

The financial system

In Germany, as elsewhere, the financial crisis initially hit banks hardest, while other parts of the financial system were not affected until later or were affected only indirectly. Mounting risk aversion, the economic slowdown and a more pessimistic view of financial institutions did not, for instance, cause a massive stock market slump until 2008, whereas the German bond market benefited from portfolio shifts out of the worst-hit investments into German government bonds, which are considered safe and liquid. Most recently, this has been the case during the euro sovereign debt crisis.

The financial and economic crisis has weighed very heavily on the German banking system and ruthlessly exposed its weaknesses. Nevertheless, the nature and size of its impact differed considerably from one bank or category of banks to another and over time: at the beginning of the crisis, large, international credit institutions with direct exposure to the US real-estate market and to related structured products and those with a large proportion of wholesale funding tended to be affected. As the financial crisis developed into an economic crisis from the autumn of 2008 onwards, other banks with a more domestic focus were increasingly hit as well. Nevertheless, the losses incurred by the German banking system in 2008 and 2009 can be attributed to a comparatively small number of larger institutions. The German banking system as a whole proved resilient. As the financial crisis lengthened, fears were awakened of negative feedback from the financial system to the real economy and ultimately a broad-based credit crunch, but they proved unfounded in Germany. The decline in bank lending to non-financial corporations that was observed during the financial crisis was mainly cyclical in nature. Moreover, enterprises were able to tap alternative sources of external and internal funding even during the crisis.

Economic policy was vital in containing the crisis. Besides the support measures adopted by monetary and fiscal policymakers worldwide, in Germany the Financial Market Stabilisation Fund (SoFFin) was created and a deposit guarantee provided by the government; moreover, the government contributed to the aid measures to avert the euro-area government debt crisis. Now that the situation has been stabilised, it is important quickly to eliminate the weaknesses in the German banking system that were exposed during the crisis. Besides strengthening the capital base and implementing the forthcoming regulatory reform, this is likely to require adjustments to the market structure.

Capital markets

Stock markets

Stock market developments robust up until the autumn of 2007

At the beginning of the financial crisis in the summer of 2007, the German stock market was in relatively good shape. Unlike during the New Economy bubble, there were no serious excesses in the run-up to the crisis; the price-earnings ratio was roughly at the average level of the preceding years. Moreover, global economic growth was robust, and German enterprises' profit expectations were moving up. Stock market prices in Germany therefore did not ease much initially in response to the turmoil on the money and credit markets and recovered quickly.

Stock market slump early 2008

At the beginning of 2008, however, the international equity markets experienced a strong downward movement, which spread to Germany. This was triggered mainly by concerns that the economic slowdown in the United States as a result of the housing and financial crisis could prove stronger than expected. As prices fell, market players' uncertainty over further price developments rose sharply. This is evident in the fact that the VDAX-NEW almost doubled in the space of a month.¹ During this phase, rate cuts by the US central bank helped stabilise the markets. Nonetheless, at the beginning of September 2008, the CDAX was down 23% compared with its level of mid-2007.

Lehman Brothers collapse

The second serious shockwave to hit the stock market was triggered by the collapse of the US investment bank Lehman Brothers. From mid-September 2008 onwards, stock

markets all over the world suffered massive losses within a very short space of time.² The financial sector was particularly hard hit, with financials falling much more rapidly than the overall market, as concerns about the state of the financial sector spread and market players were not ruling out more insolvencies of financial institutions. In addition, the combination of the financial crisis and distinctly gloomier prospects for the real economy heightened investors' risk aversion.

Stock market prices in Germany, which was particularly badly affected by the global economic downturn given its many external trade links, slipped right into the first quarter of 2009. As government stimulus programmes and aid for the financial sector as well as central bank measures increasingly took effect, stock market losses were eventually halted. All in all, German securities (as measured by the CDAX) fell some 58% between mid-2007 and the low of March 2009; banks, in particular, suffered disproportionately large losses. In terms of the CDAX's market capitalisation, more than €800 billion in wealth was destroyed in this period. Unlike in the United States, equity prices in Germany fell less this time than after the New Economy bubble burst at the start of the new millennium and prices plummeted more than 70%.³

Government measures bring about stabilisation

¹ The VDAX-NEW index measures the implied volatility of options on the DAX and can be interpreted as a measure for market players' uncertainty.

² Over the space of 31 trading days, the CDAX lost just over 32%, which equates to a loss of wealth of €360 billion in terms of market capitalisation. The global loss of wealth over this period, in terms of the global equity index constructed by Thomson Reuters, works out at more than €7½ trillion.

³ In the United States, by contrast, only the Great Depression in the 1930s saw worse stock price declines than the current financial and economic crisis.

Rising stock market prices from the spring of 2009 onwards driven by global economic recovery

The international stock markets subsequently staged a broad-based recovery, which was largely driven by expectations of an end to the recession. Nonetheless, market players were still concerned that the incipient recovery might not prove self-sustaining and was, possibly, only based on the support measures taken by governments and central banks. German equity prices were driven higher, in particular, by enterprises' earnings prospects. Since March 2009, analysts have raised their 12-month earnings forecasts for the 30 DAX enterprises by an average of 46% as the economic outlook has improved.⁴ The price-earnings ratio is currently below its five-year mean – despite a stock market rise by 58% since March 2009. That, like the higher risk premiums demanded for holding equity, indicates that investors are taking a comparatively cautious stance.

Stock price decline in an international comparison

Comparing stock market developments in Germany during the financial crisis and other industrialised countries yields a largely similar picture during both the slump and the recovery, which underscores the global nature of the crisis and the close market integration. The CDAX is currently trading some 32% lower than at the end of June 2007. It has therefore underperformed the US S&P 500 index (-25%), but outperformed the Euro Stoxx (-39%) and the Japanese Nikkei (-48%) over the total period under review. German stocks are currently benefiting from the global recovery and the improved economic outlook for Germany.

Although financing conditions have often been difficult, stock corporations used the



equity market as a source of funding even during the financial and economic crisis. All

Stock market issuance mixed during the crisis years

⁴ The earnings realised over the past 12 months have even risen slightly more in the same period, namely by 49%. As in earlier economic downturns, analysts greatly overestimated actual corporate earnings throughout 2009. This year, by contrast, the forecast error has declined significantly and recently even reversed, ie the earnings realised in the past 12 months were higher than those forecast 12 months ahead a year ago. For a discussion of forecast errors in earnings estimates, see Deutsche Bundesbank, Corporate earnings and share prices, Monthly Report, July 2009, pp 15-28.

in all, they have issued €47 billion worth of shares since mid-2007. Credit institutions, which were particularly interested in strengthening their capital base in response to the crisis, account for roughly a third of this total. They also used funds supplied by SoFFin (€6½ billion). Overall, 39 companies have been floated since mid-2007.

Bond markets

*Yields swayed
by growth
expectations ...*

German government bond yields experienced volatility but, on balance, fell sharply during the financial crisis. Various factors were at work, in particular expectations about future economic growth and inflation as well as the movement of funds into investments considered particularly safe and liquid. Thus, Bund yields rose in the first halves of both 2007 and 2008, when the outlook for the real economy was still viewed positively. As the German economy slid into recession in the second half of 2008, and particularly after the collapse of US investment bank Lehman Brothers, yields on ten-year bonds outstanding fell smartly – from more than 4½% to around 3%. The fact that the Eurosystem lowered key interest rates by ¾ percentage points between the fourth quarter of 2008 and the second quarter of 2009 was probably a major factor.

*... and inflation
expectations*

Inflation expectations for a ten-year horizon roughly followed the pattern of growth expectations and therefore also contributed to the yield moves outlined above. Up until mid-2008, high capacity utilisation and rising commodity prices meant they were towards the top of the Eurosystem's stability target. As

the financial crisis intensified and oil prices fell, they declined in the second half of 2008 and have remained below their 2007 levels ever since.

Moreover, market players regard German government bonds as a safe haven investment, making them particularly popular in times of crisis. This is reflected in comparatively low risk premiums. Price markups for higher liquidity are another factor in securities yields. In times when market players are very unsettled, demand-related changes in liquidity and risk premiums tend, historically, to contribute to falling Bund yields. This was also the case during the financial crisis, when appetite for risk⁵ plummeted and, with financial markets frozen, liquidity temporarily became the decisive criterion for portfolio investment. During this period, German government paper once again proved a safe haven. However, it is difficult to put an exact figure on the effects the various factors have on Bund yields as the premiums cannot be distinguished individually. The significance of various factors related to safe haven and liquidity effects can be estimated using factor analysis, however (see the box on pages 30 and 31).

*Safe yield
"breathes" in
line with
market players'
risk perception*

When investors and rating agencies at the end of 2009 turned their sights to the financial risks assumed by the government sector, intra-euro-area yield spreads widened sharply. The crisis of confidence peaked in the second weekend of May 2010, when it looked as

*Spotlight on
government
debt*

⁵ For information on how risk appetite is estimated based on an aggregate risk indicator, see also Deutsche Bundesbank, Constructing an aggregate risk appetite indicator with a principal component analysis, Monthly Report, August 2008, pp 38-39.

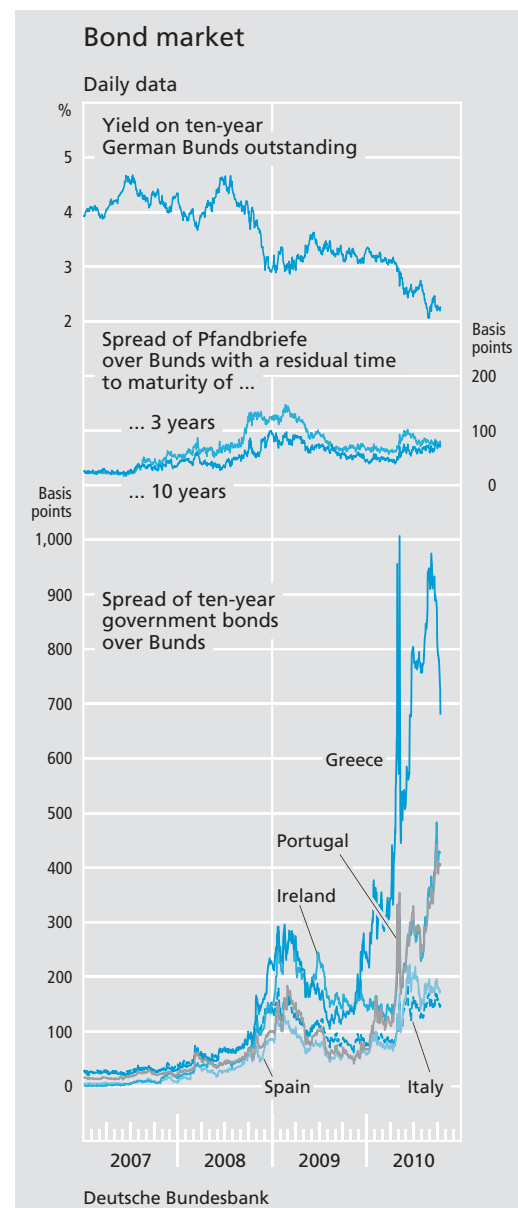
though some markets would dry up, and wide-ranging government stabilisation measures became necessary. Although a collapse of the financial system was averted, the bond markets of the euro-area countries affected remained tense. The resulting “flight” into the quality and liquidity of German government bonds sent yields sharply lower again in the spring and summer of this year. At the end of August, ten-year Bund yields temporarily marked a record low of less than 2.1%. Supply-side factors, such as the strong increase in Bunds in circulation, had no discernible impact on yields.

Tensions for non-government debt securities

Issuers of non-government debt encountered considerable tensions on the German bond market during the financial and economic crisis. This is true of banks and enterprises alike. At times, placements were virtually impossible. The German Pfandbrief market also suffered, partly because issuers suspended market making, which considerably reduced Pfandbrief liquidity. With the collapse of Lehman Brothers, interest rate spreads on Pfandbriefe shot up compared to Bunds of the same maturity.

The Eurosystem's Covered Bonds Purchase Programme

Besides market players' declining risk aversion in 2009, another positive influence on the market for private bonds was the Eurosystem's Covered Bonds Purchase Programme. Since it was announced at the beginning of May 2009, it has helped lower spreads across the entire maturity spectrum. On the secondary market, the spreads on Pfandbriefe with a remaining time to maturity of three years versus Bunds narrowed from 104 to 68 basis points between 7 May 2009 and end-February



ary 2010. However, as concerns about the sustainability of some euro-area peripheral countries' debt spiked, the covered bond markets also suffered a setback – especially outside of Germany. At the end of September – ie after the programme expired in the summer of 2010 – spreads on German Pfandbriefe with three years left to maturity were, on balance, still 16 basis points lower than before the programme was announced last

Yields on Bunds under safe haven effects

The sharp decline in yields on German government bonds (Bunds) during the financial crisis is often associated with safe haven flows. It is assumed that investors, in an environment of high uncertainty, increasingly sold riskier financial securities such as equities while stepping up their demand for government bonds. Moreover, it is argued that risky government bonds were substituted by government paper entailing less risk as the government debt crisis intensified. In the former case, share price losses should generally be linked to falling bond yields; in the latter case, the developments of yields on government bonds of different credit quality should be inversely correlated.

Factor model to analyse government bond yields and returns on shares

In order to isolate simultaneous effects during the financial crisis in an econometric study and to model the dynamics in the international financial markets, a factor model is applied.¹ One advantage of the factor analysis is that unobserved common factors can be extracted. The factor analysis is based on a dataset which contains daily changes in yields on government bonds with a ten-year maturity and daily returns of benchmark stock indices. The analysis looks at the euro-area member states as well as Japan, Switzerland, the United States and the United Kingdom. The period of observation runs from January 2003 to the end of August 2010.² During this period the performance of bond yields and share prices can be explained by three common factors.

Interpretation of the factors and the safe haven effects

A positive relationship exists between the first factor and both declining bond yields and share price losses. This is

¹ Details on the model characteristics are to be found in J Bai and S Ng (2002), Determining the Number of Factors in Approximate Factor Models, *Econometrica* 70, pp 191-221, and JH Stock and MW Watson

consistent with classical portfolio adjustments against the backdrop of the general economic situation. For instance, equities are sold and government bonds are bought when largely negative expectations with regard to economic developments or high risk aversion predominate. The first factor can therefore be interpreted as the global risk factor. It is probably also closely related to the business cycle. Equity price losses and increasing yields on government bonds of all countries are positively linked with the second factor. Thus, the second factor seems to reflect the (longer-term) financing conditions. The third factor has a greater impact on government bond yields than on equity prices. It is striking, moreover, that the third factor is positively correlated with changes in yields on government bonds of the euro-area peripheral countries, while it is negatively correlated with changes in yields on government bonds of countries not directly affected by the government debt crisis. This suggests that risk aspects linked to the extent of public debt in the euro-area peripheral countries play a decisive role. Thus, the factor reflects a higher debt risk emanating from these countries.

Decomposing Bund yields

The three factors can be used to explain 94% of the variation of yields on Bunds.³ 67% of the variation is accounted for by the global risk component alone, a further 20% by financing conditions and 7% by the risk of government debt. About 6% can be explained by variable-specific factors.

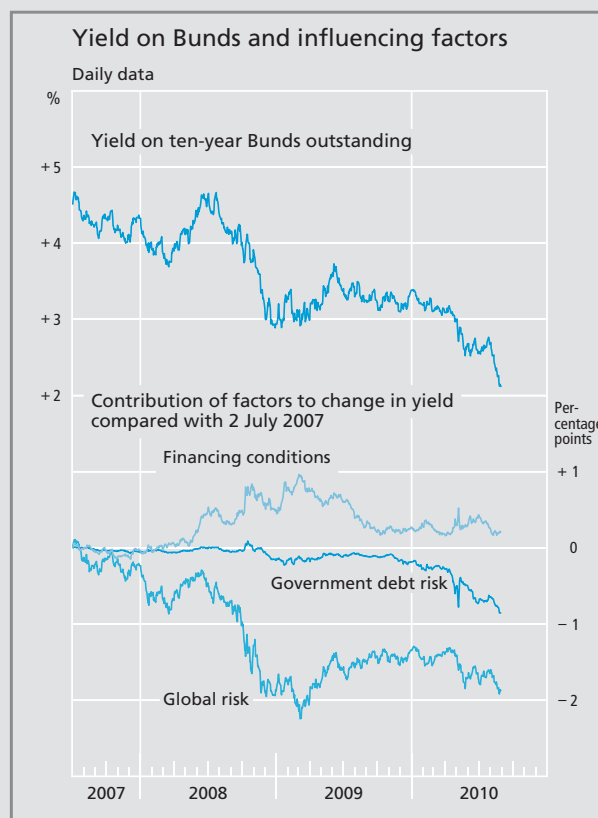
The chart on page 31 shows the contribution that the three factors have made to Bund yield performance since 2 July 2007. Proceeding from the yield level at that time, the cumulative impact of each factor on the change in

(2002), *Macroeconomic Forecasting Using Diffusion Indexes*, *Journal of Business & Economic Statistics* 20, pp 147-162. — ² By selecting this period of observation, the euro-area member countries on 1 January

yields is illustrated. It should be noted that an increase in both risk factors has the effect of lowering German yields owing to the underlying safe haven effects, and deteriorating financing conditions cause them to rise.

When the US subprime crisis broke out in mid-2007, global risk increased, sending yields on Bunds down. This development was intensified by the events of autumn 2008 (insolvency of Lehman Brothers, massive cyclical downturn). Thus, the sharp rise in perceived risk and in risk aversion in the wake of the financial crisis, which may be encapsulated in the "global risk" factor, can be seen as the main driver of the decline in Bund yields in this phase. At times, this safe haven effect played a part in Bund yields falling by just short of 2.2 percentage points. Moreover, at the end of 2008, the "government debt risk" rose; this process accelerated considerably at the turn of the year 2009/2010. Owing to the "government debt risk" alone, yields in Germany have receded by almost 0.7 percentage point since the beginning of this year. Compared with these two factors, the effect of the "financing conditions" factor on the yield on ten-year Bunds is currently relatively small. The Bund yield was driven higher in the course of 2008, when it became clear what a vast burden the financial and economic crisis would impose on public-sector budgets; this in turn gave investors cause for concern. Developments at that time are also reflected in the yield curve, which steepened noticeably. Propensity to invest in longer-dated securities was obviously lower, relatively speaking, and preference was generally given to shorter-dated paper. With regard to the performance of yields on ten-year Bunds, however, this effect is more than compensated by the concomitant flight to safe assets.

Another significant factor which cannot be considered separately in the empirical model is probably the especially high liquidity of Bunds. The difference between yields on KfW bonds (which are government guaranteed) and Bunds of the same maturity indicates that liquidity premiums rose in particular after Lehman Brothers collapsed. The yield spread peaked at over 100 basis points in November 2008. This means that the strong demand for liquid bonds was also at times a significant factor in lowering the German yield level.



2003, excluding Luxembourg, are considered. A total of 30 variables are included in the datasets. — 3 However, these common factors are also subject to domestic factors.

year. In a European comparison, German Pfandbrief issuers' funding costs have thus developed fairly well overall.

Higher primary market activity

As interest rate spreads fell, primary market activity on the market for covered bonds picked up. Overall, €353 billion worth of covered bank bonds have been issued in the euro area since the purchase programme was announced, including €110 billion worth of German Pfandbriefe.

Government-guaranteed bonds

Bonds with a government guarantee represent a special segment of the bond market. Ailing credit institutions were able to take up guarantees from SoFFin, which was created through the Financial Market Stabilisation Act (*Finanzmarktstabilisierungsgesetz*) of 18 October 2008. At its peak, the volume of guaranteed bonds outstanding totalled €168 billion. The majority of these bonds are not traded on the secondary market, as they are held in the issuing bank's own portfolio. Bonds traded on the secondary market currently have a spread of roughly 40 basis points over matched maturity German government debt.

Strong bond issuance by non-financial corporations since mid-2008

While German non-financial corporations lowered their capital market debt on balance in the second half of 2007 and the first quarter of 2008 when earnings were strong, they made heavy use of the bond market in the subsequent phase of the crisis. From the second quarter of 2008 to the second quarter of this year, they issued debt securities worth €410 billion – mainly abroad. After deducting redemptions, net issuance worked out at €118 billion, although some debtors with low credit ratings experienced extremely high

market spreads in 2008 and 2009, and it was virtually impossible to place new issues at times. Given uncertainty about future economic developments and more difficult access to bank loans for some large enterprises in particular, these firms were forced increasingly to tap the capital market for the required funds. Meanwhile, the interest rate situation for enterprises with an investment grade rating has eased noticeably.

German banking system

In addition to the Eurosystem's extensive stabilisation measures, a number of further crisis measures to support the banking system were taken in Germany. In response to the turmoil caused by the Lehman insolvency, the German government and a banking consortium provided a German mortgage bank facing insolvency⁶ with copious liquidity aid. In addition, the German government extended a guarantee for all private savings deposits at the beginning of October 2008 in order to prevent a general bank run. SoFFin, which was established mid-October, also had a central role in stabilising the banking sector. It has funds of up to €480 billion at its disposal, allowing financial institutions to strengthen their capital base and bridge liquidity shortages. In July 2009, the Financial Market Stabilisation Development Act (*Finanzmarktstabilisierungsentwicklungsgesetz*) ruled that certain risk assets could be spun off into a bad bank to provide balance-sheet relief. Participation in these measures is voluntary and

National support measures for the banking system

⁶ This credit institution was nationalised in 2009.

possible until 31 December 2010.⁷ On the whole, these measures helped keep the German financial system operational.

Earnings developments in the German banking system

Bank profits fall in 2007, massive slump in earnings in 2008, and ...

Although the financial crisis caused a marked deterioration in earnings in the German banking sector in 2007, a massive earnings slump did not occur until the international financial crisis intensified in the wake of the Lehman insolvency. The German banking industry reported an immense annual pre-tax loss in the 2008 financial year, the first since statistics on earnings have been kept. The poorer earnings situation was largely the result of considerable valuation losses in proprietary trading, higher risk provisions and sharply increased losses in financial investment business. The big banks, special purpose banks, the Landesbanken and mortgage banks were worst hit, as individual banks in these categories suffered very high losses. However, retail banks, which were largely unscathed by the crisis in 2007 – as economic momentum was still very robust in Germany at that time –, also reported significantly lower pre-tax incomes in the 2008 financial year, although results remained positive overall.

... significant improvement, but still loss, in 2009

In the 2009 financial year, too, German credit institutions recorded an aggregate pre-tax loss, although it was significantly lower than a year earlier. The very wide-ranging global government support measures for the financial sector and the extremely expansionary monetary policy were positive, while the severe global recession weighed heavily on

earnings. Once again, big banks, Landesbanken and mortgage banks reported high pre-tax losses, although in some cases much lower than a year earlier, with some individual banks again chiefly responsible for the losses reported in all these banking categories. By contrast, all other banking categories – with the exception of regional banks – posted in some cases considerably higher net incomes before taxes.⁸

While the earnings situation at large international German banking groups improved significantly in the first quarter of 2010, not least as a result of the favourable financial market environment and the brightening real economic outlook worldwide, earnings momentum slowed noticeably as the government debt crisis in the euro area intensified in the second quarter of 2010. This was largely the result of income from proprietary trading. For full-year 2010, fairly muted, but positive earnings developments are expected overall. Although risk provisioning will likely still leave a mark given the global recession a year earlier, the currently robust real economic developments in Germany should help counteract this.⁹

Fairly modest earnings performance expected for full-year 2010,

⁷ As at 30 September 2010, the government had provided stabilisation aid totalling €203.9 billion, of which just under 86% represented guarantee lines and the remainder capital measures. To date, two credit institutions have availed themselves of the option of setting up a bad bank. Moreover, state governments provided several Landesbanken with large-scale recapitalisation funds and guarantees to protect portfolios of, in particular, structured securities.

⁸ For a detailed report, see Deutsche Bundesbank, The performance of German credit institutions in 2007, 2008 and 2009, Monthly Reports, September 2008, 2009 and 2010, respectively, pp 15-40, 33-62 and 17-48.

⁹ For a detailed description of the earnings outlook and the associated risks, see Deutsche Bundesbank, The performance of German credit institutions in 2009, Monthly Report, September 2010, pp 34-36.

The core capital ratio over time*

As a percentage, end-of-month levels

Banking category	2008				2009				2010	
	Mar	June	Sep	Dec	Mar	June	Sep	Dec	Mar	June
All banks ¹	9.03	9.17	9.46	9.69	9.81	10.44	10.66	10.88	10.83	10.85
Commercial banks	9.45	9.50	10.26	10.33	10.24	11.25	11.82	12.09	11.86	11.73
of which big banks	9.17	9.18	9.88	9.96	9.72	10.99	11.73	12.05	11.67	11.48
Landesbanken	7.71	7.73	7.68	8.29	9.06	10.14	10.29	10.52	10.62	10.52
Savings banks	8.95	9.30	9.49	9.48	9.54	9.73	9.73	9.68	9.60	9.91
Credit cooperatives ²	9.32	9.57	9.70	9.66	9.37	9.55	9.49	9.47	9.42	9.79
Other	9.67	9.99	9.82	11.14	10.96	10.38	10.12	10.86	11.07	10.75

* Core capital ratio = core capital/capital requirements for credit risk, market risk and operational risk according to the Solvency Regulation. The minimum core capital ratio

according to section 10 of the Banking Act is 4%. —

¹ Including regional institutions of credit cooperatives. —
² Excluding regional institutions of credit cooperatives.

Deutsche Bundesbank

German banks' capital base

Although German banks' earnings situation came under tremendous pressure during the financial crisis, the German banking system simultaneously experienced a perceptible increase in own funds (see table above).

The increase in the average core capital ratio, which was probably in part also a reaction to the anticipated increase in regulatory minimum capital requirements, was the result, first, of sharply higher core capital. This development can be attributed, amongst other things, to SoFFin recapitalisation measures as well as capital injections by public-sector shareholders, which, though they affected only seven institutions, in sum significantly improved the average core capital ratio of the

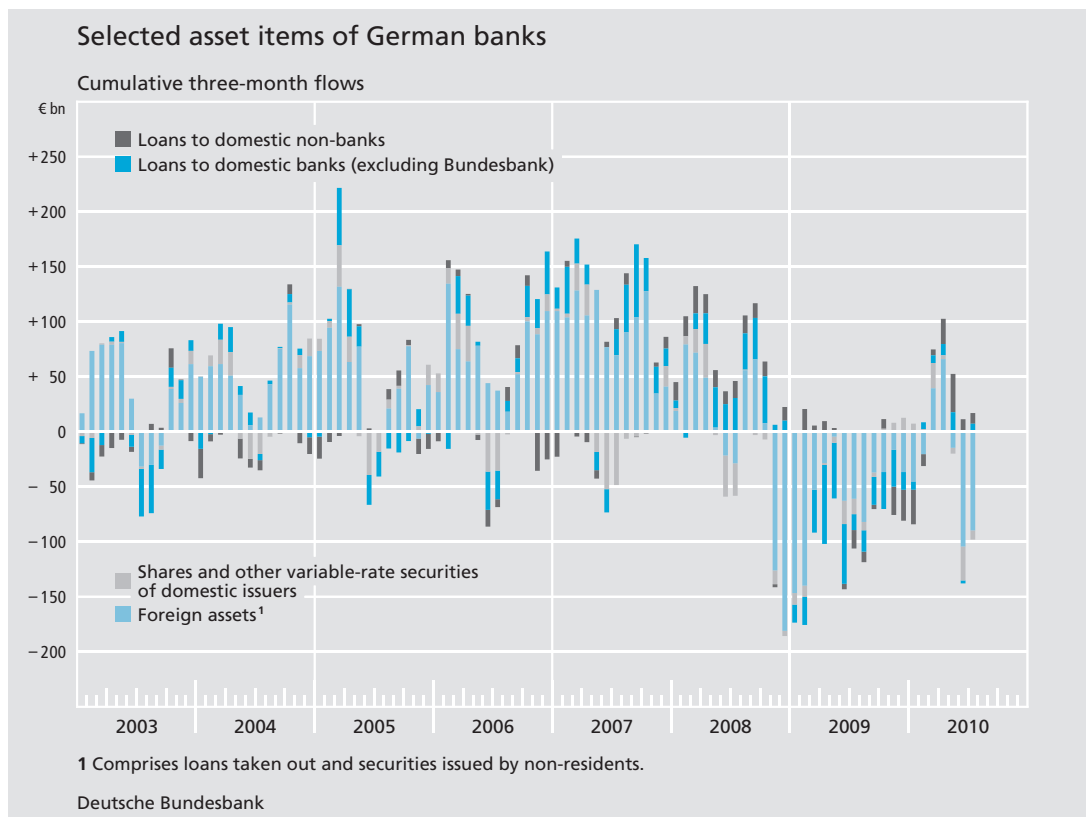
banking sector as a whole, namely by around 1.6 percentage points as measured against the current level of risk-weighted assets (RWA).

Second, risk-weighted assets fell sharply despite the deterioration in internal ratings as a result of the crisis. This was driven by the significant reduction in RWA in the Landesbank sector by a total of around 21%, which started at the beginning of 2009. Besides the relief provided by the guarantees extended by public-sector shareholders, this decline was brought about mainly by European restructuring requirements and is likely to continue. The big banks, too, have lowered their RWA perceptibly since the beginning of 2009, namely by 8%. By contrast, savings banks have held their RWA virtually stable since the

... reduction in risk-weighted assets

Core capital ratio rose significantly during the financial crisis ...

... owing to recapitalisation measures and ...



first quarter of 2008 and credit cooperatives have even raised them slightly.¹⁰

Balance-sheet clean-up in the German banking sector

According to banking statistics, commercial banks, Landesbanken, central institutions of credit cooperatives and mortgage banks have slashed their exposure to domestic and foreign (in particular UK) banks and sharply lowered other foreign assets since end-2008 (see chart above). This deleveraging process can be explained by adjustments made by Landesbanken to meet European restructuring requirements, as well as, in particular, the drying-up of the money markets, the general retrenchment of the foreign activities conducted via international financial centres,

which have been expanded significantly in recent years, and by the, in some cases high, risk associated with these assets.

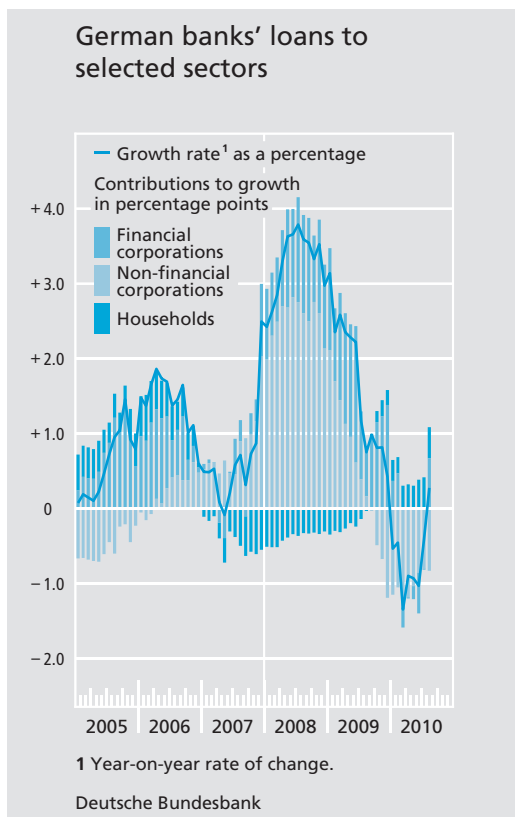
On balance, German banks' loan holdings vis-à-vis the German private non-banking sector have declined relatively little. However, this masks very heterogeneous developments for the various borrower categories. Loans to non-financial corporations fell most sharply (see pages 36 and 37).¹¹ By contrast, loans to households were largely unchanged throughout the crisis and have recorded a small but

... but less so vis-à-vis domestic non-banking sector

Financial crisis results in cut-back in lending, particularly to banks and foreign borrowers, ...

¹⁰ Savings banks and credit cooperatives had further positive effects on the core capital ratio. Their business models meant they were less affected by the financial crisis; moreover, they were not as hard hit by the real economic consequences as had originally been expected and posted net annual incomes throughout the crisis, which they were able to retain.

¹¹ The same is also true of the euro area as a whole.



steady increase since the beginning of 2009. Growth momentum for loans to financial corporations was very strong up until mid-2009, largely because this sector includes banks' special purpose vehicles and central counterparties for secured money market transactions, whose importance has grown with the financial crisis. Since then, holdings have remained high overall despite volatile monthly movements.

Bank debt securities under pressure

The financial crisis has also left a deep mark on the liabilities side of German bank balance sheets, especially at institutions whose business model means that they rely more on wholesale funding and less on client deposits. The flight into safe and liquid assets, particularly after the insolvency of Lehman Brothers, resulted in a pronounced reluctance on the

part of private investors to buy bank debt securities, as they are not, unlike deposits, covered by the deposit guarantee scheme, and even the German Pfandbrief market was affected. The large volumes of maturing bank debt securities additionally weighed on banks' refinancing. In this environment, the Eurosystem's Covered Bonds Purchase Programme passed in May 2009 was positive for the banking sector as a whole – as was the possibility of applying to SoFFin for government guarantees for new bond issues.

On the risk of a credit crunch in the non-financial corporations sector

Concerns that negative interaction between the financial system and the real economy would worsen the crisis arose in the autumn of 2008, if not earlier, when annual growth in lending by German banks to domestic non-financial corporations lost a great deal of momentum. Specifically, it was feared that the German economy could experience a credit crunch, in other words a situation in which the supply of bank loans is so limited in quantitative terms by bank-side factors that it represents a significant economic risk.¹²

Weak growth in loans to non-financial corporations

Finding a method to empirically identify a thus-defined credit crunch is very difficult, as demand and supply-side factors in lending cannot be clearly differentiated retrospectively. In principle, however, several consider-

Credit crunch difficult to identify empirically

¹² For a more in-depth discussion of the term credit crunch, see Deutsche Bundesbank, Developments in lending to the German private sector during the global financial crisis, Monthly Report, September 2009, pp 15-32.

ations back up the theory that weak lending to non-financial corporations in Germany during the financial crisis can be explained, first and foremost, by the serious real economic downturn and the higher risk associated with lending in this situation.

Loan developments during the crisis satisfactorily explained by real economic trends

One argument against the presence of a credit crunch is that, according to econometric estimates,¹³ the downward movement in the annual growth rate of these loans up until the current end of the data can be satisfactorily explained by real economic variables (such as growth in real GDP, the investment ratio and the yield spread between corporate and government bonds). Against the backdrop of weak real economic developments, lending was thus not exceptionally weak during the crisis by historical standards.

Little recourse being made to the German government's loan and debt guarantee programme

The fact that relatively little use was made of the German government's loan and debt guarantee programme (drawdown of just over 12% as at end-August 2010) is another argument that German enterprises did not face credit constraints across the board. The Business Fund Germany, which the German government decided to set up at the beginning of 2009 in response to the intensification of the financial crisis and which has a total size of €115 billion, is therefore scheduled to be phased out at the end of this year.

Developments in credit standards

Survey data serve to throw more light onto the credit environment. The Eurosystem's Bank Lending Survey (BLS) looks directly at banks' credit supply. According to this survey,

stricter credit standards were applied to enterprises following the onset of the financial market turmoil, after these standards had been eased considerably in the first half of 2007.¹⁴ The tightening of credit standards peaked in the first quarter of 2009. This development subsequently weakened and finally halted in the second quarter of 2010.

While the tighter credit standards at the beginning of the crisis mainly resulted from bank-related factors – such as refinancing costs and balance-sheet restrictions which are, in the BLS, broken down into costs relating to the capital position, financing conditions on the money or bond market, and liquidity position –, since the third quarter of 2008 institutions' risk perception, in particular their expectations regarding general economic activity and industry or firm-specific factors, has increasingly played a central role. A more detailed analysis of the significance of bank-side factors shows that during the financial crisis they temporarily had a significant impact on credit developments, but that this effect was of only limited duration. This, too, indicates that, looking at the financial crisis as a whole, weak lending was largely the result of real economic developments.

This picture is basically confirmed by regular business surveys (eg the ifo credit constraint

Decelerating credit momentum at times accompanied by tighter lending standards, ...

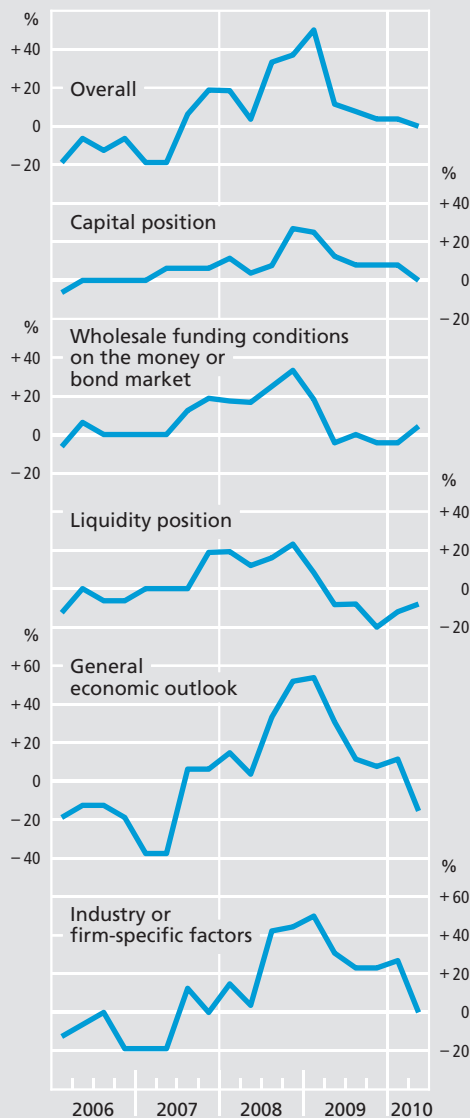
... although this is largely explained by greater risks

Other surveys also fail to indicate a credit crunch, ...

¹³ For an example of an estimate of this kind and limitations in its interpretation, see Deutsche Bundesbank, Econometric estimation equation for the development of loans to non-financial corporations in Germany, Monthly Report, September 2009, p 23.

¹⁴ For information on the explanatory content of the BLS for developments in lending to non-financial corporations, see Deutsche Bundesbank, Bank Lending Survey: an interim assessment and current developments, Monthly Report, January 2009, pp 15-30.

**Changes to BLS
credit standards* of German
banks and selected
explanatory factors****



* Difference between the sum of "tightened considerably" and "tightened somewhat" answers and the sum of "eased somewhat" and "eased considerably" answers as a percentage of responses. — ** Difference between the sum of banks responding "contributed considerably to tightening of credit standards" and "contributed somewhat to tightening of credit standards" and the sum of banks responding "contributed somewhat to easing of credit standards" and "contributed considerably to easing of credit standards" as a percentage of responses given.

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indicator and the survey conducted by the German Chamber of Industry and Commerce (DIHK)). They, too, at times identified bottlenecks in lending to specific groups of enterprises and sectors, but no general credit crunch which would significantly restrict the real economy.

Large enterprises were much harder hit by the stricter lending standards according to the BLS and other surveys especially at the beginning of the crisis than small and medium-sized enterprises (SMEs). This is probably partly because savings banks and credit cooperatives, as typical lenders to SMEs, were initially less badly affected by the crisis and did not adjust their credit standards until the general economic situation deteriorated. The results of a business survey conducted by the ECB and the European Commission also indicate that the impact on large and smaller enterprises differed in the various phases of the financial crisis. According to this survey, in the first half of 2009, slightly more than 40% of large enterprises thought the availability of bank loans had deteriorated, while this figure was just 30% for SMEs.¹⁵ In the second half of 2009, the figures reported for large firms and those of SMEs in this survey converged. This crisis therefore differs significantly from earlier ones, in which SMEs were typically worse affected than large enterprises.

... only temporarily, particularly badly hit categories of enterprises

¹⁵ Given that relatively little information is available on SMEs' funding situation, the ECB and the European Commission have, since 2009, commissioned a survey on European SMEs' access to finance every six months. Details are available at <http://www.ecb.int/stats/money/surveys/sme/html/index.en.html>.

Bank interest-rate pass-through also unremarkable

Last but not least, the fact that interest rates for corporate lending in the categories relevant to the German banking market tended to be lower than forecast by models estimated based on German banks' interest-rate pass-through before the crisis argues against a broad-based credit crunch in Germany. These estimates provide no indication that banks were exceptionally slow to pass on to clients their sharply lower refinancing costs as a result of the monetary policy easing.¹⁶

Alternative forms of corporate finance

During the crisis, significance of internal financing higher

When assessing non-financial corporations' funding situation during the financial crisis, it should also be borne in mind that bank loans represent an important, but by no means the largest source of funding. According to the Bundesbank's financial accounts statistics, the external financing, which includes bank loans, received by non-financial corporations in the period 2000 to 2007 made up just 25% of overall funding on average; on balance, enterprises funded 75% of their requirements internally.

Positive financial investment by non-financial corporations argument against credit crunch

Even during the financial crisis, internal funding had a special role to play in Germany. Purely mathematically, non-financial corporations would, throughout the financial crisis, have been able to cover all their fixed asset formation using internal funds – partly because such expenditure was cut back sharply in response to the crisis. Non-financial corporations were therefore, on balance, not reliant on funds from other sectors even in the economically difficult year of 2009; in fact, they were actually net acquirers of financial assets,

which also contradicts the hypothesis of a credit crunch.

At the same time, the volume of external funding declined during the financial crisis. While bank loans fell, alternative forms of external funding rose (see chart on page 42). Here, financing through loans to group affiliates, which is mainly used by larger and internationally active enterprises, in particular, exerted a stabilising influence in 2009.¹⁷ The same was periodically also true of trade credits – although these are less significant in quantitative terms. Non-financial corporations with capital market access had other alternatives to bank loans. Although the crisis has rendered financing conditions more difficult, they have from 2007 to the present day always been able to generate positive contributions to financing by issuing fixed-income securities, shares and other equity.

On balance, these developments indicate that the decline during the financial crisis in the volume of loans extended to non-financial corporations in Germany can mainly be attributed to the weaker real economic situation. By contrast, supply-side restrictions by banks are unlikely to have limited credit mo-

On balance, therefore, no broad-based credit crunch evident

¹⁶ For information on the methodology, see Deutsche Bundesbank, Short-term bank lending rates since the autumn of 2008, Monthly Report, May 2009, pp 36-37.

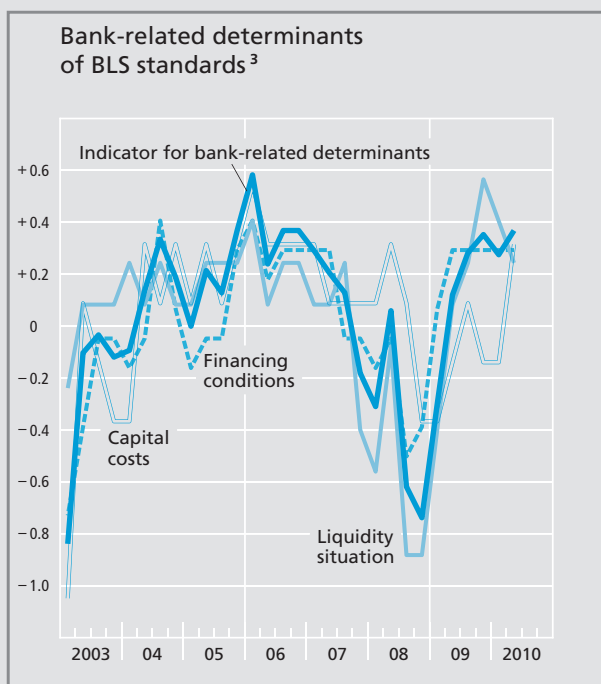
¹⁷ Some intra-group loans come about because German enterprises' financing subsidiaries pass on revenues from the placement of debt securities on the international capital market.

The importance of bank-related factors in lending to non-financial corporations during the crisis

In the Eurosystem's quarterly Bank Lending Survey (BLS), a sample of German banks is regularly asked how their standards for granting loans to non-financial corporations (including credit lines) have changed in the preceding three months. Furthermore, the reasons for the adjustments made to the credit standards are also surveyed.¹ The response options cover not only the competitive situation but also, in particular, the surveyed institutions' perception of risk (with regard to the outlook for general economic activity, and sector or firm-specific risks) as well as bank-related factors such as wholesale funding costs, the liquidity situation and balance sheet constraints. Applying econometric factor extraction techniques, these qualitative data² are used to derive an indicator of the bank-related determinants and an indicator of the impact of their perception of risk on developments in their credit standards. While

the first indicator reflects the supply-side determinants of lending, the second indicator principally describes the demand-side-driven effects. In addition, the participants in the BLS are asked specifically about enterprises' funding needs which they have observed.

Given the "credit crunch" debate, the bank-related determinants are of prime interest. As is to be expected, this indicator gains in importance with the outbreak of the financial market turmoil in the third quarter of 2007, and it attains its maximum impact on credit standards in the third and fourth quarters of 2008, ie with the insolvency of US investment bank Lehman Brothers. Subsequently, however, the bank-related determinants quickly recede in importance again – evidently against the backdrop of the Eurosystem's rapid monetary and liquidity policy response and the introduction of governmental support measures.



The explanatory power of these two factors for the lending of banks in the BLS sample to non-financial corporations was verified with the aid of a panel estimation. This was based on a balanced panel consisting of 14 banks and 31 quarters (2002 Q4 to 2010 Q2). The estimation used the ordinary least squares approach (fixed-effects method). In its general form, the equation is written as

$$\Delta Loans_{it} = \alpha_i + \beta(L)BLS_{it} + \gamma(L)X_{(i)t} + \varepsilon_{it}$$

Where $\Delta Loans_{it}$ represents the first difference of the logarithmic real loan portfolios (seasonally adjusted) for bank i in the period t , BLS_{it} is a vector of BLS variables (credit standards, indicator of bank-related determinants, indicator of the impact of the perception of risk and indicator of demand) for bank i in period t . $X_{(i)t}$ is a vector with additional explanatory macro and micro

1 For a detailed description of the Bank Lending Survey, see Deutsche Bundesbank, Bank Lending Survey: an interim assessment and current developments, Monthly Report, January 2009, pp 15–30. — 2 The possible responses for the credit standard determinants are: 1=contributed considerably to tightening of credit standards, 2=contributed somewhat to tightening of credit standards, 3=contributed to keeping

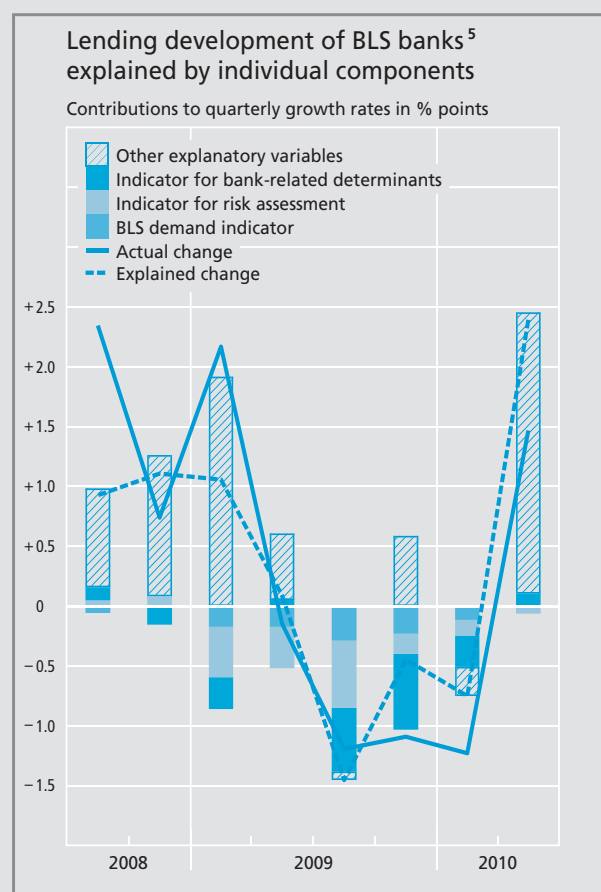
credit standards largely unchanged, 4=contributed somewhat to easing of credit standards, 5=contributed considerably to easing of credit standards. — 3 Determinants with negative values have a tightening influence on banks' credit standards, while positive values exert an easing effect. — 4 Comparable results with regard to the effects of the bank-related determinants are also produced in alternative esti-

variables (the logarithmic growth rate of real GDP, the growth rate of deflated insolvency claims, the capital ratio of bank i , as well as the difference between the interest rates for debt financing and the returns of alternative sources of financing for the enterprises). The results show that, in addition to the other incorporated variables, the indicator of the bank-related supply factors makes a significant contribution to explaining the negative dynamics of lending in the years of the crisis. As, according to the estimate, the dampening impact of the bank-related factors first appears with a time lag of four quarters, these factors did not exert their maximum restrictive effect until the third and fourth quarters of 2009. Subsequently, this explanatory factor quickly becomes less important and even reverses into positive territory at the end of the period under consideration.⁴ The time lag in the impact of the bank-related factors is consistent with the sequential deleveraging of the banks. Accordingly, the increase in capital ratios on the asset side of their balance sheets necessitated by the escalation of the financial crisis was carried out by banks not through loans to the private sector but through other asset items (external assets, interbank claims, equities and other variable-rate securities). Enterprises drawing on negotiated credit lines may also have contributed to the lagged impact.

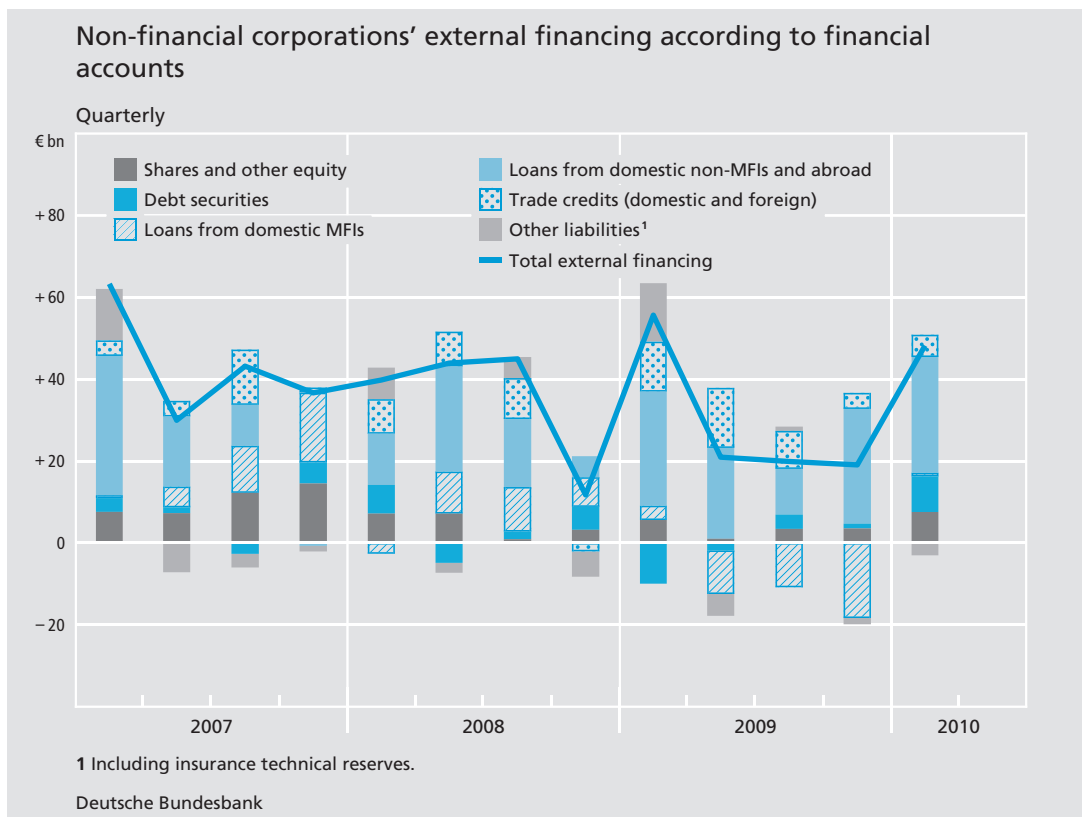
On balance, the estimate suggests that bank-related restrictions in the crisis also played a part in the weakening credit growth. Even in the period when the impact of bank-related factors was at its strongest, the explanatory power of the other determinants explicitly incorporated into the estimate were, in sum, more significant. Furthermore, the influence of the bank-related factors was of no more than limited duration owing to the rapid and clear response of the Eurosystem and to the governmental support measures. The scale and duration of the

mation variants (OLS estimates additional incorporating time effects, estimates with unbalanced BLS data, estimates with feasible GLS) used in the robustness check. — ⁵ Breakdown of estimated credit growth into its individual components and/or explanatory factors. The chart shows how the credit growth explained by the estimate is distributed

restricting impact of the bank-side factors therefore do not suggest a broad-based credit crunch. What should also be taken into consideration is that the results are based on a sample with a disproportionately high percentage of larger credit institutions. As such institutions tended to be more strongly affected during the crisis by a heightened need for write-downs and restricted wholesale funding opportunities, the econometric analysis is likely, if anything, to have overestimated the importance of bank-related factors for the lending of the banking sector as a whole.



among bank-related supply factors, the risk indicator, the BLS demand indicator and the other explanatory variables (such as the growth rate of real GDP, the growth rate of deflated insolvency claims, the interest rate spread, etc).



mentum for any length of time.¹⁸ There is, therefore, no evidence to date of a broad-based and self-reinforcing credit crunch that is triggered by bank-side factors.

On the risk of a credit crunch in the cyclical recovery phase

This year, the downward trend in bank lending momentum in Germany appears to have been broken, as German banks' holdings of loans to domestic non-financial corporations have largely stagnated since the beginning of the year. However, a turnaround and renewed rise in loan holdings is not on the horizon yet. If demand for bank loans mirrors the accelerating economic recovery over the next few months and enterprises' capital requirements for working capital and investments

rise, the possibility still cannot be completely ruled out that an inadequate supply of finance by banks might dampen overall economic activity. That is a fairly unlikely risk scenario, however. For one, access to alternative external and internal sources of funding is likely to become increasingly easier with the economic recovery and the gradual stabilisation on the financial markets.

Moreover, the likelihood of an imminent credit crunch is also likely to remain limited for bank-related reasons. Since the beginning

At the current end, loan supply situation appears to have eased somewhat, ...

¹⁸ A breakdown of lending by banking category shows that the banking categories that were particularly hard hit by the financial crisis, notably the big banks and the Landesbanken, reduced loans to domestic non-financial corporations most. However, corporations that might have been rejected by banks with restrictive lending policies might well have been able to satisfy their funding requirements by turning to other types of banks.

Downward trend in loan momentum now broken, but no turnaround on the horizon yet

of 2010, lending to the German economy has improved steadily, as evidenced by the results of business and bank surveys. According to the special survey the Bundesbank conducted again in July 2010,¹⁹ German banks even anticipate rising loan volume over the next 12 months given the favourable economic environment. Moreover, the pressure to reduce balance-sheet assets within the German banking system in order to deleverage, which was triggered by the financial crisis, is currently easing overall. Given macroeconomic developments, it currently looks as though German banks' profitability will be muted, but positive in full-year 2010 despite non-negligible financial market risks (see page 33). The gradual normalisation of the interbank market in the euro area is also encouraging.

... but capital requirements set to rise

However, when determining whether a credit crunch might occur in future, it is important to consider whether banks will raise capital in anticipation of expected higher regulatory capital requirements, either on their own account or because of market pressures. The decisions that the Basel Committee on Banking Supervision has taken to date concerning future capital requirements,²⁰ which the G20 Heads of State or Government should finally pass at their meeting in early November in Seoul, indicate that German banks will require considerably more capital going for-

ward. Large changes in lending behaviour as a result of regulatory changes are nonetheless unlikely in the near future – not least because long transitional periods are in place. Moreover, the restructuring of bank balance sheets during the crisis has shown that when credit institutions in Germany restructured their asset portfolios, this was only partially done at the expense of client exposures. The impact of regulatory adjustments on average-risk loans should therefore initially be limited; it is more likely that access to riskier loans will become more difficult.

Higher capital requirements strengthen the banking system's resilience. This on its own should reduce the risk premiums banks pay for equity and debt. Provided financial markets continue to stabilise worldwide and the German banking system's balance-sheet adjustment process has peaked, the financial crisis is likely to have a limited negative impact on the real economy and a broad-based credit crunch will remain just a risk scenario.

¹⁹ For more detailed results, see the Bundesbank's Third special survey on German banks' lending to domestic enterprises at http://www.bundesbank.de/download/volkswirtschaft/publikationen/ergebnisbericht_sonderumfrage_juli10_en.pdf.

²⁰ For details, see press release from the Basel Committee on Banking Supervision, Group of Governors and Heads of Supervision announces higher global minimum capital standards, 12 September 2010.