices – possibly averaged over a fixed period of time – such as share prices or credit default swap premiums. Alternatively, this can be decided on a discretionary basis by a public authority.

To date, the best-known capital instruments of this kind are contingent convertibles, also known as "CoCos", which were issued this year for the first time (in different forms) by both a British and a Dutch institution. In both cases, it was decided that the trigger would be the capital ratio falling below a fixed minimum level. Furthermore, in supervisory circles, "bail-in" procedures are being discussed as a possible component of a concept for dealing with systemically important banks, although they have yet to be tested. In such a procedure, a conversion of debt capital into equity capital or a percentage cut in the claims of predetermined – senior – creditor groups would be governed either by contractual regulations ("contractual bail-in") or by a supervisory di-

1 See O Hart and L Zingales, (2009), A New Capital Regulation for Large Financial Institutions, CEPR Discussion Paper, No 7298. — **2** See A K Kashyap, R G Rajan and J C Stein, Rethinking Capital Regulation, Paper prepared for Federal Reserve Bank of Kansas City Symposium on Maintaining Stability in a Changing Financial System, Jackson Hole, Wyoming, August 2008. — **3** See Basel Committee on Banking Supervision, Proposal to ensure the loss absorbency of regulatory

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rective ("statutory bail-in"). It should be borne in mind that credit institutions' debt capital partly consists of customer deposits, which would probably have to be treated separately in the case of a bail-in procedure.

Following the significant tightening of the tier 1 capital requirements under the new Basel III capital rules, prudential recognition of contingent capital is only possible for the countercyclical capital buffer – and then only if it is shown to be able to fully absorb losses – or for a capital surcharge for systemically important banks. The question of how to ensure that regulatory capital can absorb losses when a credit institution is unable to survive without an injection of public funds is currently being discussed by the Basel Committee on Banking Supervision.[3] In Switzerland, a commission of experts appointed by the Federal Council has proposed that, in addition to 10% tier 1 capital, big Swiss banks should, in future, be obliged to set aside an additional capital buffer of 9% of their risk-weighted assets in the form of contingent convertibles.[4]

Irrespective of the above-mentioned issues, there is still no market for contingent capital at present. However, prudential recognition or specification of fixed requirements for these kinds of instruments is likely to foster the development of such a market. It is unclear whether there is a large enough community of potential investors in contingent capital. For bond investors, investing in contingent capital holds the risk of unrecoverable write-downs on claims in times of crisis, or having to accept a conversion into shares. In addition, investments in such hybrid instruments are often not covered by investment mandates. In economic terms, these instruments could forge a link between potential difficulties and financial booms, when risks accumulate. Risk premiums are typically low during boom periods, thus making it advantageous to issue contingent capital precisely at such times when risks are accumulating.[5] Closely linked to this is the issue of determining an appropriate price for convertible capital, bearing in mind that in turbulent market conditions – particularly if market liquidity is decreasing at the same time – the price could be subject to extreme fluctuations. In the case of market price-based mechanisms for triggering conversion, a certain potential for manipulation cannot be ruled out. If a conversion takes place, this is always likely to be interpreted by the financial markets as a crisis signal and, in periods of market turbulence, could therefore increase market pressure, particularly on the specific institutions concerned. The overall effect of system-stabilising features on the one hand and potential additional risks for market dynamics in the event of a systemic crisis on the other cannot be gauged at present.

capital at the point of non-viability, 19 August 2010. — **4** See Final report of the Commission of Experts for limiting the economic risks posed by large companies, 30 September 2010. An interesting feature of the Swiss approach is that it envisages two different triggering thresholds for the contingent convertibles. — **5** It must be ensured, however, that banks do not use this capital as a form of insurance and take excessive risks.

which were adopted by the G20 leaders in September 2009. They are regarded as global standards in this area and have been incorporated into the EU Banking Directive. Germany has already transposed the international standards into national law.[24] In a peer review report in March 2010, the FSB found implementation of its compensation standards to be still incomplete.[25] Moreover, financial institutions are currently revising their remuneration schemes and are testing in some cases very different approaches, in particular with regard to methods for aligning variable compensation elements with risk.[26] Thus, the reform of remuneration systems is far from over. The FSB will present a follow-up report next year on the progress made in implementing compensation standards.

Regulatory and supervisory reforms to improve corporate governance

Regulatory and supervisory reforms which aim to correct misguided incentives revealed by the crisis also contain elements suitable for improving corporate governance. Greater powers of intervention for supervisory authorities – such as the power to dismiss persons considered not adequately qualified to be a member of the supervisory board – can help ensure adequate in-house risk control. Additionally, more intensive and effective supervision can also encourage the development of adequate risk management systems as a means of preventing the build-up of excessive risk positions. In many instances, supervisory authorities lacked independence or a corresponding mandate as well as sufficient resources to be able to properly monitor large complex financial institutions (LCFIs) in particular. In this context, the establishment of international supervisory colleges for SIFIs is every bit as welcome as plans for the further development of the Basel Core Principles for Effective Banking Supervision, which describe the minimum standards of sound supervisory practices.[27] In future, supervisory authorities are also to be able to exert influence with a view to preventing the organisational structure of financial institutions from becoming so complex that adequate monitoring by the supervisory board can no longer be assured.

Generally stricter corporate governance rules

Moreover, in February of this year, the Organisation for Economic Co-orporation and Development (OECD) submitted recommendations aimed at improving implementation of its Principles of Corporate Governance.[28] The Basel Committee on Banking Supervision presented a revised version of its principles for enhancing corporate governance in October 2010. Last but not least, in its Green Paper on Corporate Governance of June 2010, the European Commission put forward its suggestions for consultation.[29] In this Green Paper the Commission announced, contrary to the previous practice of largely voluntary agreements, that further-reaching suggestions for statutory regulations on corporate governance would be presented in early 2011 as a consequence of the shortcomings revealed by the crisis.

24 See Act on the Prudential Requirements for the Remuneration Systems of Institutions and Insurance Companies (Gesetz über die aufsichtsrechtlichen Anforderungen an die Vergütungssysteme von Instituten und Versicherungsunternehmen), August 2010.
25 See FSB, Thematic Review on Compensation, 30 March 2010.
26 See also Basel Committee on Banking Supervision, Range of Methodologies for Risk and Performance Alignment of Remuneration. Consultative Document, 14 October 2010.
27 See also FSB, Intensity and Effectiveness of SIFI Supervision, Recommendations for enhanced supervision, 2 November 2010.
28 See OECD, Corporate governance and the financial crisis – Conclusions and emerging good practices to enhance implementation of the Principles, February 2010.
29 See European Commission, Corporate governance in financial institutions and remuneration policies, Green Paper, 2 June 2010.

Box 6.3

RATING AGENCIES AND THE USE OF RATINGS

At an early stage of the financial crisis, the large rating agencies with an international focus, in particular, became the object of regulators' attention.[1] The failures and misjudgements of these agencies, especially in their assessment of structured products, were a key factor in determining the scale of the crisis and the rate at which it progressed. In the autumn of 2009, the European Council and the European Parliament therefore adopted an EU rating regulation, with the aim of improving rating quality, managing conflicts of interest, introducing a separate rating scale for structured products and enhancing transparency in the area of rating activities. Rating agencies operating in the EU have since been subject to registration requirements as well as mandatory supervision by the competent national authorities.[2]

However, closer supervision is no substitute for market participants using the credit ratings awarded by rating agencies responsibly.[3] Ratings are only intended to serve as the starting point for independent analyses by investors themselves or as a complementary measure. A mandatory requirement obliging institutional investors to disclose the extent of their reliance on ratings and the role played by ratings in their investment mandates might aid incentives aimed at encouraging a more critical approach towards external ratings.

In addition, the financial crisis has demonstrated that the use of ratings in investor protection clauses (rating triggers) and in collateral requirements for downgrades below a critical threshold may cause sudden market swings, which can jeopardise the stability of the financial system.

Regulatory and supervisory bodies will be able to deploy sounder arguments against the excessive reliance of market participants on ratings if they, too, scrutinise their own references to ratings in legislation and regulations and, wherever possible, reduce them. In broad terms, this also applies to the use of external ratings for defining capital requirements in banking supervision and determining requirements with regard to the collateral framework for monetary policy operations. Appropriate national and international initiatives are in the pipeline. In addition, an FSB working group has presented a set of principles designed to reduce references to ratings both in the public and private domain.[4]

In many cases, fundamental changes in the use of ratings are viable solely as a long-term option because appropriate short-term alternatives are not available across the board. For instance, credit rating assessments offer much greater stability than market price-based indicators and are, therefore, less pro-cyclical in terms of their impact, such as when calculating prudential capital requirements. Moreover, despite all the deficiencies that were exposed in the course of the financial crisis, in their valuation of securitisations the rating agencies currently still seem to be benefiting from their lengthier experience and better access to details regarding securitised exposures compared with banks' internal valuation models.

1 See Report of the Financial Stability Forum on Enhancing Market and Institutional Resilience, 7 April 2008. — **2** Regulation (EC) No 1060/2009 of the European Parliament and of the Council of 16 September 2009 on credit rating agencies. The regulation is currently undergoing revision, with a view to transferring the supervisory powers set out therein – which have hitherto been exercised at the national level – to the newly established European Securities and Markets Authority (ESMA). — **3** See A Dombret, Stärkere Regulierung der Ratingagenturen allein reicht nicht, Handelsblatt, 8 October 2010, p 8. — **4** See Financial Stability Board, Principles for Reducing Reliance on CRA Ratings, October 2010.

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The EU sets up three new supervisory authorities

Three new EU authorities …

In September 2010, the European Commission, the European Parliament and the European Economic and Financial Affairs Council (Ecofin) agreed to establish three new European supervisory authorities (ESAs). Thus, the European Banking Authority (EBA), the European Securities and Markets Authority (ESMA) and the European Insurance and the Occupational Pensions Authority (EIOPA) will be able to commence work on 1 January 2011. The three ESAs have their origins in the present financial supervisory committees, the Committee of European Banking Supervisors (CEBS), the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) and the Committee of European Securities Regulators (CESR).

… endowed with extensive powers

The new authorities will be endowed with wide-ranging powers that by far exceed those of the present committees. The ESAs are to, and will, contribute to greater convergence in Europe by developing within areas determined by Ecofin and the European Parliament legally binding standards which, once they have been adopted by the European Commission as regulations or decisions, will have a direct impact in the EU. Moreover, if national supervisors do not observe or implement EU supervisory legislation, the ESAs are to be empowered to intervene and give binding instructions both to national supervisory authorities and, if necessary, to the institutions concerned. In addition, the ESAs are to help achieve more coordination and cooperation among European supervisors, especially with regard to LCFIs. To this end, they will be given an important role in the European supervisory colleges for individual banks.[30] They can, moreover, act as arbitrator, whereby their decisions are to be binding, if disputes arise between two or more national supervisors in the areas named in sectoral law – for example, when joint decisions are to be made by the competent supervisors of a group of institutions on the supervisory approval of internal models pursuant to Article 129 (2) of the Banking Directive. And in times of crisis, too, the ESAs are to adopt a strong, coordinating role in that they will be able under certain circumstances to issue national supervisors with legally binding instructions, for example to temporarily restrict or forbid certain financial activities. Additionally, the ESAs, working closely with the ESRB,[31] will be responsible for developing and conducting EU-wide stress tests and risk analyses in order to identify systemic risks at an early stage and take corrective measures, where necessary.

Balance between national and European level

The three EU supervisory authorities will place European supervisory cooperation on a considerably higher footing; however, they will have to prove themselves in practice before a sound evaluation can be made. Although the three European supervisory authorities have been assigned extensive powers in a number of areas, responsibility for the ongoing monitoring of institutions is to remain with the national supervisory bodies, and fiscal responsibility with the member states. In future, therefore, it must be ensured, given the incompleteness of political union in the EU and the principle of conferral, that an appropriate balance is main-

30 See Deutsche Bundesbank, International cooperation in the area of ongoing banking supervision, Monthly Report, December 2009, pp 47-57.
31 See also the comments on pp 124-125.

tained between national fiscal and supervisory responsibility and European-level powers of intervention. The Bundesbank will play its part in this.

Identifying and containing systemic risk

Macroprudential policy to limit systemic risk necessary

One of the central lessons to be learned from the crisis is that financial stability can be assured only if the financial system is looked at and treated as a whole. This is the stance taken in macroprudential oversight. Its objective is to limit systemic risk. That means, first, mitigating the risks arising from contagion effects and the interaction of financial institutions, markets, market infrastructure and the macroeconomy (cross-sectional dimension of systemic risk). Second, the objective is to prevent financial imbalances from building over time (time dimension of systemic risk).[32] Macroprudential policy therefore complements the traditional microprudential view, which measures the solvency and liquidity situation of individual institutions but frequently neglects the interplay of the individual market players and their interaction with the economy as a whole. Microprudential analysis alone is therefore not sufficient. The contagion effects within the financial system following the collapse of the investment bank Lehman Brothers and the impact this had on the economy as a whole illustrate the importance of macroprudential analysis.

Instruments relate first to financial institutions, …

Various instruments are available to conduct macroprudential policy. However, there are virtually no systemic intervention tools originally designed for this purpose yet; most instruments constitute microprudential approaches that have been adjusted to macroprudential purposes. The instruments can be categorised by the element of the financial system to which they are applied. The majority of instruments relate to financial institutions. Relevant instruments include, for instance, the two types of capital buffer (capital conservation buffer and countercyclical buffer) outlined in the Basel III accord as well as a risk provisioning system that is forward-looking and smoothes losses over the economic cycle (dynamic provisioning). Both measures deal with the time dimension of systemic risk. The bank levy adopted in Germany also applies to financial institutions and therefore comes into the first category. Finally, mention should also be made of measures to manage financial crises, such as the deposit-guarantee scheme or dedicated insolvency rules for banks. Overall, macroprudential policy should look not only at banks, but should also include insurers and non-regulated market players.

… second to the markets and third to the financial infrastructure

The second set of instruments focuses on the risks emanating from markets. Relevant instruments include, for example, the collateral to be submitted in return for central bank liquidity. The third set of instruments is applied to risks emanating from the financial infrastructure. One possible instrument is, for instance, the introduction of central clearing houses. Overall, the instruments in the cross-sectional and time dimension tend to interact positively. Equally, lower risk on the markets and in the financial

32 See C Borio, Towards a macroprudential framework for financial supervision and regulation?, BIS Working Paper 128, February 2003. For an overview of macroprudential instruments, see ECB, Macro-prudential Policy Objectives and Tools, Financial Stability Report June 2010, and BIS, Macroprudential Instruments and Frameworks: a Stocktaking of Issues and Experiences, CGFS Papers, No 38, May 2010.

infrastructure also tend to reduce the risks associated with financial institutions.

Countercyclical capital buffers to dampen credit cycle

Basel III accord includes countercyclical capital buffer

One example of a macroprudential instrument is a countercyclical capital buffer. Many commentators demand that it should be introduced as a necessary regulatory change in response to the crisis. The Basel III accord does envisage the introduction of a countercyclical capital buffer at national level. But unlike the rules discussed in the preceding section (increasing minimum capital requirements, tightening liquidity regulations and introducing a capital conservation buffer), there are no fixed targets yet for the countercyclical buffer over the next few years. To date, only its outline has been laid down, and it is still open whether it will be introduced at all. This instrument will therefore be discussed here only in an exemplary manner.

Objective of countercyclical buffer is to prevent excessive lending …

The most important reason for introducing a countercyclical capital buffer is to prevent phases of excessive lending.[33] These may be caused by various factors, for instance financial innovations such as complex securitisation structures, which spurred lending in the subprime mortgage sector in the United States. Excessive lending will, in general, lead to the build-up of system-wide risk, which may destabilise the financial sector. The objective of a countercyclical capital buffer is therefore first to make loans more expensive by stipulating higher capital backing when the economy is buoyant in order to dampen demand for credit and prevent overheating. Second, it should ensure that banks have sufficient capital in times of crisis to continue to supply the economy with credit and thereby avert a potential credit crunch.

… and dampen procyclical effects

Another reason for a countercyclical capital buffer, which has, however, receded into the background somewhat at present, may be to dampen the potential procyclical effects of regulation, in particular of risk-sensitive capital requirements. A concern frequently voiced in the academic and political debate is that risk-sensitive capital requirements could act procyclically, ie they could amplify the financial and economic cycle. In good economic times, capital requirements would be relaxed as debtors are less likely to default, causing banks to lend more, which would additionally stimulate economic growth. Conversely, during a recession, banks could be forced to sharply curtail lending in order to meet higher capital requirements. The quantitative significance of such effects is not clear from a theoretical point of view, and, at the present juncture, it is still very difficult to assess the actual effects.[34] The introduction of a countercyclical capital buffer could, however, counteract any potential procyclical effects.

Choosing suitable indicators to manage the buffer

There are a wide variety of options on how to use a capital buffer.[35] First of all, the variables must be determined on which the level of the

33 See also Basel Committee on Banking Supervision, consultative document, Countercyclical capital buffer proposal, July 2010, and Basel Committee on Banking Supervision, press release on higher global minimum capital standards, 12 September 2010.
34 The correlation described above between capital requirements and the economy is, for instance, mitigated by the fact that Basel II recommends the use of through-the-cycle ratings, which should not change much over the economic cycle, rather than point-in-time ratings.
35 See M Drehmann, C Borio, L Gambacorta, G Jiminez and C Trucharte, Countercyclical capital buffers: exploring options, BIS Working Paper No 317, July 2010.

buffer is to be based. The selected variables should be suited, first, to signal a build-up of systemic risks at an early stage in order to initiate a capital build-up phase. Second, the conditioning variables should also indicate when to end the capital build-up phase if risks materialise and there are increasing signs of system-wide stress. Besides macroeconomic variables (such as growth of gross domestic product (GDP), credit growth), potential variables could be indicators of banking sector performance (eg aggregate banking sector earnings, the volume of non-performing loans) and financial market variables (such as banks' credit risk premiums or interest rate spreads between the unsecured and the secured money market).

International coordination necessary

When designing the buffer, it is also important to consider at what level the indicators should be measured – nationally and identically for all banks, or internationally and on a bank-specific basis. The implication of measuring indicators internationally and on a bank-specific basis would be that the buffer for internationally active banks is determined by weighting the various national indicator values with the bank's foreign loan portfolio in the respective country. Given that developments on the credit markets diverge, in some cases considerably, international measurement appears sensible, particularly as, also in the run-up to the current crisis, credit markets overheated only in some countries, while credit growth in other countries was subject to largely normal fluctuations. When introducing a countercyclical buffer, a general aim should be to ensure that the rules are harmonised internationally in order to avoid competitive distortions.

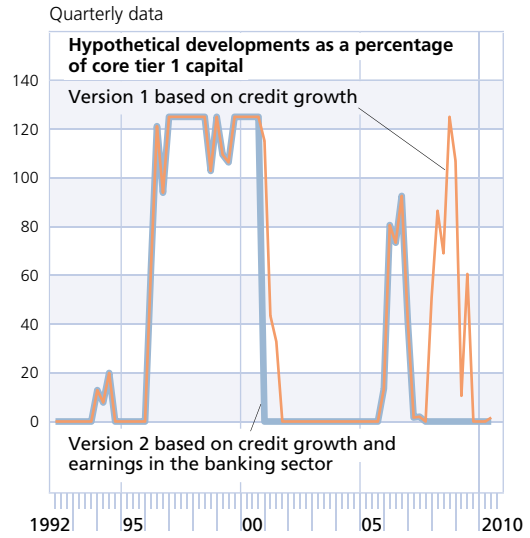
Exemplary illustration

Chart 6.2 illustrates two simple examples of possible capital buffers for the German banking system. In version 1, the level of the buffer is derived from the detrended credit growth of the German banking system. The buffer fluctuates between 0% and 125% over time. It is 0% when actual credit growth equates at most to the trend figure, and reaches the maximum of 125% as soon as credit growth exceeds the trend figure by one standard deviation. In between, the buffer rises in linear fashion. Version 2 of the buffer differs from version 1 in that the profits generated by the German banking system are taken into account and capital build-up is halted if profits (as a percentage of average total assets) are below the long-term average since 1990. Both buffers should be understood as relative add-ons to the minimum ratio of core tier 1 capital, in other words for a minimum ratio of core tier 1 capital of 2% as required under Basel II, the add-ons are at most 2.5 percentage points.[36] In both examples, the add-ons raise the current minimum capital ratio on average. This follows from the assumed calculation rules, which only allow for positive add-ons. Alternatively, buffers could also be constructed such that they are activated less frequently but then expand more rapidly. Overall, it is clear that a buffer that is based on detrended credit growth alone does not appear suitable for Germany, as the variable would have indicated a phase of capital build-up in the current crisis. This points to the advisability of combining various conditioning variables when designing the buffer.

36 The range of fluctuation from 0 to 2.5 percentage points is in line with the Basel III rules for the countercyclical capital buffer.

Chart 6.2

GERMAN BANKS' COUNTER-CYCLICAL CAPITAL BUFFER



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Countercyclical buffer could be quantitatively significant in a crisis

The effect of the buffer depends on the degree to which banks are actually encouraged to create additional capital. Banks generally already have a buffer over and above the minimum capital ratio to satisfy the expectations of the markets and rating agencies and to prevent capital dropping below the minimum ratio, thereby causing banking supervisors to step in. Banks can therefore be expected to aim for a voluntary buffer, even after an obligatory add-on over and above minimum capital ratios is introduced, and therefore to raise their capital ratios to protect themselves against unexpected developments. Had a capital buffer according to version 2 been obligatory before the onset of the financial crisis and had banks formed additional capital amounting to 75% (100%) of the requirements, the buffer would have peaked in September 2006 and banks would therefore have formed €43 billion (€57 billion) worth of capital.[37] This would have been equivalent to an increase in the core tier 1 ratio by 1.4 (1.9) percentage points. By way of comparison, the public sector has injected some €50 billion worth of capital (excluding guarantees) into the German banking system since the onset of the financial crisis.[38] All other things being equal, an obligatory capital buffer would therefore have helped banks to overcome the crisis significantly better without government aid.

Additional data to render risk arising from financial interconnectedness transparent

Interconnectedness and systemic risk

The main objective of macroprudential oversight is to recognise and tackle systemic risk at an early stage. The increasing interconnectedness of the global financial system represents a major challenge, as interdependencies may mean that the functioning of the system as a whole is jeopardised when one market player runs into difficulties. Systemic risk may emanate from all parts of the financial system. Moreover, there are potential contagion channels both within financial sectors and across sectors. A comprehensive concept for safeguarding financial stability must therefore ensure that the competent public authorities have access to all necessary information at all times.

37 Banks can also establish the countercyclical buffer by lowering their voluntary capital buffer, ie they need not necessarily create new capital in the full amount.
38 All capital aid (excluding guarantees) provided by the Federal and state governments, municipalities, savings banks, the Financial Market Stabilisation Fund (SoFFin) and the KfW promotional bank.

It is key that players outside the classical banking system which, however, perform similar functions are addressed and overseen as consistently as possible. What is decisive is their potential systemic importance, which is expressed not only in their size or type of institution. The content and depth of regulation should be determined not by the sector which financial intermediaries formally belong to but by their function within the financial system. Otherwise risks could spread from unregulated to regulated areas or, conversely, migrate to unregulated markets.

Improvements to BIS statistics

A first promising approach to closing existing information gaps is to improve the information content and potential uses of the extensive statistics provided by the Bank for International Settlements (BIS).[39] Work on improving and extending them has already started. For instance, the geographic reach of the banking statistics is to be gradually extended, existing gaps, for instance on the banking sector's refinancing requirements in various currencies, to be closed, and data to be made available more quickly. Qualitative improvements are also to be made to securities and derivatives statistics, for example credit risk transfer statistics.[40]

Closing information gaps

However, the need for information and data for macroprudential analysis goes even further. To meet this need, all SIFIs, markets and instruments must be subject to appropriate reporting requirements and, potentially, oversight, regardless of their form (eg bank or fund). In this respect, the crisis has revealed significant gaps; these must be closed by subjecting all parts of the financial system to appropriate transparency requirements.

High requirements of international statistics

The increasing complexity and interconnectedness of the global financial system and especially the strong growth of the shadow banking system (see Box 6.4 on page 122) entail new, significantly higher requirements in terms of timely and internationally comparable statistics. Indispensable data for a stability analysis includes, amongst others, regular updates on the balance sheet structure, for instance risk exposure by asset class and the extent of financial leveraging. Market players in the shadow banking system should also, if necessary, be required to report their exposure in derivatives and short-selling positions.[41] Since some market players are able to restructure their portfolios at short notice, reporting frequency should be at least quarterly to ensure that the risk picture is sufficiently up to date. The introduction of new disclosure requirements should be internationally coordinated as much as possible to prevent market players from taking circumventive action.

FSB/IMF project commissioned by G20

The G20 made a political response to the increased data requirements for analysing systemic risk and asked the FSB and the International Monetary Fund (IMF) to identify the most significant information and data gaps and to provide proposals on how to address them. In October 2009, the FSB and the IMF thereupon presented a report with 20 concrete recom-

39 The Bundesbank is responsible for collecting the German data and sending them to the BIS. See www.bundesbank.de/statistik/statistik.en.php.
40 See BIS, Credit risk transfer statistics, CGFS Paper, No 35, September 2009 and BIS, Research on global financial stability: the use of BIS international financial statistics, CGFS Paper, No 40, June 2010.
41 See also IOSCO Task Force on Unregulated Entities, Data Template, February 2010 available at http://www.iosco.org/news/pdf/IOSCONEWS179.pdf.

Box 6.4

SHADOW BANKING SYSTEM WITHIN THE MACROPRUDENTIAL APPROACH

The crisis has unambiguously illustrated the dangers arising from the fringes of the financial system, which are significant in terms of volumes. In the run-up to the crisis, a great many traditional bank functions had been shifted to the shadow banking system, where multi-tiered intermediation processes entailing, for example, off-balance-sheet conduits or structured investment vehicles (SIVs) led to large-scale maturity transformation.[1] Securitised loans were regularly issued by special-purpose vehicles, which likewise did not appear on banks' balance sheets, not least in order to circumvent supervisory regulations governing capital backing. The strong growth of the shadow banking system occurred largely outside the areas monitored by supervisory bodies; what is more, the structure of the off-balance-sheet activities masked the extent of the actual risks. As the crisis intensified, banks felt obliged – not least in order to protect their reputation – to bring previously unloaded risks back onto their balance sheets, a fact that contributed significantly to the deterioration in their capital base and liquidity situation.[2]

In the run-up to the financial crisis, the expansion of the shadow banking system was closely linked to the favourable conditions applying to wholesale money market funding. Apart from (asset-backed) commercial paper, this, above all, includes the secured repo market. The rapid withdrawal of liquidity provided by repos (repo run), whereby parts of the shadow banking system also came under pressure, resulted in many intermediaries encountering additional difficulties and was therefore a major channel of contagion in the financial crisis. This makes it necessary to obtain a better insight into the scope, structure and financing situation of the repo market, given its importance as a source of funding.

The opaque part of the financial system also includes leveraged investors such as hedge funds. Owing to their links to systemically important financial institutions they constitute a potential risk factor for the financial system. Furthermore, in individual market segments, hedge funds may acquire systemic importance. Especially in tight markets, they can induce or significantly amplify market reactions if they feel forced to adopt herding behaviour. Moreover, hedge funds can act as a catalyst for a general reassessment of risks in the financial markets. Having recently gained the approval of the European Parliament, the new EU Directive on Alternative Investment Fund Managers (AIFM) is to be formally adopted in the near future.[3] The directive stipulates that, in addition to mandatory registration and licensing, hedge funds will in future be subject to extensive disclosure requirements vis-à-vis supervisors and investors.[4] In this regard it is crucial for reporting requirements to be harmonised worldwide and for comparable information to be provided in a timely fashion.

Gaining a deeper insight into the shadow banking system is a precondition for detecting systemic risk and hence for macroprudential oversight, which also comprises identifying any potential regulatory arbitrage through the shadow banking system. First and foremost, the new tighter regulations applying to the traditional banking sector must not be allowed to serve as the starting point for a renewed migration of business to areas of the financial system that are subject to little or no regulation. At the same time, the resilience of banks to risks emanating from areas outside the traditional banking system also needs to be strengthened to ensure that the financial system will not be jeopardised and impaired in a similar manner again.

1 See, for example, P Tucker, Shadow banking, financing markets and financial stability, speech in January 2010, and Federal Reserve Bank of New York, Staff Report No 458, Shadow Banking, July 2010. — **2** Against this backdrop, the G20 decision to implement Basel II in all major financial centres by the end of 2011 is helpful. Liquidity lines to special-purpose vehicles will then, as a matter of principle, have to be backed by capital. — **3** The AIFM covers not just hedge funds but also private equity funds and specialised funds. — **4** The recent financial market reform in the United States also tightened disclosure rules for hedge funds, which will moreover be subject to expanded SEC registration requirements in the future and will be required to regularly report data on their investment activities and risk exposures.

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mendations.[42] These aim, in particular, at extending the information base on the build-up of risk and on cross-border financial sector linkages, and at improving sectoral statistics; the communication of official statistics is also to be optimised. The recommendations are now being implemented; in many areas, for example in capturing counterparty risk associated with credit default swaps, gratifying progress has already been made.[43]

Unsatisfactory data on network connections

There is, to date, not enough information available specifically on international network connections.[44] This is especially true of the segment for secured money market transactions, known as repos. Repo markets are key to liquidity management and represented one of the central channels through which shocks were transmitted during the crisis. Moreover, changes in behaviour on repo markets can also be used as a timely indicator for a loss of confidence in an individual financial institution or in the financial system as a whole. Qualified information on the structure of and activity on repo markets is therefore needed. In the second quarter of this year, the US Fed introduced a new quarterly survey on changes in credit terms and conditions for securities financing and over-the-counter derivatives transactions,[45] which could serve as a model for the euro area.

Measuring short selling

As the banking crisis intensified in September 2008 and in connection with the escalation of the sovereign debt crisis in May 2010, misgivings were voiced, not least in political circles, about the potentially destabilising effects of short selling and credit default swaps. It is difficult to obtain empirical evidence for this view, however, as very few countries had in place reporting and disclosure requirements for short selling and credit default swaps at the onset of the crisis. In order to identify any problems arising from such transactions and to react to them in a targeted manner, supervisory authorities must receive up-to-date data on the scope of transactions or at least the volume of short selling positions. In addition, the existence of reporting requirements in itself can be expected to help counteract abusive behaviour and aggressive market practices and reduce the danger of resulting market distortions. In Germany, the Federal Financial Supervisory Authority (BaFin) introduced reporting and disclosure requirements for net short selling positions at the beginning of March 2010. In March 2012, these will be replaced and extended by a law passed in July 2010.[46] In addition, the European Commission presented a proposal for regulating short selling and certain aspects of credit default swaps in September 2010, the main objective of which is to increase the transparency of these transactions.

42 See FSB and IMF, The Financial Crisis and Information Gaps. Report to the G20 Finance Ministers and Central Bank Governors, October 2009. Another comprehensive report on various types and the scope of regulation including recommendations on how to eliminate information gaps was published by the Joint Forum. See Joint Forum, Review of the Differentiated Nature and Scope of Financial Regulation – Key Issues and Recommendations, January 2010.
43 See FSB and IMF, The Financial Crisis and Information Gaps, Progress Report, Action Plans and Timetables, May 2010.
44 Moreover, the way in which tail risks are dealt with is very important. However, this problem will have to be studied in greater detail before concrete measures can be taken.
45 See Board of Governors of the Federal Reserve System, Senior Credit Officer Opinion Survey on Dealer Financing Terms, June 2010.
46 See Act to prevent abusive securities and derivatives transactions [Gesetz zur Vorbeugung gegen missbräuchliche Wertpapier- und Derivategeschäfte], July 2010.

Central banks have key role in macroprudential oversight

Macroprudential regulation under development

The financial crisis has highlighted the weaknesses of financial supervision based on microprudential aspects alone. It is incumbent upon macroprudential supervision to identify systemwide risks and help combat looming financial crises. Only by looking at the structures of the financial system in their entirety and the interaction of various players, accounting for herding behaviour and existing incentives, can risks to financial stability be properly assessed. National financial authorities and international institutions all over the world are therefore establishing additional macroprudential oversight or extending existing surveillance activities. This applies both to the analytical toolkit and to the institutional framework.

IMF and FSB early warning exercises

At the international level, the IMF and the FSB are engaged in monitoring the current risk situation as well as risk trends within the international financial system. At the behest of the G20, they have intensified their collaboration. The IMF is primarily responsible for macro-financial risk, ie especially the interaction between the real economy and the financial sector. The FSB, actively supported by its member states and institutions, focuses on vulnerabilities within the financial system. Twice a year, at the IMF's spring and annual meetings, the two institutions merge their assessments to conduct a joint early warning exercise. The objective is to identify key risks and to provide policymakers and regulators with confidential recommendations. The IMF and FSB present the results of their early warning exercise to the IMF's International Monetary and Financial Committee (IMFC), which then has the opportunity for in-depth confidential discussions on risk assessment and policy priorities. Still, national policymakers will have to decide on how to address the risks identified and how to respond to the recommendations, therefore making them responsible for the success of these extended analyses. Within the EU, the establishment of the ESRB closes an important gap in the European financial supervision framework. The ESRB, together with the three microprudential supervisory bodies,[47] represents an essential part of the European System of Financial Supervision (ESFS). As the European Parliament approved the legislative proposals in September 2010, the ESRB can start operating in January 2011 as planned.

ESRB's tasks

The ESRB's tasks include monitoring and assessing systemic risk with the objective of increasing the financial system's resilience and containing the impact of shocks to the financial system. The ESRB is thereby to make an important contribution to financial stability and, ideally, help prevent financial crises. In the pursuit of these tasks, the ESRB may issue general or specific risk warnings to the European Union, individual member states or the three European supervisory bodies with a view to defusing any risks promptly and adequately. Moreover, the ESRB may, in an emergency situation, issue confidential warnings to Ecofin. The ESRB is also to help implement the IMF, BIS and FSB recommendations. Thus, the ESRB will form the core of macroprudential surveillance at the EU level and play a key role in coordinating macroprudential oversight and microprudential supervision. Implementation of the recommendations and warnings may be sup-

47 See comments on pp 116-117.

ported by the use of macroprudential instruments at the European and national level.[48] To ensure transparency, the use of such instruments should primarily be rule-based. However, the discretionary use of suitable additional instruments cannot be ruled out in order to maintain adequate scope for action.

Involvement of national central banks

The ESRB will be independent in its decisions but nevertheless cooperate closely with the European Central Bank (ECB) and the national central banks. The secretariat of the ESRB will be entrusted to the ECB, which will therefore provide analytical, statistical, administrative and logistical support. To the extent that the ECB carries out macroprudential analyses as part of the Eurosystem's financial stability mandate, which will remain in place independently of the ESRB, and supplies these to the ESRB or conducts analyses at the behest of the ESRB, the national central banks' competence should be used in the interests of the quality of the analyses and a decentralised performance of tasks. These and other national supervisory authorities have the largest fund of experience on their respective financial system and make independent contributions to macroprudential oversight. The aim is that, by observing one financial system and the feedback effects it has on other national financial systems in greater detail, any risks to financial stability will be identified at an early stage and contained.

ESRB institutional framework

The General Board, the ESRB's decision-making body, will be composed of the president and vice-president of the ECB, the 27 national central bank governors, a representative of the European Commission and the chairs of the three European supervisory authorities (voting members). Moreover, the national supervisory authorities especially will be represented on the ESRB's General Board, albeit without voting rights, in order to ensure close coordination between the ESRB and microprudential supervision. The General Board will be assisted by a Steering Committee to support its decision-making process as well as an Advisory Technical Committee (ATC) and an Advisory Scientific Committee (ASC). The chairs of these committees and the vice-chairs of the ASC will also be represented on the General Board, where they will have voting rights. Overall, as macroprudential oversight is expanded, the number of international bodies rises, as does the need for coordination and the incidence of competing competencies. It is therefore important that clear competencies and areas of responsibilities are defined in the international framework of bodies and institutions.

Macroprudential oversight in Germany

Central banks usually satisfy the necessary conditions for macroprudential oversight, in particular the combination of macroeconomic and financial market competencies. For Germany, that means that the Bundesbank will take on the central role in macroprudential analysis and oversight. At the end of 2009, the Risk Committee was set up as a coordination committee to better link micro and macroprudential responsibilities. It is a joint committee comprising high-ranking representatives of the Bundesbank and BaFin. Based on large-scale monitoring of relevant risk areas, and maintaining the necessary confidentiality, information is exchanged between BaFin and the Bundesbank to assess early on which situations could be systemically important or relevant to

48 The authority of the ESRB itself will lend weight to its legally non-binding recommendations.

individual banks. The committee's toolkit includes making concrete recommendations to the supervisory areas concerned.

Enabling the restructuring and resolution of large financial institutions

Ensuring the ability to act and providing incentives

The fact that insolvent enterprises drop out of the market, not least to create room for new market players or to enable further growth for healthy market participants, is a basic functional principle of a market economy. In the case of systemically important banks, in particular, this could potentially entail high macroeconomic costs, however. Mechanisms are therefore required which, if necessary, allow a compulsory restructuring or resolution of an institution, without jeopardising the stability of the financial system or even harming the entire economy.

Introduction of dedicated insolvency and restructuring procedures for banks

Existing intervention options insufficient

The existing intervention options did not suffice in many cases to allow the competent authorities to curb the crisis situation quickly and effectively; the overall system was affected as a result. It will not be possible to rule out the collapse of individual financial institutions in the future either; nor is this desirable in a market economy. Instead, in the interest of ensuring a functioning incentive structure, it must be possible for even large and systemically important financial institutions to exit the market. Hence, it is important to ensure that the competent authorities are provided with the necessary ways and means in future to prevent the collapse of one institution from triggering a chain reaction and escalating into a systemic crisis.

Restructuring and resolution mechanisms for the financial sector

The introduction of appropriate restructuring and resolution mechanisms is of key importance in this context as existing general bankruptcy legislation has proved to be inadequate in many countries.[49] The aim must be to enable the competent authorities to intervene at an early stage so that ailing financial institutions can, if required, quickly be restructured or wound up in order to effectively reduce contagion effects. Dedicated insolvency legislation for the financial sector would not just significantly enhance public authorities' scope for action in times of crisis, it would also ensure the proper systemic incentive function of an orderly market exit. This would go some way towards countering market expectations that systemically important institutions will always be bailed out and would reduce incentives to act in a way that jeopardises stability, such as growing to an excessive size.

Avoid misguided incentives and ensure international compatibility

To function efficiently and, in particular, to prevent the emergence of new misguided incentives, government restructuring and resolution mechanisms need to meet certain requirements. For them to have a disciplining effect on business behaviour, it is crucial that neither equity investors nor creditors are exempt from liability; conversely, the burden on taxpayers should be minimised. The mechanisms must concurrently ensure transaction security while seeking to minimise legal risks. Efforts should also be made to ensure the highest possible level of international cooperation. National

49 See Deutsche Bundesbank, Financial Stability Review 2009, pp 78-79.

resolution regimes must be compatible with those of other countries in order to enable smooth cross-border bank resolutions.[50]

Living wills as a disciplining instrument

Swift and efficient restructuring or resolution is often impeded by the complex group structures of today's cross-border financial institutions. Although the corporate structure of financial institutions should obviously not be geared primarily to a possible resolution scenario, some forward planning and organisational groundwork would be appropriate. This could take the form of an obligation, which was also approved by the G20, to draw up recovery and resolution plans (living wills) applicable in a crisis that would facilitate the separation of systemically important parts from the rest of the institution, for example. It should be borne in mind, however, that it will often not be possible to execute such resolution plans in a crisis, which is typically characterised by unpredictable and escalating events. This being so, living wills are no substitute for a strong legal foundation for restructuring financial institutions. Living wills can, however, generate positive *ex ante* disciplining effects, especially if they encourage a modular group structure which would simplify the hiving-off of individual business units in the event of a crisis. Tax law should also be critically examined in terms of possible amendments as, here too, there are incentives to set up complex and also cross-border corporate structures.

Involving financial sector in the costs of the crisis

One issue which is closely linked with the implementation of suitable resolution mechanisms is whether, and to what extent, the financial sector should contribute to the costs resulting from a crisis by means of a levy. Here, consideration must be given to the interaction with other reform measures, especially the more stringent capital requirements and the resulting cumulative burden of the financial sector. Furthermore, it is essential to avoid creating new misguided incentives. A restructuring fund should therefore be used exclusively for the restructuring or the resolution of banks without causing market disruption. The resources of such a fund must not be used as a general rescue fund for institutions or an indemnification pool for former owners.

German approach: greater sovereign intervention rights …

In many countries, legislative initiatives have already been initiated to correct the shortcomings identified in the legal and institutional framework and to enable an orderly resolution of banks at risk of insolvency. Corresponding legislation has now also been passed by the lower house of parliament (Bundestag); the deliberations in the upper house of parliament (Bundesrat) are due to be concluded by the end of the year.[51] The core elements of the law are the introduction of a two-stage internal process for ailing credit institutions (first stage: restructuring procedure initiated by the institution itself; second stage: reorganisation procedure modelled on the existing insolvency plan procedure) and an extension of prudential powers, including the possibility of transferring the financial assets of a systemically important distressed bank to a private bank or to a public bridge bank. The remaining non-systemically

50 See, in particular: Basel Committee on Banking Supervision, Report and Recommendations of the Cross-border Bank Resolution Group, March 2010.
51 See Act on the restructuring and orderly resolution of credit institutions, on the establishment of a restructuring fund for credit institutions and on the extension of the limitation period of management liability under the German Stock Corporation Act (Gesetz zur Restrukturierung und geordneten Abwicklung von Kreditinstituten, zur Errichtung eines Restruktuierungsfonds für Kreditinstitute und zur Verjährungsfrist der aktienrechtlichen Organhaftung), October 2010.

important parts could then be wound up during the insolvency proceedings if necessary.

… backed by a restructuring fund

Furthermore, the German legislation provides for the creation of a restructuring fund to be financed through a levy from the banking sector. This means that in the event of a crisis situation, funds would be available – although on a limited scale – to the supervisory authorities to finance a restructure or a resolution. Compulsory contributions will have to be made by all German credit institutions. The contribution will be calculated on the basis of the respective institution's degree of systemic risk, which, in turn, is determined on the basis of the institution's unsecured liabilities, and so the levy should additionally exert a certain steering function.[52] A target volume of between 1% and 2% of GDP is often quoted as an appropriate amount for such a fund. This appears to be sufficient to finance a resolution or a restructure, but would not serve as a rescue shield in the event of a systemic crisis. Given the overall burden on banks resulting from various regulatory measures, the banks' contributions are to be moderate in relation to the overall size of the fund. Owing to the amount of time required to build up such a fund, however, the possible relief for the tax payer is likely to be only small, also in the long run. The German law therefore by and large meets the requirements of a modern restructuring and resolution regime.

Avoiding competitive distortions through international coordination

In order to avoid competitive distortions, it is essential that bank levies are introduced and coordinated at the international level. An agreement among the G20 nations on introducing bank levies can be ruled out at present, however. This makes it all the more important to find a common solution, at least at EU level. The European Commission has put forward the idea of a network of restructuring funds to be administered by the individual EU countries and which would be financed *ex ante* by contributions from the banking industry.[53] It is important to ensure that the subsidiarity principle is upheld in the process and that the power to decide on the use of the financial resources remains with the national governments. The basic principles of the levy, such as the assessment basis and the defined group of contributors, should be harmonised at EU level, not only to ensure a level playing field but also to avoid duplicate burdens, in particular. A certain degree of national leeway should be granted in the detailed design, however.

Crisis management mechanisms also for distressed sovereign debtors

In the most recent episode of the financial crisis which has been underway since spring of this year, it was not so much the solvency of financial institutions that was called into question as the creditworthiness of government debtors from euro-area member states. Against the backdrop of a lax application of the rules of the Stability and Growth Pact, the markets' sudden reaction pushed a number of euro-area countries to the brink of insolvency. A significant need for regulation has become apparent. In the meantime, the European Council has laid the foundations for setting up a crisis resolution mechanism. The current state of discussion in the EU on improving the implementation of sound budgetary policies and on the

52 This construct justifies the levy's application to all banks as it limits the externalities generated by systemically important banks and thus improves the position of the other market participants at the same time.
53 See the Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee, the European Court of Justice and the European Central Bank entitled Bank Rescue Funds, from May 2010.

modalities for the future management of sovereign debt crises are outlined in Box 6.5 on page 130.

Deposit protection is being reformed

Deposit protection as a means of preventing bank runs

Deposit guarantee schemes serve to protect bank deposits in the event of insolvency. Institution protection schemes provide indirect depositor insurance by preventing the onset of insolvency. They therefore contribute towards financial stability as they reduce the likelihood of a sudden, massive withdrawal of deposits by customers (bank runs). Nevertheless, deposit guarantee schemes reduce the incentive for investors to take a prudent approach when choosing a credit institution and therefore diminish the associated disciplinary effect on banks' risk propensity. This should also be borne in mind when drawing up further financial market regulations. In Germany, a number of voluntary deposit guarantee schemes and cross-institution protection schemes exist alongside the statutory deposit insurance scheme. All of the German guarantee schemes are currently funded by *ex ante* contributions supplemented by *ad hoc* top-up payments.

EU reform to counteract fragmentation

The statutory deposit guarantee schemes in the EU are regulated by the EU Directive on Deposit Guarantee Schemes, which is based on the principle of minimal harmonisation. There are currently around 40 such guarantee schemes in place in the EU supporting various groups of investors and deposits to varying amounts. In July 2010, the European Commission put forward a proposal for an amendment of the Deposit Guarantee Schemes Directive. The plans are aimed at further harmonising deposit protection in the EU. Under the new rules, the increase in the minimum level of mandatory protection to €100,000, which was agreed in 2009 and which will come into force in 2011, will apply as the maximum level of harmonisation in future. The German statutory deposit protection scheme currently guarantees deposits up to a maximum amount of €50,000 per depositor in accordance with the Deposit Guarantee and Investor Compensation Act (*Einlagensicherungs- und Anlegerentschädigungsgesetz*). However, most deposits are protected additionally by the existing voluntary deposit guarantee schemes and cross-institution protection schemes.

Contributions of all banks to be risk-based in future

The Commission's proposal provides for the contributions of all credit institutions to the deposit guarantee schemes to be calculated on a harmonised basis according to their risk profile and to consist of both risk-based and non-risk-based components. The non-risk-based component of the contributions is calculated according to the amount of the deposits that are eligible for reimbursement. The risk-based component consists of indicators relating to both the assets and liabilities side of the balance sheet.

Overall burden on banks should be borne in mind

Within the next ten years, 1½% of all deposits eligible for reimbursement within the EU will have to be financed in advance. Furthermore, banks will also be required to make additional *ad hoc* contributions of up to ½% of the deposits eligible for reimbursement if required. In the accrual period, this, in conjunction with other measures (bank levy, capital increase from retained profits), could place a strain on banks' profits and dividend payments. However, the actual burden resulting from the

Box 6.5

REFORM NEEDED TO SAFEGUARD THE SUSTAINABILITY OF PUBLIC FINANCES

To overcome the current crisis and prevent future crises, confidence in the sustainability of public finances has to be regained by bringing the fiscal policy of all euro-area countries back onto a sound path and ensuring to the best possible extent that this is lastingly secured. Credible budgetary rules can play a crucial role in achieving this. By enshrining the debt brake in its constitution, Germany has taken an important step in the right direction.

There has as yet been no tightening of budgetary rules at European level. The current regulations and their implementation by the competent institutions have proven insufficient. A number of member states experienced severe fiscal aberrations and problems, causing confidence to wane. In addition, the foundations of European monetary union (EMU) were seriously stretched by the support package for Greece and the European Stabilisation Mechanism, even if these were – in spite of concerns – ultimately justifiable given the risks that rapidly arose for the stability of the financial markets and EMU.

The reform of the European fiscal framework thus needs to focus on stabilising and reinforcing the weakened foundations of EMU. The changes to the Stability and Growth Pact that the European Council of Economic and Financial Affairs (Ecofin) initiated at the end of October 2010 may result in progress vis-à-vis the *status quo*. However, these changes are yet to be fleshed out. It is crucial to safeguard a sound fiscal development as far as possible by implementing stringent requirements. However, it is already becoming evident that the adjustments will fall short of the more ambitious ideas proposed *inter alia* by the European Commission. There appears to have been no majority for a larger degree of automatism, and no details have yet been specified for a greater and more binding obligation to comply with the debt criterion. In the future, the application of the rules by Ecofin will thus remain crucial and will therefore continue to be decisively influenced by political bargaining.

In addition to the changes to the fiscal framework, more intensive macroeconomic oversight is to ensure that serious problems are identified and combated at an early stage. However, any temptation to indulge in macroeconomic fine-tuning should be resisted and the principle of subsidiarity, which is a key element of the EU, must be upheld. An early warning mechanism should help to prevent, in particular, imbalances that jeopardise the stability of EMU as a whole, such as unsustainable current account deficits.

Yet even greatly improved prevention mechanisms can offer no promise that euro-area countries will not experience any financing problems in the future. To be equipped for this eventuality, Ecofin has laid the foundations for setting up a crisis resolution mechanism. In particular, the reaffirmation that neither the union nor the member states are liable for the debt of other member states is to be welcomed. This is a cornerstone of the existing union with its principle of autonomous responsibility for national fiscal policy.

Private creditors should not be absolved from their responsibility and there should be no one-way transfer of risks to the union. In very exceptional cases, where the stability of the currency union is at risk, a crisis mechanism can provide government aid based on strict conditionality and a very limited timeframe. However, it must not distort incentives for fiscal policymakers and investors. A transparent and predictable procedure which also notably guarantees a comprehensive and credible consolidation and reform programme could, in conjunction with improved financial market regulation, largely limit the risk of a systemic crisis. Fairly extensive sanctions in cases where the stability of the currency union is at risk should also be an additional important element of this new fiscal framework.

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contributions is not clear; the costs resulting from this could also be passed on to customers. If the national funds are insufficient in the event of a crisis, guarantee schemes are to be able to serve as a mutual lending facility. The payout period for deposits which are eligible for reimbursement is also to be reduced to seven days.

Existing voluntary guarantee schemes should be taken into account

Germany, however, opposes the plans for such a comprehensive harmonisation of deposit guarantee schemes in the EU and a possible departure from the proven principle of minimal harmonisation. Due account should be taken of the existing voluntary guarantee schemes in Germany.

Financial market infrastructure: derivatives markets and trading methods in the spotlight

Resilient infrastructure guarantees reliability and transparency

A functioning financial market infrastructure has a stabilising effect on the financial system, provided the former is secure and market participants actually make use of it. For this reason, it is vital to strengthen the robustness of the infrastructure on the international financial markets. A key focus of regulatory activities is therefore the mandatory introduction of financial infrastructures for over-the-counter (OTC) derivatives markets, mainly in order to increase transparency and mitigate counterparty risk in this area. With regard to trading infrastructure, too, it is important to identify risks to financial stability, particularly in the area of high-frequency trading. During the crisis, the payment and securities settlement systems proved robust.

Resilience of payment and settlement systems being further strengthened

Payment systems are systemically important infrastructures

Payment systems serve to settle payments between credit institutions; any interruptions can have major consequences for the financial system, especially as shocks are transmitted at great speed. Here, a particularly significant role is played by large-value payment systems which settle time-critical large-value payments in real time and are characterised by a strong interconnectedness with other financial market infrastructures. TARGET2,[54] which is operated by the Eurosystem, is not only the most extensive large-value payment system in Europe but also one of the biggest in the world. The system works from a single shared platform, which achieved 100% availability during 2009 and in the first half of 2010.

Standards reviewed in response to the crisis

Financial market infrastructures proved robust and reliable in the course of the crisis, and in so doing helped to stabilise the financial markets. Nevertheless, more can be done in terms of further strengthening the resilience of these infrastructures. For instance, drawing on lessons learned from the crisis and past experience, the standards for financial market infrastructures developed by the Committee on Payment and Settlement Systems (CPSS), which operates under the auspices of the BIS, and the International Organization of Securities Commissions (IOSCO) are being extensively adapted. A key aspect of this revision process is the need to bolster the resilience of market infrastructures to liquidity shortfalls, which can arise from the default of a critical participant. In ad-

54 Trans-European Automated Real-time Gross Settlement Express Transfer System.

dition, the three separate standards for payment systems, securities settlement systems and central counterparties respectively are being integrated as certain problems, such as operational risks, affect all infrastructures in the same or at least a similar manner. In this context, at the beginning of 2011, the CPSS-IOSCO working group intends to present a draft document and conduct a public consultation exercise.

Eurosystem has carried out an analysis with system operators

In further response to the crisis and based on an analysis involving system operators and participants, the Eurosystem has tabulated those measures already initiated to improve crisis management and proposed additional action. For example, there have been discussions about the possible harmonisation of default regulations in the case of interconnected systems.[55]

OTC derivatives markets becoming safer and more transparent

Need to enhance stability and safety of OTC derivatives markets …

The financial crisis has vividly demonstrated that the default of a single market participant has the potential to put the entire system at risk. In order to safeguard financial stability it is therefore vital to significantly improve transparency and safety, particularly in the OTC derivatives markets. To accomplish this, counterparty credit risk must be as fully hedged as possible, netting facilities expanded and the quality of collateralisation enhanced. Furthermore, the supervisory authorities must gain a comprehensive insight into market participants' exposures. At present, the OTC derivatives markets broadly fail to meet these requirements.

… through the use of central counterparties and trade repositories

In accordance with a corresponding G20 objective, in September 2010 the European Commission published a proposal for EU-wide regulation of OTC derivatives markets. The proposal provides for the general clearing of standardised OTC derivatives via central counterparties (CCPs), with a view to establishing a reliable and above all uniform collateralisation channel for all centrally cleared contracts to the benefit of all market participants. OTC derivatives markets need to be transparent from the point of view of the supervisory authorities. To this end, OTC derivatives contracts would have to be recorded in trade repositories, to which the competent authorities would have unimpeded access for information purposes. As regards CCPs, a set of EU-wide minimum prudential standards would apply. The trade repositories would likewise be subject to harmonised minimum requirements, mainly with respect to operational reliability and protecting confidentiality. CCPs and trade repositories located outside the European Union would not be allowed to become operational in Europe until after their prudential equivalence has been recognised.[56]

Standardisation a key prerequisite for the use of infrastructures

The standardisation of OTC derivatives contracts is an important technical prerequisite for CCP clearing and the capability to report to trade repositories. As part of its activities relating to the reform of OTC derivatives markets, a working group operating under the auspices of the FSB and spanning several committees has tabled proposals outlining ways to drive

55 For more information on this analysis and an overview of the measures put forward, see ECB, Report on the lessons learned from the financial crisis with regard to the functioning of European financial market infrastructures, April 2010.
56 In the summer of 2010, the USA established a legal basis for the regulation of OTC derivatives markets.

forward standardisation in cooperation between market participants and regulators using a combination of incentives and regulatory provisions.[57] Other groups, too, like the Committee of European Securities Regulators (CESR), as well as a number of private sector initiatives have been focusing their attention on this problem. However, the standardisation of OTC derivatives contracts has its limits inasmuch as international accounting standards, for example, prescribe tailor-made contracts to facilitate effective hedging of risks.[58]

Modern trading methods pose new challenges for supervisory authorities

Trading platforms are part of the systemically important financial infrastructure

Risks to financial stability can also stem from undesirable developments on trading platforms. The practice of high-frequency trading has come under particular scrutiny from supervisory authorities across the globe.

Technological advances demand corresponding regulation

High-frequency trading offers a number of advantages for markets' efficiency, including enhanced liquidity and narrower bid-offer spreads. There are, however, some potential disadvantages as well. Data input errors or technical malfunctions in high-frequency trading systems can, on account of the large volume of order entries affected, lead to abrupt and massive price volatility, thus generating lingering uncertainty among trading participants, which can impede the smooth functioning of financial markets. This shows that high-frequency trading can harbour systemic risks. The requirements directed at risk management systems should take due account of these hazards, with a particular focus on high-frequency traders.

Systemic stability is predicated on market integrity

High-frequency trading might also impair financial stability by artificially generating volatility on the secondary markets even when there are no fundamental reasons for this attributable to market participants' differing expectations. Adverse consequences might also arise from inadequate management of operational risk on the part of market participants, such as when technical or manual errors trigger extremely fast and large-volume order entries. Another danger lies in additional opportunities for market abuse and manipulation, thereby posing a threat to market integrity.

Solutions must be agreed and realised at the international level

A number of national supervisory authorities are currently looking at high-frequency trading.[59] In the United States, the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) published an unofficial report on 1 October 2010 examining the market turmoil witnessed on the US stock markets on 6 May 2010 which focused *inter alia* on the subject of high-frequency trading. Yet the report includes no recommendations for regulatory action.[60] At the international level, IOSCO has taken up the subject and will, within the space of a year, present a report – possibly containing recommendations for action – for public consultation.

57 See FSB, Implementing OTC Derivatives Market Reform, 25 October 2010.
58 Irrespective of accounting standards, the industry has a vested interest in making sure that risks are hedged as precisely as possible. However, it is not inconceivable that standardised contracts, too, might broadly satisfy this interest.
59 See Financial Services Authority, The FSA's markets regulatory agenda, May 2010.
60 See US Commodity Futures Trading Commission/US Securities and Exchange Commission, Findings regarding the market events of May 6, 2010, Report of the staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issues, 30 September 2010.

Conclusion: progress in restoring financial stability made in key areas

Central projects deliver encouraging results in 2010

In 2010, the institutional and regulatory framework of the international financial system was enhanced in several decisive respects. In particular, the strengthening of banks' capital base through Basel III and the introduction of arrangements concerning the treatment of systemically important financial institutions (SIFIs) will contribute considerably to financial stability in the medium term. With the regulation of liquidity and countercyclical capital buffers already agreed, additional key instruments will soon be at hand to tackle the causes of the crisis directly at the roots. Not just the regulatory framework but also the institutional framework for financial stability has been reinforced in the EU.

New rules to be implemented in 2011

From the Bundesbank's point of view, the results delivered in areas considered crucial, ie new capital standards, the treatment of SIFIs and macroprudential oversight, are a welcome development. The introduction and application of the new global standards at national level will take centre stage in 2011, alongside ongoing international projects, such as the regulation of OTC derivatives markets. In this context, it will be necessary, in particular, to be alert to possible regulatory arbitrage. For one thing, individual countries should not be permitted to drag their feet in implementing the new rules and thereby acquire a competitive advantage at the expense of financial stability. For another, activities should not be allowed to migrate from the now more tightly regulated parts of the financial system to more lightly regulated segments.

Elements of a coherent financial market architecture

The financial system requires an institutional and regulatory framework founded on the principle of autonomous responsibility. This, in turn, requires individuals and society as a whole to embrace the fact that potential profits and the risk of losses are inextricably linked. This necessitates a risk culture in which risks are taken on the basis of conscious and informed decisions, and earnings are, in principle, generated from a sustainable source. This concept of a risk culture requires a firm macroeconomic foundation consisting of stable money and sustainable public finances. Stable money is underpinned by the independence of central banks and their mandate to safeguard price stability. Strict fiscal rules must be drawn up to secure fiscal discipline. The current reform agenda focuses on banks owing to their pivotal role in the financial system. However, reform would be futile if activities were to subsequently migrate to the shadow banking system. A consensus has been reached internationally to follow a macroprudential approach. Central banks have a key role to play in this. Adding a legal mandate for macroprudential oversight and policy to the Bundesbank's current range of tasks through a corresponding amendment of the German Banking Act (*Kreditwesengesetz*) would strengthen and safeguard its role in financial stability policy.

Shift in balance between markets and governments

The financial crisis has revealed both inconsistencies in microeconomic decision-making and also serious functional shortcomings in the financial system itself. Given the high macroeconomic costs of the crisis, the financial system's role in the overall economic process has been increasingly called into question. It is already evident that the efforts undertaken to contain and overcome the financial and economic crisis have significantly shifted the balance between markets and governments. While it would be premature to try to draw any definitive conclusions about this development at this stage, it is time to critically review past events, not least in the light of tried and tested market and institutional principles.

Focus on changes in financial system

The liberalisation process that began in the early 1980s reflected the high degree of public confidence in markets' efficiency to allocate financial resources and risks. It paved the way for an enormous outburst of innovation. Wave after wave of ever more complex financial products and financing processes flooded on to the market. As a result, the financial system has undergone a sea-change over the past decades. In particular, its size – also in relation to the real economy – and complexity have increased substantially. The financial crisis then exposed the double-edged nature of this development, which is beneficial in normal times but can also trigger or intensify crises. Furthermore, experience has shown that regulation can never be complete. Moreover, government is not only a neutral rule-setter and

arbiter but also itself a systemic player on the financial markets in its role as the largest debtor and agent of fiscal policy with its wide-ranging impact.

Strengthen foundations for autonomous responsibility

The prompt and far-reaching international response by governments and central banks was necessary during the crisis and, on the whole, successful. However, in the long term, excessive government intervention in economic processes is not desirable. In a market economy, priority must be given to the principle of autonomous responsibility. This requires an appropriate institutional and operational setting, including a coherent and incentive-compatible regulatory framework whose reach extends beyond just banks or insurers. Transparency must be a cornerstone of this financial market architecture. For example, a clear picture is needed of the regional and sectoral allocation of risks. This must apply to all markets, both regulated and over-the-counter (OTC). Institutions' risks should be made equally transparent. This relates primarily to accounting standards. These should distinguish clearly between the information function, which provides the requisite transparency, and the profit distribution function, which can affect resilience. This information forms the basis for prudential supervision and government action as well as for the decisions of market players. The latter are ultimately liable for their decisions and should therefore generally not relinquish appropriate powers to monitor or intervene. In hindsight, it can be seen that policymakers and rule-makers created or tolerated misguided incentives which were one of the factors that led to the crisis.

Dedicated insolvency law for financial institutions needed

The planned introduction of dedicated bank insolvency legislation that is internationally harmonised and has prudential powers of early intervention is a key element in the ongoing development of the financial architecture. Equally essential is the requirement that implicit underwriting by the taxpayer be reflected as a cost factor for systemically important institutions, for example through the imposition of capital surcharges. However, it is not just equity investors but also bondholders that have benefited from support measures for the financial sector. Ultimately, the apportionment of liability has to be in line with the capital structure to prevent the macroeconomic allocation of capital from being distorted by misguided incentives.

Regulation of financial system should be broadly based ...

Given the pivotal role that banks play in the financial system, the task of correcting misdirected incentives and strengthening resilience must inevitably start at the level of these institutions. However, this would be futile if regulations were to be circumvented and risks subsequently migrated to segments of the financial system that are subject to little or no regulation, often referred to as the shadow banking system. The G20's demand that no systemically important segment, product or financial market participant remain unsupervised or unregulated must therefore be implemented swiftly and rigorously across the international plane.

... but regulation has limits

However, the corrections which are now being initiated will face their acid test going forward. This is because the impact of regulations must really bite during a boom phase when there is typically a particularly pronounced tendency to take high or, in some cases, excessive risks. Moreover, it must be remembered that regula-

tion has its limits and, by nature, is incomplete. Regulation is typically backward-looking in its design and cannot always keep up with dynamic processes of change, especially in the financial sector. Rules and regulations must first define the group of addressees to which they apply and, hence, by implication those who are beyond their scope. Moreover, regulations can never explicitly take into account every possible future eventuality. Above all, it is difficult to strike the optimum balance between the two extremes of light regulation with loopholes, on the one hand, and stifling overregulation, on the other.

Broader awareness of risk culture needed

It follows that a stable financial architecture needs broader foundations. A key element of this is that all market players – individuals and institutions alike – are fully aware of the risks that they incur and actively manage them. On the one hand, this involves making informed and conscious decisions about the type and extent of the risks incurred. Information about and education in financial issues is crucial for this. On the other hand, this also implies the capability, willingness and, ultimately, legal obligation – which hitherto has sometimes been lacking – to bear the risks assumed. This requires society as a whole to accept and embrace a risk culture in which profits and losses are understood and recognised as being inextricably linked. The acceptance of this pairing of opportunities and risks is a first step towards an efficient allocation of risks, which is indispensable for an economy's dynamics. In turn, broad public acceptance of the risk/reward ethic requires that risks are taken in a conscious and informed manner and that earnings are generated from a sustainable source. This concept of a risk culture requires a firm macroeconomic foundation consisting of stable money and sustainable public finances.

Confidence in public finances needs strengthening

The crisis has ruthlessly exposed shortcomings in the budgetary policies of many countries. It is therefore necessary to lastingly strengthen confidence in the sustainability of public finances. Fiscal discipline, as much as stable money, is a macroeconomic counterpart to the private sector's risk culture. The regulatory framework for stable money stipulates, in particular, the independence of central banks and their mandate to safeguard price stability.

Crisis mechanism for sovereign debt

By contrast, the framework for fiscal discipline still needs to be tightened. More stringent European fiscal rules are of particular importance in this context. A crisis resolution mechanism for sovereign debt should also have a disciplining effect in this regard. A new crisis mechanism is needed to replace the European Stabilisation Mechanism. Such a mechanism must respect one of the central principles of the existing union, namely that neither the union nor the member states are liable for the debt of another member state. The principle of autonomous responsibility for national fiscal policy is a cornerstone of European monetary union, which is neither a transfer union nor a bail-out community. In very exceptional cases where the stability of the currency union is at risk, a crisis mechanism could provide government aid based on strict conditionality and a very limited timeframe. However, it must not distort incentives for fiscal policy or absolve private creditors from their responsibility. A transparent and predictable procedure which also notably guarantees a comprehensive and credible consolidation and reform programme could, in conjunction with improved financial

market regulation, largely limit the risk of a systemic crisis. Fairly extensive sanctions should also be a key element of this new fiscal framework.

Central banks play key role in macroprudential approach

There is international consensus that a macroprudential approach comprising analysis, regulation and oversight is necessary to safeguard financial stability. Central banks play a key role here as they possess profound financial expertise gained from their traditional monetary policy analysis. In many cases they are also involved in financial sector supervision. A holistic macroprudential approach places even greater demands on central banks. It increases the requirements in respect of their analytical work, which no longer focuses solely on the business cycle and monetary growth but also explicitly includes the stability of the financial system. Hence the analytical activities of central banks now have the added responsibility of identifying misdirected developments within the financial system early enough to allow them to be corrected before they cause any damage.

At the same time, there is a growing need for increased international coordination and agreement so that a national macroprudential approach can have the desired impact on internationally open and interconnected financial markets. An ongoing debate is currently taking place in many international forums concerning the choice and potential deployment of macroprudential instruments, and the Bundesbank is actively involved in this discourse.

Additional macroprudential mandate necessary

The crucial importance of financial stability and central banks' special position suggest that it would be appropriate to widen national central banks' mandate accordingly as a logical complement to the institutional arrangements at European level. Adding a legal mandate for macroprudential oversight and policy to the Bundesbank's current range of tasks through a corresponding amendment of the German Banking Act would strengthen and safeguard its role in national, European and international stability policy.

Overview | Bundesbank publications concerning financial stability

This overview lists selected recent Deutsche Bundesbank publications on the subject of financial stability. Unless otherwise stated, the publications are available in printed form and on the Bundesbank's website in both German and English. The publications are available free of charge to interested parties and may be obtained from the Bundesbank's Communications Department. Additionally, a tape or 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 Systems and Mathematical Methods Division. 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 REPORTS

Financial Stability Review, November 2009
Financial Stability Review, November 2007
Financial Stability Review, November 2006
Financial Stability Review, November 2005
Report on the stability of the German financial system, October 2004
Report on the stability of the German financial system, December 2003

ARTICLES FROM MONTHLY REPORTS

October 2010	Germany in the financial and economic crisis
September 2010	The performance of German credit institutions in 2009 | The Act Modernising Accounting Law from a banking supervision perspective | Supervisory disclosure under Pillar 3 of Basel II
July 2010	On the problems of macroeconomic imbalances in the euro area | Nominal and real exchange rate movements during the financial crisis | Deutsche Bundesbank Spring Conference 2010 – International risk sharing and global imbalances
April 2010	Emerging markets in the financial crisis: the effect of cross-border bank loans
March 2010	Financing and representation in the International Monetary Fund
January 2010	German enterprises' profitability and financing in 2008

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