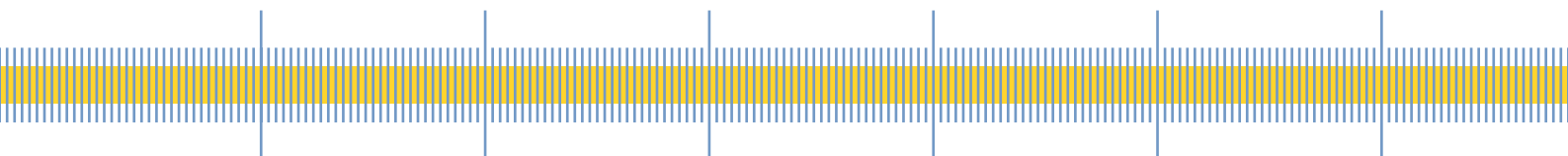


FINANCIAL STABILITY REVIEW



November 2006

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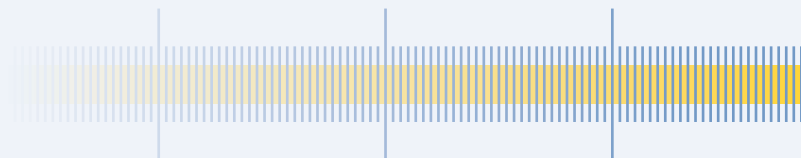
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Abbreviations and symbols

p Provisional; s Estimated; . Data unknown, not to be published or not meaningful; – Nil.
Discrepancies in the totals are due to rounding.

Analysis



Overall assessment

Gratifying stability situation ...

The stability of the German financial system improved further this year. The process of consolidation which began in 2003 has thus continued. Overall, there has been an ongoing easing of the German banks' risk situation and, at the same time, their risk-bearing capacity has improved significantly. Insurance corporations, too, have been able to strengthen their financial base.

... in a favourable setting

Financial intermediaries and markets have benefited, not least, from the favourable macroeconomic environment. The global economy has remained buoyant and, along with a dynamic investment trend, this has led in Germany – measured against the potential rate – to a robust real economic expansion coupled with moderate price inflation. This has implied a higher earnings potential for banks, especially in trading and commission-related business. The favourable financing conditions have also helped to improve the credit quality of German enterprises and households. It may currently be assumed that the positive underlying growth dynamics will persist, particularly as most forecasts are now predicting no more than a slight cooling of in the global economy.

Stability review also encompasses less probable stress scenarios

This review assesses the risk situation and resilience of the German financial system in the light of the current setting. In this context, due account has to be taken of possible adverse developments in the real economy and in the financial markets. This should not, however, be interpreted as a projection of developments which are likely to happen. Rather, the objective is to include in the discussion less

probable stress scenarios – events that, if they were to occur, could weaken the stability of the German financial system.

One of the macroeconomic risk factors is a renewed rise in oil prices – which are still at a high level. Another conceivable risk is a sharper slowdown in US economic growth than is currently expected by the markets. As a result of the downturn in the housing market, the performance of the US economy could be dampened more than is anticipated at present.

Risk factors: oil price and US economy

The large and still growing global imbalances harbour the risk of a downturn in foreign financial investment in the United States. A withdrawal by international investors could bring about a marked depreciation of the US dollar and a rise in US long-term interest rates – with ensuing contractionary effects on the real economy. Moreover, concomitant heightened risk aversion on the part of investors could lead to higher long-term interest rates and risk premiums worldwide.

Risk factor: global imbalances

The buoyant state of the real economy has been a key determinant of the risk situation in the international financial markets for some time now. The withdrawal of liquidity initiated by a number of central banks has progressed so far without any major frictions. The baseline scenario of a slight cyclical slowdown in the world economy (with more balanced growth regionally and limited inflationary pressure) is, to a large degree, currently determining the expectations of the market players and the valuations of financial assets.

Positive macroeconomic situation influencing financial markets
...

... but reassessment in the event of a marked revision of macroeconomic expectations ...

However, should it become necessary to revise these optimistic macroeconomic expectations, for instance about the prospects for global and regional growth, a general reassessment in the international financial markets might be accompanied by major disruptions. For example, falling corporate profits coinciding with a decline in the historically high returns on equities could place a strain on stock prices. At the same time, lower corporate profits would weaken the enterprises' credit quality. As a result, the relatively high valuation levels for corporate bonds and in the closely linked credit risk transfer markets could come under pressure.

... with possible amplification effect on market dynamics

The occasional financial market turbulence in the second quarter of this year showed that a sudden rise in risk aversion may be accompanied by heightened volatility and a change in the correlations between individual asset classes. Abrupt market swings and the resulting interaction of market price risks with market liquidity risks and counterparty risks also harbour the danger of unfavourable market dynamics.

Greater transparency of hedge funds necessary

The behaviour and resilience of major market participants play a key role in the market's dynamics. Disruptive effects might be generated by hedge funds, whose major presence in some market segments has a considerable impact on price movements. The persistently high correlation of hedge funds' returns gives cause for concern that market reversals might be intensified by co-moving portfolio shifts. A number of misspeculations by hedge funds that have recently come to light have exposed shortcomings in risk management, even though their implications for the financial

system have remained limited in the currently robust market setting. Against this backdrop, measures aimed at strengthening market discipline are highly welcome. It would be desirable for the hedge fund sector to adopt a code of conduct covering not only corporate governance and risk management aspects but also exacting transparency rules. Ratings provided by recognised rating agencies could contribute to greater transparency of hedge funds. At the same time, the public authorities' dialogue with hedge funds should be further intensified with the objective of better identifying potential systemic risks.

Even if one or more of the above-mentioned risk factors were to materialise, they would impact on a German banking system that currently is in robust shape across all sectors. This improved resilience is due both to a relatively favourable risk situation and a stronger risk-bearing capacity.

German banking system in robust condition

The risk situation in the German banks' lending business has eased markedly, especially compared with the strains experienced in 2002-03. The main reason for this is the perceptible improvement in credit quality in the corporate loans portfolio, in respect of lending both to large corporations and to small and medium-sized enterprises (SMEs). First and foremost, this is reflected in the portfolios of non-performing loans (in relation to the gross volume of non-bank loans) falling to a level last seen in the late 1990s. Developments in credit quality in lending business with households appear less clear-cut. Nonetheless – unlike in countries which have experienced a boom in house prices – no pronounced risks to stability exist in this segment since

Risk situation in lending business has eased markedly

households' indebtedness is likely to fall in the medium term on account of increasing employment.

Increased risk positions in the area of market risk

In the area of market risk, the German banks have taken up somewhat larger risk positions. The commercial banks have stepped up their equity price risk – doing so, above all, in the first quarter of 2006. The smaller and medium-sized banks are displaying a heightened interest rate risk since, given a flatter yield curve, they have extended the average maturity of their assets. Even so, there is no identifiable excessive build-up of market risks. Furthermore, the market risks within the German banking system meanwhile appear to be better diversified.

Increase in risks stemming from legal disputes

In the past few years, legal disputes have become a more significant factor. Crucial determinants are the internationalisation of banking business, activity in new market segments that do not yet have a mature technical and legal infrastructure, as well the increasing electronification of trades and settlement processes.

Marked improvement in profitability in the German banking system

At the same time, the German banking system's risk-bearing capacity has been strengthened further, not least owing to a marked improvement in profitability. The large, internationally active banks, for example, were able to boost their earnings considerably in 2005 and the first half of 2006, benefiting from favourable capital market conditions. In the medium term, an ongoing positive trend in operating business is emerging – in particular, owing to enhanced operational efficiency and increasing asset productivity. The savings banks and credit cooperatives suffered

a decline in their operating results in 2005, but were able to increase their profit for the financial year before tax. The Landesbanken made notable progress on the way towards developing new business models, which have also been assessed positively by the markets and the rating agencies. So far, the process of weaning themselves from government-guaranteed liabilities has been running smoothly.

On average, the German banks were able to clearly improve their capital and core capital ratios last year. This was also due to lower spending on risk provisioning. Given relatively good credit quality and strengthened risk management, the risk provisioning levels appear adequate at present.

Capital and core capital ratios showing clear improvement

Following a difficult period at the turn of 2005-06, featuring considerable outflows of funds in some cases, the situation of the open-end real estate funds – which are of particular interest from a stability perspective owing to their close link with the German banks – has now stabilised and consolidated. Disposals of real estate portfolios and a renewed rise in returns also played a part in this.

Situation of open-end real estate funds has stabilised

In the light of the German banking system's increased resilience, three main risks to its stability persist. First, the positive development in credit quality in the case of corporate loans may have reached its zenith. A trend reversal has been emerging in international lending business for some time now, even though large international enterprises' profitability remains at a high level. Business with SMEs in Germany could suffer should the domestic economy cool down more than expected, especially in the event of further rising energy

Main risks: weakening of credit quality, ...

prices. This could place a strain on the SMEs' profitability and robustness. A turnaround in the national and/or international credit cycle would probably initially put a stop to the trend towards lower value adjustments, which was an important factor in the increased profitability in 2004 and 2005.

... volatile income sources and ...

Second, it should be noted that much of the improved operating result – especially in the case of the large, internationally active banks – has been generated by income sources that are quite volatile. This is true of several commission-driven lines of business, such as investment banking, and trading business. Unfavourable developments in the financial markets might therefore generate income-dampening effects.

... net interest result under pressure

Third, for a variety of reasons, the net interest result is likely to remain under pressure in the short and medium term. Besides the current flat yield curve, which makes maturity transformation risky and less attractive, interest margins have been exposed to a process of erosion for some considerable time now – on both the deposit side and, more significantly, on the lending side. In particular, those institutions for which net interest income plays a key role would consequently find it harder to meet their longer-term profit and return objectives.

German banking system robust against macro-economic and financial market shocks

All these risks are manageable, which is also confirmed by the macro, credit and market risk stress tests that have been conducted. Nevertheless, an accumulation of different risks and adverse factors – as would occur, admittedly, only in the event of extremely unfavourable macroeconomic and financial mar-

ket shocks – would pose significant challenges to the German banking industry.

The German insurance industry remains in sound overall shape with reinforced financial strength. The sector's earnings performance in 2005 was marked by opposing trends, however. Life insurance companies achieved a substantial increase in their profit for the year, whereas non-life insurers and reinsurers saw their combined ratios rise, although they managed to cushion these with improved net capital investment income. Alongside damage risks due, say, to natural events and pandemics, risks arising from the sector's structure and the overall competitive setting as well as specific risks caused by political initiatives, a persistently low long-term interest rate level represents a challenge for this sector since it makes it more difficult to earn the guaranteed returns on policyholders' funds.

German insurance industry remains sound

The German financial system can rely on a robust payment system infrastructure. Systemically important individual payment systems, such as RTGS^{plus} or TARGET, and other key applications such as the SWIFT communications network were characterised last year by high availability. The further increase in the market share of the CLS payment-versus-payment system for foreign exchange operations promises to reduce settlement risks in forex trading. By contrast, it remains to be seen what overall impact the provisions of the EU directive on payment services in the internal market, which is currently under consultation, and especially the creation of a new type of payment services provider ("payment institution") will have on the risk situation in the field of payments.

Payment systems stable

Risk factors affecting the German financial system

Macroeconomic risks

This section identifies the macroeconomic risks which are relevant today and their main transmission channels. Such risks are not just transmitted via the traditional real economic channels, such as foreign trade, but also via the financial markets. Identifying these risks is therefore essential if we are to analyse financial market stability.

Upturn in German economy maintained

The baseline scenario of macroeconomic developments as featured regularly in the *Monthly Report* does not assume any lasting adverse affect on cyclical expansionary forces in Germany. Indeed, the upturn in Germany gained momentum and became more broadly based this year. Bolstered by continuing brisk growth in the global economy, macroeconomic growth accelerated noticeably in the first six months of the year. Even though more moderate growth rates are being assumed for the second half of the year and beyond, the positive underlying momentum is likely to continue. This is also true with respect to the dampening effect of the rise in turnover tax in the coming year. Although this will temporarily slow macroeconomic developments, the German economy appears to be strong enough to cope with this measure.

Risk factors

However, a number of factors could cloud the picture. These include not only a renewed rise in oil prices and a marked slowdown in the US economy but also a potential abrupt adjust-

ment to the existing global imbalances in the current accounts.

Renewed oil price rise

As the experiences of the 1970s and 1980s show, considerable risks to the global economy can come from the oil markets. By comparison, the oil price rises of the past few years have been absorbed fairly well owing mainly to the hitherto limited second-round effects in the oil-importing countries, the generally good investment climate, and the improved recycling of the oil-exporting countries' revenues. However, this favourable situation could be jeopardised if oil prices were to rise sharply again.

Oil prices as a risk factor

Prices in the international oil markets, which reached a new high at the start of August 2006, with a barrel of Brent crude oil costing US\$78, have since tended to go down markedly; in mid-November, they were around US\$20 below the level at the beginning of August and only around US\$3 higher on the year. It would be premature, however, to see this as the start of a prolonged downward trend resulting in permanently lower oil prices. Indeed, the risk of oil prices rising again should not be underestimated. Although forward quotations have also fallen sharply in recent months, they have not fallen as sharply as spot prices, which suggests an assessment of the markets to that effect (see Chart 1.1.1).

Current situation in oil markets

Limited spare capacity in oil-producing countries

All in all, it is therefore to be assumed that the level of the oil markets' susceptibility to disruption will remain high in the foreseeable future. This can be attributed mainly to the fact that the oil-exporting countries still have very limited spare production capacity and global refinery capacities are almost fully utilised. According to International Energy Agency (IEA) estimates, free capacity in the OPEC area amounts to slightly more than two million barrels per day, while global oil demand amounts to 85 million barrels per day.¹ Added to this is the fact that it is essentially heavy and sour crude oil, for the processing of which there is too little worldwide refinery capacity.

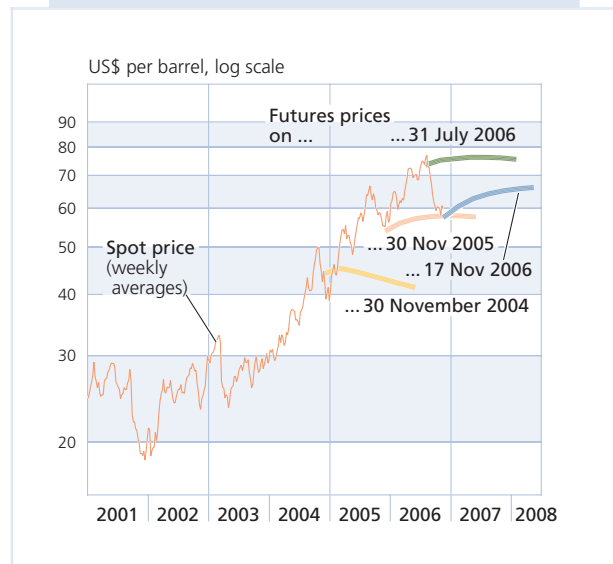
No sustained improvement in longer term

Based on current findings, there is unlikely to be any notable increase in production capacity in the next few years either. By contrast, global demand for crude oil is continuing to rise, although, given the more moderate global economic growth expected, probably somewhat more slowly than it has until now. The IEA is currently expecting an increase of 1% and 1¾% for 2006 and 2007, respectively, having forecast a marginally sharper increase in the middle of the year. Furthermore, the OPEC countries attempted to counter a supply-side-induced fall in prices with a 1.2 million barrel reduction in production quotas due on 1 November 2006. If this is not enough to stabilise oil prices, further production restrictions are to be expected. Against this backdrop, a sustained and noticeable fall in oil prices is not to be expected in the longer term. Instead, future price rises cannot be ruled out either.

A renewed rise in oil prices would have a dampening effect on the world economy. The main reason for this is that, judging from

Chart 1.1.1

CRUDE OIL PRICES*



Sources: Thomson Financial Datastream and Global Insight. — * Spot price and futures contract prices for Brent crude oil.

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experience, the contractionary effects on demand triggered by oil-price-induced losses in purchasing power in the consumer countries are having a more rapid effect than the expansionary stimuli of the oil-producing countries' larger oil revenues. However, increasing deliveries of goods to the oil-exporting countries and increased investment via the financial markets are leading, with a certain time lag and at least partially, to a balance in respect of macroeconomic demand. Yet the rise in capital imports by the consumer countries is also reflected in the rising debt of the domestic sectors. Moreover, as a consequence of a sharp rise in oil prices, there could be a sustained deterioration in the price climate if

Possible effects of further oil price surges on global and German economic growth

¹ See International Energy Agency, Oil Market Report, November 2006.

there were to be stronger second-round effects.

In the first phase following an oil price surge, Germany, as a country highly dependent on energy imports, would suffer marked losses in growth. According to simulations with the Bundesbank's macroeconomic model, if there were to be a sustained rise in oil prices of 20% starting from the current level, a ½% fall in real GDP can be expected within two years – measured in terms of the baseline or starting level. If oil prices were to rise by 80%, the negative GDP effect to be expected would amount to just under 2% in the second year. The majority of this fall can be attributed to the lower private consumer demand. Furthermore, the rise in production costs and the fall in foreign demand would impair overall output. In addition, consumer price inflation would increase markedly; the price index would stand 3% above the baseline in the second year.

Slump in US growth

US economy as a pacemaker for the global economy

The strong upturn in which the global economy currently finds itself has been significantly sustained, especially in its initial phase but also subsequently, by the United States. The German economy was a particular beneficiary of this. The key role of the US economy as a pacemaker for the global economy raises the question of whether a slump in the US economy would have grave consequences for the rest of the world in general and for Germany in particular.

In the second and third quarters of 2006, the US economy embarked upon a noticeably

calmer economic course (see Chart 1.1.2). In the subdued increase in private consumption and the fall in private residential investment in the second and third quarters compared with the fourth quarter of 2005 and the first quarter of 2006, the effects of the increased short-term and long-term interest rates are particularly evident. According to projections from the Federal Reserve, US GDP will grow slightly more slowly than potential output in the coming quarters, too. Market expectations as expressed in the consensus forecasts point in the same direction. Although this is likely to dampen the global upturn somewhat, it is highly unlikely to lead to a downturn, as the cyclical momentum has now become markedly stronger, especially in the euro area, and most of the emerging market economies are continuing to experience dynamic economic growth.

Slowdown in US growth in second and third quarters of 2006

However, the housing market – as well as external imbalances – represents one potential weakness of the US economy. Sharp rises in the price of residential property have stimulated private consumption and construction activity in recent years by way of positive wealth effects and additional credit facilities as a result of higher loan values for mortgages. A marked fall in property market prices would, conversely, greatly reduce demand for new housing. A sharp rise in mortgage defaults could have similar effects. In both cases, less construction activity would be the direct consequence.

Housing market potential weak spot

Private consumption would be indirectly affected, since many households would have to adapt their consumer credit to the lower loan values. To that extent, negative wealth effects

would be added to this, as the fall in property values would tend to reduce consumers' propensity to buy. Even a deceleration in house price rises may already be exerting a potentially dampening effect. It has to be remembered that private consumption in the USA accounts for 71% of GDP (2005); if housing investment is included, it would actually be 76½% of GDP. Moreover, industrial investment could probably also be affected by a general deterioration in sentiment. The fact that the negative saving rate which has prevailed for some time now has been increasing the sensitivity of households to adverse shocks should also be taken into consideration.

These direct adjustments are likely to limit the extent of a possible fall in prices. In this scenario, the macroeconomic slowdown would be less pronounced than in a case of sharply falling prices and associated additional negative wealth effects. Another argument against the latter is that the continuing rise in the US population offsets a greater fall in house prices. After all, it should be remembered that, if a downturn in growth were to emerge, the US Federal Reserve would, judging from experience, very quickly make use of any monetary policy manoeuvrability to counter it. If inflation expectations were stable, long-term interest rates would tend to fall as a result.

Diverging assessments of any overvaluations

The risk of a sharp fall in prices in the housing market depends mainly on whether house prices have moved significantly far from the level that appears appropriate in the light of fundamental determinants. It is undisputed that house prices have risen sharply in the past few years, with clear regional differences. However, if they had previously fallen well short of their fundamental value or have simply been following changes in the underlying conditions – a view held by part of the empirical literature – this price rise is hardly a result of speculative exaggerations.² All in all, the question of a possible overvaluation in the US housing market is shrouded in considerable uncertainty.

All in all, although there is only a limited likelihood of the housing market sharply holding back economic momentum in the United States, which would also have negative consequences for the German economy, it should not be neglected.

Probability of a marked slump in US growth limited

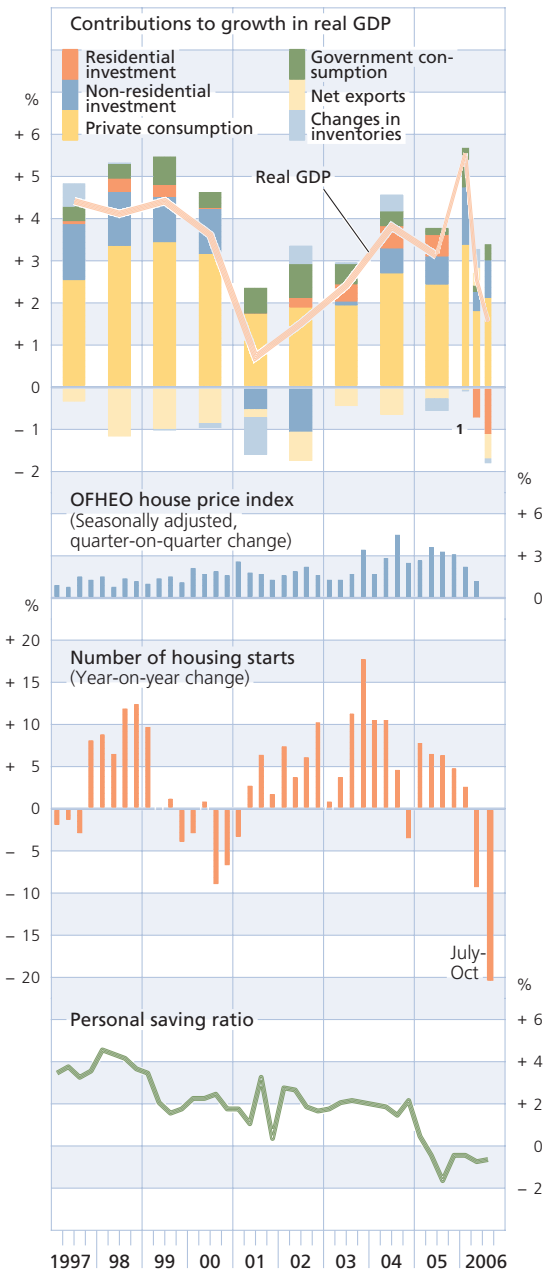
² It is generally difficult to determine the fundamentally justified value of the national housing stock. In practice, the relationship between house price indices and fundamental determinants, such as the disposable household income or rents, is regularly used. The current deviation of such an indicator from its long-term average then serves as a measure for an overvaluation. However, the consistency of the historical average with the fundamentally justified relationship is merely assumed. Regression models, too, are based on the assumption that house prices have been determined by their fundamental factors in the past and that any divergence from their equilibrium value has been random. However, if property were systematically undervalued in the past and current market prices exceed model forecasts, an overvaluation will be wrongly shown. Hwang Smith and Smith (2006) estimated fundamentally justified house prices as net present values of an investment in a house from rental data from several US city regions. Consequently, making plausible assumptions about the future cash flow from residential property, housing in the United States was generally not overvalued in 2005. The OECD recently compared the actual relationship between house prices and rents with the fundamentally justified price-to-rent ratio, as derived for a balance on the housing market from the user cost of residential property. According to this, the US housing stock was still more or less accurately valued in 2004. See M Hwang Smith and G Smith (2006), "Bubble, Bubble, Where's the Housing Bubble?", Brookings Papers on Economic Activity 1 2006, pp 1–50, as well as OECD Economic Outlook No 78, December 2005, p 203 ff.

Rapid quantity adjustments limit price adjustments

But even if a bubble were to have arisen, there would not need to be an abrupt correction to the mispricing. Construction indicators, such as private housing expenditure, building permits, housing starts, or new house sales, are now tending to fall, thereby showing rapid quantity adjustments on the supply side.

Chart 1.1.2

US ECONOMY



Sources: Bureau of Economic Analysis, Office of Federal Housing Enterprise Oversight (OFHEO) and Census Bureau. — 1 From 2006, seasonally adjusted annualised quarter-on-quarter change.

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The question therefore arises as to how far any such downturn in growth in the USA would affect the German economy. If US GDP were to fall by 2 percentage points, for example, German exports to the United States would be roughly just under 4% lower. Given a share of exports to the USA of just under one-tenth, this results in a direct negative effect on the growth in German exports of around 1/3 percentage point. The resultant slowdown in the rise in GDP in Germany would then amount to 1/10 percentage point. Added to this, however, would be negative third-market effects and a probably discernible deterioration in confidence, which could quickly have an effect on the German economy. Estimates of the overall effect also depend on whether the slowdown in US growth can be attributed to a supply or a demand shock.³ All in all, it would be highly unlikely that the German economy would be able to escape a marked and prolonged slowdown in the United States. This would particularly be the case if – as may be expected – other economic regions were to be affected and the weaker expansion in demand in the United States were to be accompanied by a noticeable depreciation of the US dollar.

Potential repercussions for the German economy

Abrupt adjustment of global imbalances

The global current account imbalances continue to be a latent risk factor affecting developments in the financial markets. The situation has intensified in that the US current

Global imbalances remain latent risk factor

³ Fluctuations on the demand side are transmitted more quickly and powerfully to the German economy than supply shocks. See Eickmeier, S (2006), Business cycle transmission from the US to Germany – A structural factor approach, European Economic Review (forthcoming, also available as Bundesbank Discussion Paper 12/04).

account deficit continued to rise in the first six months of 2006 and, at over US\$430 billion, amounted to just over 6½% of GDP. The US current account deficits are mirrored in the sharp growth in the surpluses of the oil-exporting countries and Asian economies in recent years. The position of the euro area as a whole is largely in balance, even though there are definite differences at the level of the individual member states (see Chart 1.1.3).

High demand for US assets ...

Up until now, demand from international public and private investors for US assets has continued unabated. Debt instruments accounted for the majority of purchases. While, as a rule, these promise lower returns than other financial instruments, such as shares, they are regarded as comparatively safe. With its highly developed capital market, the United States evidently acts as a financial intermediary for the rest of the world. Added to this is the fact that the United States is still seen by private and public investors as a safe haven providing protection from global political or macroeconomic risks.

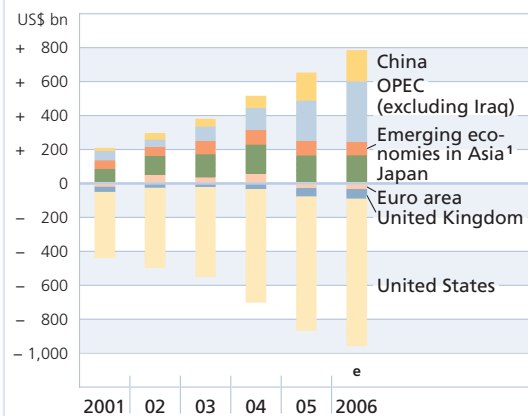
The significance of the US dollar as an international reserve currency is a key factor in this connection. Around two-thirds of international foreign exchange reserves are held in US dollars. Although the share has fluctuated considerably in the course of the past few years – due not least to valuation adjustments – a trend decline cannot be observed.⁴

... contrasts with low savings in the USA ...

The domestic economic equivalent to US capital imports can be found in the low level of US saving. This is due not only to the government deficit of 3.8% of GDP in 2005, although this is likely to be lower this year, but

Chart 1.1.3

CURRENT ACCOUNT POSITIONS OF SELECTED COUNTRIES AND REGIONS



Sources: IMF, ECB and BIS. — ¹ Hong Kong, Singapore, South Korea and Taiwan.

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also, and more importantly, to the high propensity of households to consume. Facilitated by the continuing low level of interest rates and the associated rise in asset prices – particularly house prices – the private saving ratio was actually negative last year and in the first three quarters of this year.

The US savings gap reflects comparatively moderate investment activity in many parts of the world. In the second half of the 1990s, investment declined noticeably in some emerging market economies as a result of the escalating financial crises originating in Thailand; added to

... and moderate investment activity in other countries

⁴ See BIS Quarterly Review, September 2006. By way of qualification, it should be pointed out, however, that not all countries publish the composition of their foreign exchange reserves. This applies especially to the People's Republic of China, which holds around one-fifth of the worldwide foreign reserves.

this is the fact that the saving ratio is very high in many Asian economies. There are therefore funds available to offset the US savings gap.

Currently no signs of abrupt changes in capital flows

There are currently no signs of abrupt changes in international capital flows, resulting in potential negative effects on the stability of the German financial system. The current robust economic growth in Europe and Asia, together with a slight slowdown in the US economy, essentially provides favourable conditions for an adjustment in the high current account positions without greater tensions, although this is not enough in itself to reduce the imbalances that have come about. The effective 3% depreciation of the US dollar⁵ between the beginning of the year and the middle of November is also likely to facilitate an orderly adjustment.

Effects of falling demand for US assets ...

Whether it comes to this essentially depends on whether foreign investors remain prepared to acquire US assets. Weaker foreign investment in the US capital markets would probably be associated with a rise in the US interest rate level and a depreciation of the US dollar. Furthermore, investors' general risk aversion is also likely to increase, with the result that a rise in the interest rate level and the corresponding contractionary effects on the real economy would likewise be expected in other parts of the world. These developments could be even further exacerbated outside the dollar area by a loss of price competitiveness as a result of the depreciation of the dollar and the fall in import demand in the United States.

... on the USA ...

In its latest World Economic Outlook, the IMF, on the basis of its Global Economy Model, sets up a scenario in which the United States

suddenly loses its special attractiveness to foreign investors and its interest rate advantage as a debtor country is eroded.⁶ In the United States, according to the model, this would result in a sharp interest rate rise within a year and a real effective depreciation of over 14% in the US dollar as well as a temporary drastic slump in economic growth of 3 percentage points in real terms.

Of the partner countries, emerging economies in Asia would probably be the worst affected. According to the model calculation, their exchange rates would probably appreciate by over 17% on average, and the current 8% economic growth in real terms would halve during the first two years after the shock.

... emerging economies in Asia ...

The effects in Europe and Japan would be similar but less pronounced. At 7%, the real effective appreciation of the euro and the yen would be limited, according to IMF calculations, although, at almost 1½ percentage points, the reduction in economic growth would be considerable.

... Europe and Japan

In our own calculations, we simulated for Germany⁷ the potential effects of an abrupt 30% depreciation of the US dollar but with the effects transmitted through the interest rate channel excluded. According to these calculations, German GDP would fall by 1½% in comparison with the baseline scenario in the first year after the shock and nearly 2½% in the second year.

German economy likewise hard hit

⁵ Against 26 countries.

⁶ IMF World Economic Outlook, September 2006.

⁷ In the model, the effective appreciation of the euro is created by an effective depreciation of the US dollar of 30%, which, in turn, results from a depreciation of the US dollar against all Asian and European currencies, ie including the euro, of just over 44%.

Suitable political measures,...

The risk of an abrupt adjustment of the global current account imbalances should therefore be countered by suitable and timely political measures. Despite positive trends in public budgets, a reduction in the government deficit, as well as an increase in private saving, remain necessary in the United States. In some Asian emerging market economies, exchange rates are still strongly geared to the US dollar. If they were to become more flexible, a potential market-related effective depreciation of the US dollar would become more broadly based, limiting the extent of the bilateral exchange rate adjustments against other currencies. Finally, policy makers in Europe and, in particular, Germany also need to take action. Further reform measures are urgently required, with the aim of strengthening growth potential, not least in order to make the economy more resilient to external disruptive effects.

... complemented by multilateral consultations

At supranational level, multilateral consultations are planned in which, in addition to the IMF, representatives from the United States, the euro area, Japan, China and Saudi Arabia will take part. In particular, they should make it clear that the political measures which have been recommended to reduce global imbalances also serve the individual interests of the countries concerned.

Financial market risks

Positive baseline scenario also reflected by financial markets

Positive expectations regarding global economic developments, which include a soft landing of the US economy and also underlie the baseline scenario for this review, are reflected in the movement of international financial market prices.⁸ In contrast to the

boom years around the turn of the millennium, there are currently only sporadic signs of potential exaggerations in key submarkets. Viewed over the longer term, however, current valuations in important market segments appear to be vulnerable to a deterioration in the present cyclical setting.

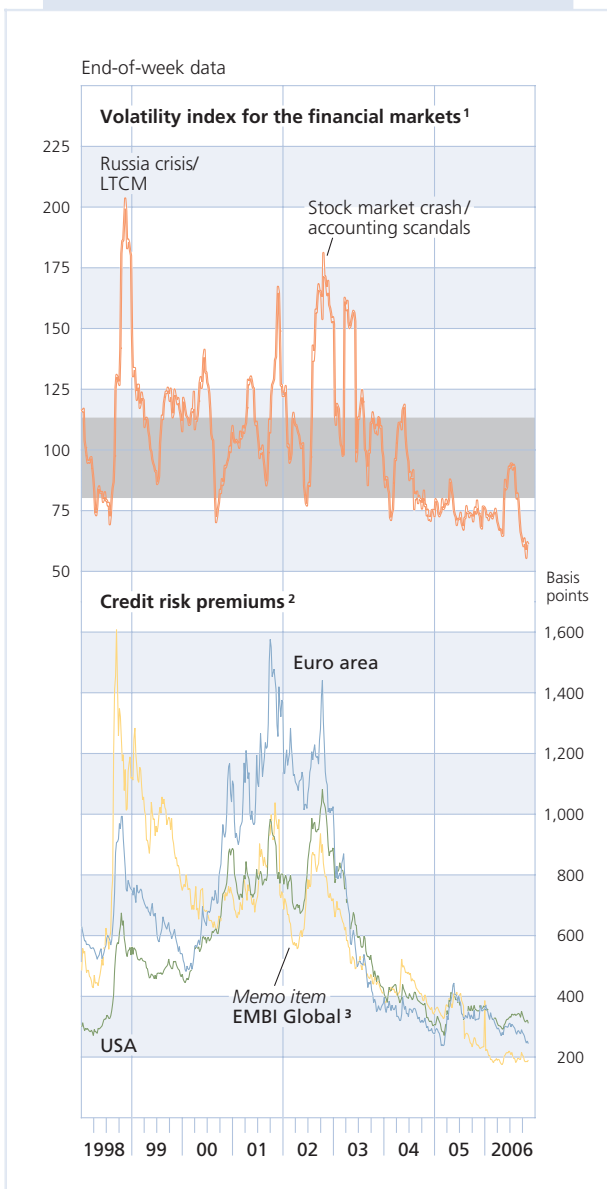
Against this background, the possibility that the current assessment of the risk scenario and earnings outlook may undergo a general revision if real economic prospects unexpectedly worsen poses a key financial market risk at the present time. Adjustments could be triggered, in particular, by a revision of the favourable expectations for global and regional growth and firms' credit quality. The international financial system – with which German financial intermediaries and financial markets are closely intertwined – has shown itself to be highly resilient to shocks and corrections in individual market segments in recent years. Experience has shown, however, that major market price adjustments in a weaker global economic climate may be associated with considerable tensions. One potential source of market disruption comes from hedge funds, whose continuously growing weight and frequent use of trend-following trading strategies could magnify market swings. A self-reinforcing negative momentum can also be generated, in particular, by the interplay between market-related risks (such as market liquidity and counterparty risks) and interaction between market segments.

Risk of tensions in the course of a global downturn

⁸ The US bond market is a notable exception: its long-term interest rates have already been exceptionally low relative to the prevailing state of the economy for two years now. As in the past, this phenomenon is likely to be the result of special factors, including foreign central banks' foreign reserve investments, which are not primarily motivated by the desire to maximise returns.

Chart 1.1.4

VOLATILITY INDEX AND CREDIT RISK PREMIUMS



Sources: Bloomberg, JPMorgan, Thomson Financial Datastream, Merrill Lynch and Bundesbank calculations. — **1** Twelve-week historical volatility, normalised and added up for Dow Jones EuroStoxx, S&P 500, Bunds, US Treasuries, euro/US dollar and yen/US dollar. Since 1992 50% of index values have been within the grey band, 25% above it and 25% below it. — **2** Difference between corporate bonds (rated BB by Standard & Poor's or Ba by Moody's or lower) with a residual maturity of at least one year and government bonds of similar maturity. — **3** Emerging Markets Bond Index Global.

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Risks of major adjustments of financial market prices ...

Since the end of 2005, domestic and foreign financial markets have been influenced chiefly by the very buoyant global economic climate. Strong growth of corporate earnings, against a background of favourable financing conditions and low default rates, have contributed to keeping the volatility of prices of financial instruments low, on the whole (see Chart 1.1.4). The low corporate credit risk premiums, in particular, are based largely on the expectation of a continued positive market environment, which typically is also accompanied by an increase in market players' risk appetite.

Financial markets influenced by favourable real economic environment ...

On the monetary side, the central banks of the United States (until mid-year) and the euro area continued their gradual tightening of monetary policy to avert rising inflationary risks; in Japan, a tighter money policy was cautiously initiated. Over the past two years, on the whole, the cost of liquidity increased without provoking any major frictions in the financial markets, not least because the monetary tightening process was implemented in measured steps. Given that monetary policy in the euro area and Japan is still accommodative and that other Asian countries are continuing to intervene in the foreign exchange markets, liquidity remains abundant in the global financial system.

... and gradual liquidity withdrawal

In view of the macroeconomic risks described above, scenarios which presume a stronger downturn in the real economic environment merit particular consideration. Where financial market prices are based on overly optimistic

Significant market risks in the event of a fundamental reassessment by the financial markets ...

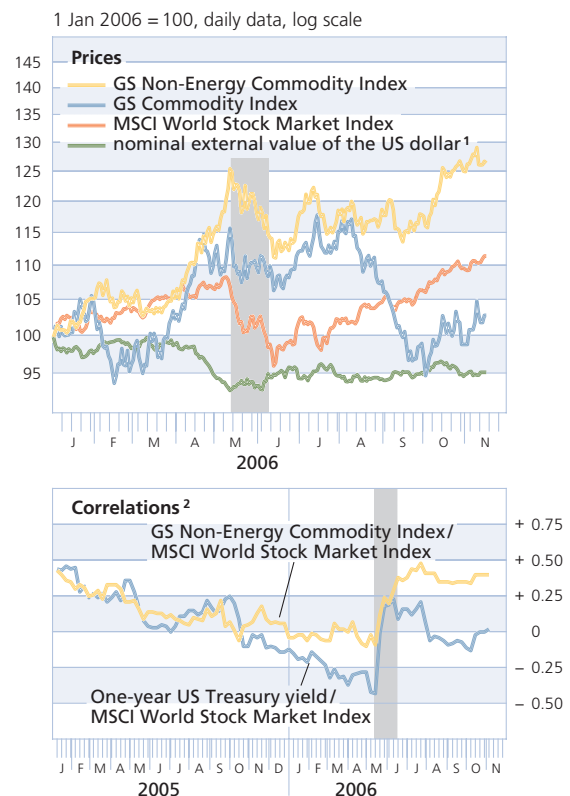
macroeconomic assumptions,⁹ a revision of the risk and return outlook could be associated with disruptions in the financial markets. The temporary increase in financial market volatility in the second quarter of 2006 has shown that, even in a fundamentally sound environment, a correction that is driven largely by a turnaround in risk appetite can take on considerable dimensions. In a less robust economic setting, there is a growing risk that market players' declining appetite for risk and cyclical weakening may become mutually reinforcing (if, for instance, investment and consumption fall owing to diminishing asset values).

... as evidenced by the correction in the second quarter

In this connection, it is worth noting the at times surprising changes in the correlation between individual asset classes during stress periods. In the May to June 2006 period, for instance, this was reflected in a sharp rise in the positive correlation between share prices and some commodity prices (see Chart 1.1.5). In addition, a rise in the (implied) volatility in the equity markets and the risk premiums in the bond markets was apparent over that period. The temporary abating of risk appetite was a key factor that led investors simultaneously to vacate many riskier asset classes. Financial instruments that had previously recorded rapid sharp price gains were particularly affected. Portfolio shifts associated with increasing risk aversion – especially a general trend towards lower-risk, more liquid assets – could therefore trigger severe short-term price volatility, even in broadly diversified asset classes.

Chart 1.1.5

MARKET CORRECTIONS IN MAY - JUNE 2006



Source: Bloomberg and Bundesbank calculations. — ¹ Trade-weighted against major currencies. Source: US Federal Reserve, H.10. — ² Moving average of the last 26 end-of-week levels based on rates of change.

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... in the bond markets

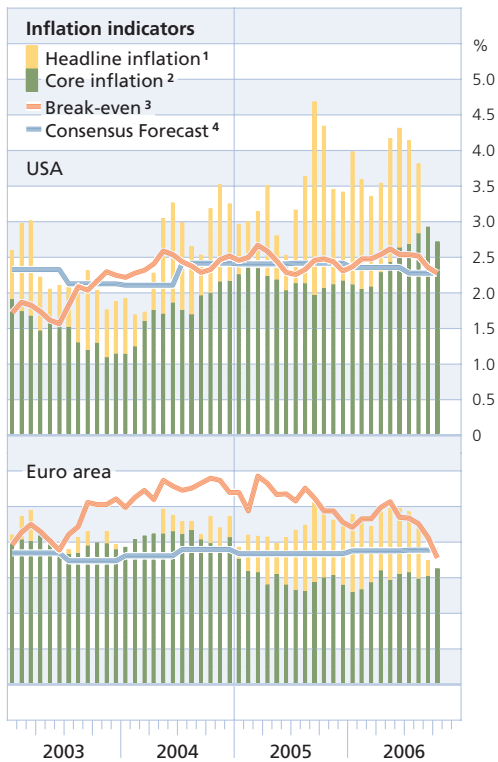
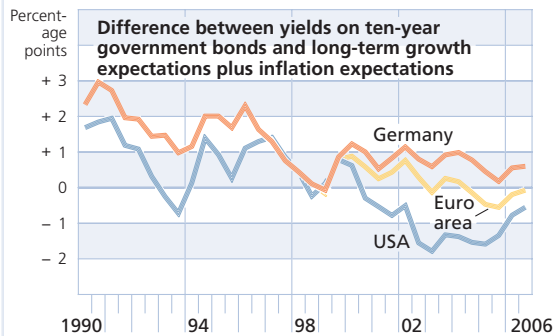
The expectation of moderate economic growth coupled with low inflation continues to characterise the movement of yields on ten-year German (Bund) and euro-area government bonds (see Chart 1.1.6). The key factor in the

Low yields, given moderate growth and inflation expectations

⁹ Not only cyclical factors but also structural factors – eg if the inflation-curbing effects of the globalisation process do not turn out to be sustainable – could trigger a revision of expectations.

Chart 1.1.6

BOND MARKET VALUATION FACTORS



Sources: Consensus Economics, Bloomberg and Bundesbank calculations. — **1** Annual percentage change in the Consumer Price Index (USA) and the HICP (euro area). — **2** Annual percentage change in the Consumer Price Index excluding food and energy (USA) or excluding unprocessed food and energy (euro area). — **3** Spread between nominal and inflation-indexed government bonds. — **4** Semi-annual surveys of expectations about consumer price movements over the next ten years.

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current level of bond yields, which is low by historical standards, is probably the decline in term premiums, which compensate investors for the increased price risk of longer-term bonds. A sustained lowering of term premiums improves the financing conditions for investors and impacts positively on the prices of other assets, such as shares and real estate. To that extent, the low level of long-term yields has a certain stabilising effect on the business environment of financial institutions; the profits these institutions make through maturity transformation, though, are under pressure owing to the flatter yield curve. In the light of the cyclical environment in Germany and the euro area, a baseline scenario in which the yield curve remains relatively flat over a longer period of time currently does not seem implausible. This is also consistent with experts' interest rate forecasts (see Chart 1.1.7).

An important factor here is that long-term real interest rates, as well as inflation and term premiums in the euro area, do not have any pronounced potential for correction. Key framework conditions for the bond markets also include the reliability of monetary and economic policy and the expectation that intensive global competition will counteract potential price pressures in the future as well. As a case in point, the steep rise in crude oil prices over the past few years has so far not led to perceptibly higher longer-term interest rates as a result of rising inflation expectations.

No pronounced potential for correction in the case of long-term euro-area government bonds

Special factors, such as capital inflows from oil-exporting countries and a regulatory increase in demand for longer-term securities from insurance corporations and pension funds, will probably continue to put downward pressure

Risks of an upward revision of US yields ...

on capital market yields.¹⁰ In the United States, these factors seem to have even contributed to exceptionally low capital market interest rates. This is associated with a decoupling of real long-term yields in the United States from both the cyclical situation and from long-term growth expectations. Against this background, the inverted US yield curve, unlike in the past, is currently a less reliable indicator that a recession is imminent in the United States.

... could also affect Germany's financial system

The decoupling, however, includes the risk of an abrupt upward correction of long-term US yields. Such a scenario would be fraught with risk for Germany's financial system, too, as it could lead to a revaluation of assets worldwide. Expected consequences would include not only losses for German investors but also less favourable financing conditions for internationally active enterprises and a downturn in German credit institutions' international credit and capital market business. A general revaluation could also give rise to a direct transfer of yield shocks from the US bond market to European bond markets. The co-movement of euro-area and US government bonds that has characterised the past few years indicates that major swings in the US market could spill over to European yields. A risk scenario must therefore include the possibility of such a contagion effect, even though the latter is not inevitable, especially over the medium and long term.¹¹

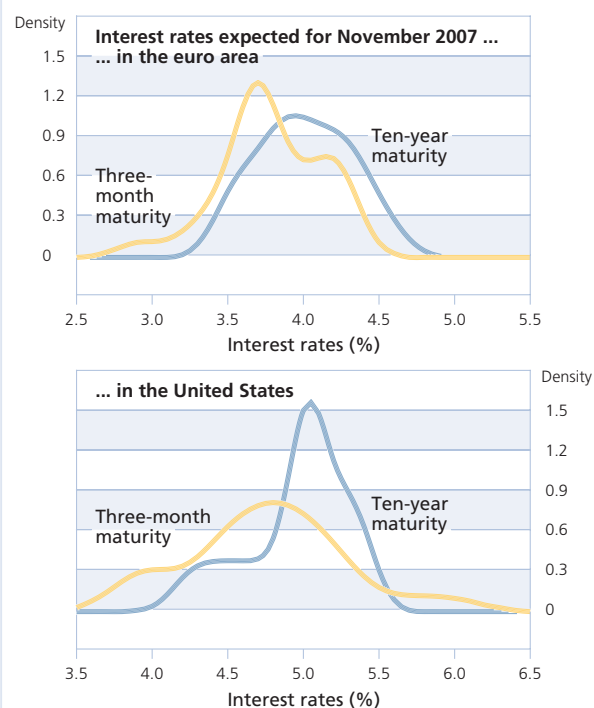
... in the equity markets

Excellent earnings situation boosting share prices

In the European and US equity markets, the very robust overall profitability of enterprises and the favourable real economic environment since the fourth quarter of 2005 have

Chart 1.1.7

EXPERT FORECASTS FOR SHORT-TERM AND LONG-TERM INTEREST RATES*



Source: Consensus Economics and Bundesbank calculations. — * Expert forecasts (Consensus Forecasts, November 2006) for interest rate levels as at end-November 2007. The frequency distribution was smoothed using a non-parametric kernel method (Gauss/Silverman).

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lifted share prices distinctly. Following the temporary correction in the second quarter of 2006, share prices resumed their upward trend, at times reaching long-time highs.

¹⁰ For more exceptional factors, see Deutsche Bundesbank, Financial Stability Review, November 2005.

¹¹ If a yield correction in the United States were to coincide, for instance, with an outflow of foreign capital and a depreciation of the US dollar, the reinvestment of these funds in Europe could lead to an appreciation of the euro and a dampening of potential upward pressure on yields in the euro area.

BOX 1.1

CORRELATION BETWEEN STOCK MARKET VOLATILITY AND MAJOR FINANCIAL MARKET PRICES

The volatilities of yields on major assets such as government bonds, corporate bonds, stocks and currencies have, on the whole, been low since mid-2004 when compared with the previous eight years. While volatility in the stock markets and foreign exchange markets did surge during the market correction in May/June of this year, it largely returned to its previous level once the selling wave had subsided.

Not only structural but also cyclical factors have probably had an important influence on the recent decline in volatility in the financial markets.¹ Empirical studies have demonstrated that stock market volatility, in particular, is negatively related to overall economic activity.² This raises the question of what implications an unexpected weakening of global growth would have on stock market volatility.³ Especially for Germany, there are indications that high stock market volatility more often coincides with recessions in the United States than recessions in Germany itself.⁴ Hence, even if the current favourable macroeconomic conditions in Germany were to persist, it should not be assumed that volatility in the German financial markets will remain low.

A regularly observed phenomenon is that rising volatility in the stock market is accompanied by falling share prices. Conversely, volatility typically falls as share prices rise. One possible explanation for this asymmetric correlation is the so-called leverage hypothesis.⁵ Increased volatility in the stock market also has effects on corporate bond spreads. According to Merton's asset pricing model (1974), a lower market value and increasing volatility under oth-

erwise constant conditions lead to higher required credit spreads.⁶ There is empirical evidence that the recent drop in stock market volatility and rising share prices have led to a significant decline in the credit premiums on corporate bonds.⁷ Conversely, it may be assumed that growing volatility leads to wider risk spreads.

Finally, the level of implied stock market volatility is closely related to the correlation between returns on the equity and government bond markets. A simple regression based on monthly data for the period from 1994 to mid-2006 demonstrates that a low level of implied volatility in the German stock market is accompanied by a high correlation between equity market and bond market yields. Should volatility consequently increase to a significantly higher level, it may be assumed that the correlation will be negative. This is favourable for financial stability because in turbulent times on the stock markets, most recently in the middle of this year, the returns on a mixed portfolio generally stabilise as bond prices tend to rise.

It should be pointed out that these relationships as such do not allow any conclusive statements regarding potential causalities to be made. Thus, changes in additional variables (such as a general shift in expectations, for example) could also be responsible for simultaneous changes in stock market volatility and asset prices. Nevertheless, they provide evidence of a close relationship between stock market volatility and individual segments of the financial market.

1 Important structural explanatory factors include the lower volatility of macroeconomic variables (growth, inflation), financial innovations that allow risks to be spread more widely across the financial system, greater transparency at major central banks and a more gradualist monetary policy. See also Bank for International Settlements, The recent behaviour of financial market volatility, BIS Papers No 29, August 2006. — **2** See, for example, G Schwert (1989), Why Does Stock Market Volatility Change over Time?, Journal of Finance 44, (1989), pp 1129-55. — **3** Increased insecurity regarding the future path of monetary policy after short-term interest rates have moved towards a neutral level could also contribute to a rise in volatility. — **4** See IMF, Global Financial Stability Report, September 2003, p 71.

The underlying estimations relate to the period from 1970 to 2002. Fundamentals (for example, a possible lead of the US business cycle) and institutional aspects (for example, the cross-listing of stocks) could be important explanatory factors. — **5** The hypothesis states that if a firm's stock market value falls, the share of equity decreases (and the leverage thus rises). This, in turn, leads to a rise in the volatility of the stock. See J Campbell, A Lo and A MacKinlay, The Econometrics of Financial Markets, (1997), p 497. — **6** R C Merton (1974), On the Pricing of Corporate Debt: The Risk Structure of Interest Rates, Journal of Finance 29, pp 449-470. — **7** See Deutsche Bundesbank, Structural model for valuing corporate bonds, Monthly Report, April 2004, p 25.

Moderate valuation based on short-term earnings forecasts yet earnings cyclically high

The valuation of the German and US markets appears to be moderate based on the current (short-term) earnings estimates. Thus the DAX 30 is currently trading at 12.6 times the earnings expected for the next 12 months; the average figure from 1988 to the present is 16.4 (see Chart 1.1.8). The price/earnings (P/E) ratio for the S&P 500, at 14.7, is likewise below the long-term average of 16.¹² In the event of a marked economic downturn, however, enterprises' short-term earnings dynamics could slow down more sharply than is currently expected. It should be noted that the return on equity of enterprises listed on German and US exchanges, following the surging profits of the past few years, is now near or at an all-time high.¹³ Should earnings growth falter, pressure on share prices would be quite conceivable.¹⁴

Increase in risk aversion and rise in interest rates on bond markets could put pressure on equity markets

A higher equity risk premium and/or rising real interest rates could likewise put downward pressure on equity markets. In the dividend discount model, not only the current and expected dividends (or earnings) but also the real interest rate and the equity risk premium constitute the fundamental determinants of the price of a share. The equity risk premiums estimated for the DAX and S&P 500 using

Chart 1.1.8

EQUITY MARKET VALUATION FACTORS



12 However, an additional commonly used valuation indicator, the price-to-cash-flow (P/CF) ratio, indicates a relatively high long-term valuation: at 6.2 and 11.4 for the German and US equity markets respectively, this ratio is well above its long-term averages of 4.3 and 9.6 respectively. Some analysts prefer this valuation ratio because cash flow is generally subject to fewer discretionary accounting influences than earnings.

13 In a broad equity index calculated by Thomson Financial Datastream, a data services provider, enterprises' average return on equity in Germany and the United States is currently 14.7% and 17.6% respectively, as against 11.4% and 14.1% on average from 1980 to the present.

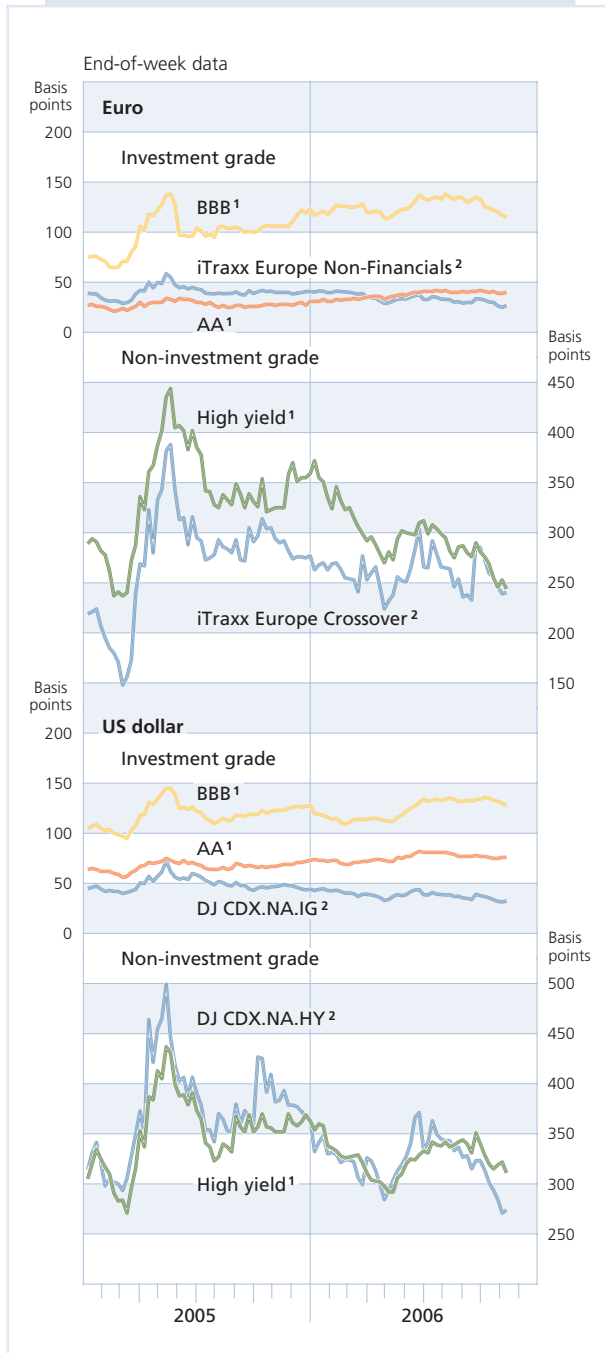
14 On the basis of a ten-year moving average of earnings, the S&P 500's P/E ratio is currently at 31.0 and thus above its long-term average of 24.5 since 1978. The comparable value for the DAX index calculated by Datastream is currently 18.7, as against 21.7 for the period from 1983 to the present.

Sources: Thomson Financial Datastream, Consensus Economics and Bundesbank calculations. — **1** For the index calculated by Thomson Financial Datastream based on DAX companies. Index weights are calculated here according to market value, not according to free float such as for DAX as calculated by Deutsche Börse. — **2** For the DAX. — **3** For the S&P 500. — **4** Calculated as the ratio of price/book value to the price/earnings ratio for the broad equity market indices calculated by Thomson Financial Datastream for Germany and the United States. — **5** Equity risk premium calculated using the three-stage dividend discount model according to R J Fuller and C-C Hsia (1984), A Simplified Common Stock Valuation Model, Financial Analysts Journal, September-October, pp 49-56.

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Chart 1.1.9

CREDIT RISK PREMIUMS



Sources: Merrill Lynch, Bloomberg and JP Morgan. — **1** Spread of seven to ten-year corporate bonds in each rating category over government bonds with a comparable maturity. — **2** The composition of the CDS index is adjusted half-yearly in March and September.

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the three-stage dividend discount model are currently either just below or just above their long-time averages and therefore do not indicate an extremely pronounced risk appetite among market participants.

... in the corporate credit markets and credit risk transfer markets

This year, high corporate profits have continued to underpin low risk premiums on corporate bonds. Even though the debt level of the non-financial corporate sector in both the USA and the euro area has risen perceptibly on the year,¹⁵ the debt-to-profit ratio is still well below its long-term average. Accordingly, payment difficulties and defaults on corporate bonds and syndicated loans have been minimal. Looking to further developments in the debt-to-profit ratio, it is, particularly, volatile corporate profitability which, in a worst-case scenario, could trigger a rapid increase in risk premiums in the market for corporate credit. For instance, earnings growth in the United States is currently well above its long-time trend.¹⁶

Buoyant earnings trend continues to support corporate bond markets ...

The credit risk premiums on European corporate bonds have, on the whole, risen slightly from a low level over the course of the year (see Chart 1.1.9). However, the risk premiums of borrowers with a relatively low credit quality are currently back to near their all-time low reached in the first quarter of 2005. A dete-

... yet high valuation contains potential for setback

15 See Federal Reserve Board, Flows of Funds, Table D.3, and ECB, Euro Area Statistics (Annex to the Monthly Bulletin), Table 3.2.

16 No timely data on earnings in the euro-area corporate sector are available. Historically, however, there has been co-movement between the United States and the rest of the world (including Europe) with regard to profitability and default rates on corporate bonds.

rioration of the earnings outlook is not the only factor that could seriously jeopardise this high valuation level. The gradual tightening of monetary policy could make less risky investments, which are substitutes for corporate bonds, increasingly attractive, especially as the yield curve has flattened distinctly. In addition, if firm-specific events were to lead to a re-assessment of risks, this could potentially trigger abrupt market corrections.¹⁷

Rating grades assigned by agencies somewhat down amid mixed overall picture

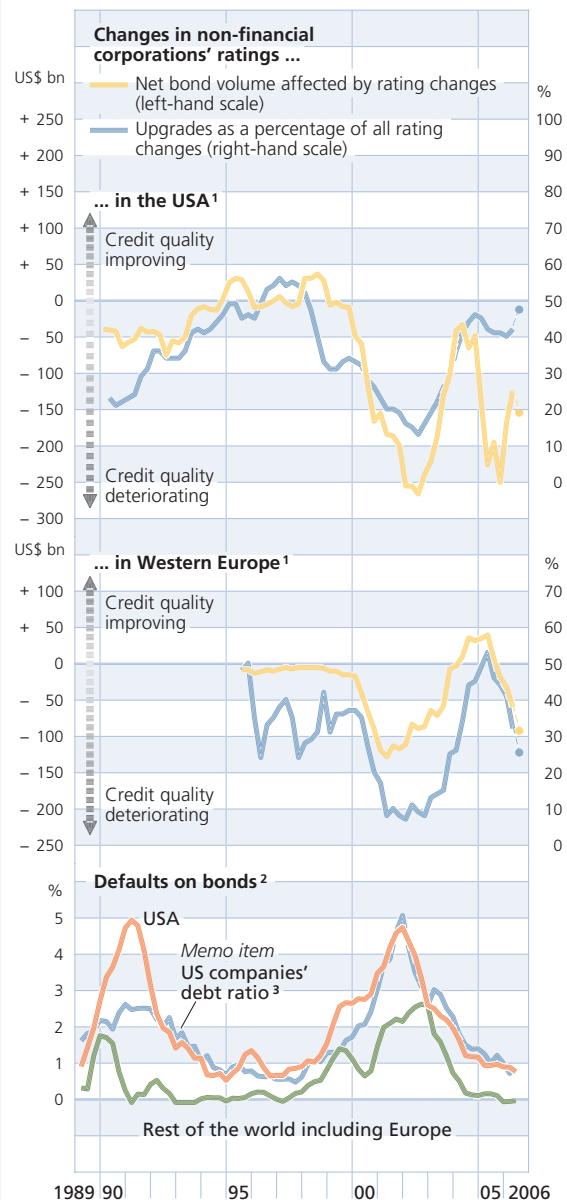
The rating agencies' credit assessments indicate that the credit quality of rated enterprises in western Europe has, on the whole, slid somewhat as of late (see Chart 1.1.10). Thus, in the second and third quarters of 2006, downgrades clearly exceeded upgrades.¹⁸ However, it is worth noting that, in the segment of lower-quality borrowers, upgrades and downgrades virtually matched one another this year. Within the investment-grade segment, however, the trend towards a deterioration of credit quality accelerated in the course of the year.

Negative factors could still prevail, at least in the short term

Increased gross fixed capital formation by enterprises with a high credit rating was a key factor in this, along with the use of the continued favourable financing conditions by many poorer-quality borrowers to further improve their balance sheets, such as by reducing their interest payments.¹⁹ Over the longer term, it appears quite possible that the increase in investment by investment-grade firms will lead to higher profitability, thereby

Chart 1.1.10

INDICATORS OF CREDIT QUALITY



Sources: Thomson Financial Datastream, Moody's and Bundesbank calculations. — **1** Four-quarter moving average. ● = Latest position: 2006 Q3. — **2** Includes insolvencies and defaults on interest and redemption payments. Number of issuers affected as a percentage of all rated issuers; 12-month moving average. — **3** Index for the ratio of debt to earnings.

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¹⁷ One source of risk, for instance, lies in the continued difficulties of companies in the US automobile industry, which comprises some of the largest non-bank issuers.

¹⁸ By contrast, downgrades and upgrades in the United States almost equalled each other.

¹⁹ See Moody's, European Credit Trends Q3 2006, October 2006.

improving overall credit quality. By contrast, rating grades could come under pressure if the tendency in the corporate sector towards shareholder-friendly measures such as share buy-back programmes and special dividend pay-outs persists²⁰ and the trend towards leveraged buy-outs (LBOs) continues (see also Box 1.2 on p 44).

Markets for credit risk transfer could enhance the efficiency of the financial system in the medium term ...

Structural developments, such as increased tradability and more precise valuation methods in the markets for credit risk transfer, could generally promote a broader dispersion and more efficient allocation of credit risks in the financial system. These factors could therefore possibly reduce the average level of credit risk premiums – over a full business cycle. Owing to the limited transparency of this market segment, however, one cannot rule out the possibility that investors who do not fully comprehend the risk profiles of complex structured products may be active in this sector. For that reason, too, it is not yet possible to sufficiently gauge the impact of this market segment on the stability of the financial system.

... yet have a particularly pronounced potential for a setback in the short term

Like the corporate credit markets, the credit risk transfer markets, in a shorter-term perspective, appear vulnerable to a deterioration in the macroeconomic environment, especially corporate earnings trends. The risk premiums are at low levels owing especially to a sustained high demand for securitised and structured products as well as the attendant hedging activities. The peculiarities of this relatively young market segment – which has not yet been exposed to a full credit cycle – could cause frictions that might well spill over, not least, to the corporate bond market.²¹

The liquidity of the market depends considerably on the willingness of hedge funds to assume those tranches of structured financial instruments which involve a higher credit risk.²² If these more short-term-oriented financial market players were to withdraw abruptly, owing to, for instance, a turnaround in expectations, this could trigger a negative market momentum, thereby impairing market liquidity. Furthermore, large market players, despite distinct progress in reducing infrastructural weaknesses,²³ are still lagging behind in the booking and confirmation of trades. This makes it difficult to determine the actual risk position and thus hampers the task of risk management, which would be a problem precisely in a situation of market tension. Since several German credit institutions²⁴ are also among the 25 most important global counterparties in credit derivatives trading, tension in this market would have not just an indirect effect but also a direct impact on market participants in Germany.

Dependency on hedge funds and remaining challenges to risk management

20 The announced share buy-backs rose in the second quarter of 2006, according to the BIS, to US\$ 117 billion, from US\$ 100 billion in the first quarter and, on average, US\$ 87 billion per quarter in 2005.

21 Owing to their ability to process new information more quickly, the prices of credit derivatives, such as credit default swap (CDS) premiums, have in some cases assumed price leadership in the spot market. The CDS market, in addition, often anticipates rating downgrades. See: Deutsche Bundesbank, Credit Default Swaps – functions, importance and information content, Monthly Report, December 2004, pp 43–56.

22 In the 2005-06 period, 58% of the total trading volume in the US credit derivatives market was accounted for by hedge funds. See Greenwich Associates, U.S. Fixed Income: The Buy-Side Divide, August 2006. See also FitchRatings, Hedge Funds: An Emerging Force in the Global Credit Markets, 2005.

23 The practice of assigning positions to third parties without informing the original counterparty has come to an end – 80% of trades are now confirmed electronically, and an agreement to use cash settlement as the standard method of settling transactions is helping to eliminate uncertainty in the case of credit events.

24 See FitchRatings, Global Credit Derivatives Survey: Indices Dominate Growth as Banks' Risk Position Shifts, 2006.

... in the foreign exchange markets

Persisting risk of a sharp correction of US dollar

Given the very large US current account deficit, the foreign exchange markets remain exposed to the risk of a sharp correction of the US dollar and of frictions in global exchange rate relationships. Uncertainty about future exchange rate developments was particularly evident from mid-April to mid-May 2006 when, following a distinct depreciation of the US dollar, the implied volatilities in the foreign exchange markets rose sharply.²⁵ In principle, the evident slight shift in regional shares in global growth does provide a favourable setting for an orderly correction of global imbalances. This, however, will probably not be enough to reduce existing disequilibria.²⁶ In addition, the US dollar could lose some of its lustre if an economic cooling is followed by a distinct narrowing of the US interest rate spread.

Currencies of emerging market economies affected by greater risk aversion in early 2006

A significant slowdown in US growth, which could be associated with greater aversion to risk in the global financial markets, would particularly endanger the currencies of emerging market economies. In addition, these currencies could also be put under pressure if carry trades are unwound. The latter was probably instrumental in the distinct value losses sustained by several high-interest currencies in the first half of 2006. In May to June 2006, for instance, the Turkish lira (-18%) and the Hungarian forint (-7%) fell against the euro. Those countries had earlier seen strong growth in private consumption along with a sharp expansion of current account deficits.²⁷ The distinct tightening of monetary policy, intended to limit the depreciation, will probably impair these countries' growth outlook.²⁸ The uncer-

tainty to which these currencies are subjected is still reflected in a slightly elevated level of exchange rate volatility (see Chart 1.1.11).

The large current account deficits in many central and east European emerging market economies harbour a risk potential that is not negligible.²⁹ The financing of these deficits could become more difficult, particularly if the international capital markets go into a downturn (or if the previously assumed growth outlook for those countries changes).³⁰ A depreciation of the currency would mainly affect sectors with a large share of foreign currency lending.³¹ If borrowers are not adequately protected against adverse exchange rate movements, banks' default risks could consequently rise. This would also affect German banks (specifically, their local affiliates) since they play an active role in lending to a number of central and east European countries.³²

Large current account deficits still represent considerable potential for risk

25 During that period, the US dollar fell by around 6% against the euro and around 7% against the yen.

26 On that vein, the IMF, in its latest World Economic Outlook (September 2006), has estimated that the US current account deficit will grow from 6.6% of GDP in 2006 to 6.9% in 2007 despite an expected slowdown in GDP growth from 3.4% to 2.9%.

27 In 2005, the current account deficits were 7.4% of GDP for Hungary and 6.3% of GDP for Turkey. Moreover, Hungary ran a large fiscal deficit of 7.6% of GDP in 2005 (Turkey: 3.1%).

28 Changes in key interest rates since early June 2006: Hungary: +200 BP to 8.0%; Turkey: +425 BP to 17.5%.

29 The IMF puts the current account deficit of the region (including Turkey) at 5.7% of GDP in 2006. The expected deficits for most of the countries in the region are over 6% of GDP.

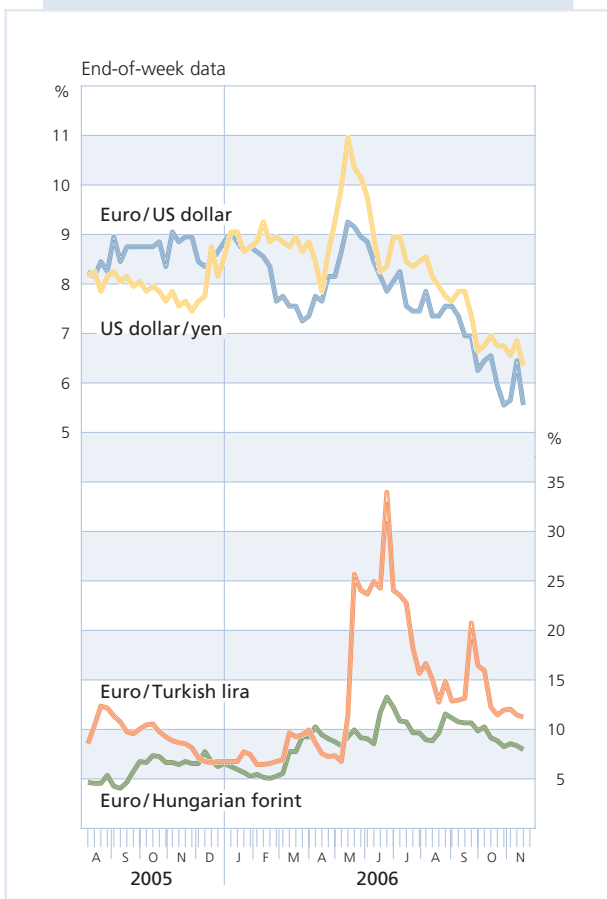
30 The main element of the threat is that, in many countries, the lion's share of financing is provided in the form of (more volatile) portfolio investment and not as foreign direct investment (FDI).

31 For instance, the IMF has estimated the percentage of foreign currency-denominated loans to domestic households at around 35% in Poland, 40% in Hungary and 45% in Romania.

32 In 2004, 70% and more of the total assets of the banking sectors in Albania, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Lithuania and Slovakia were held by foreign banks (especially from Germany and Austria). See IMF, Global Financial Stability Report, September 2006, p 52.

Chart 1.1.11

IMPLIED VOLATILITIES* IN SELECTED FOREIGN EXCHANGE MARKETS



Source: Bloomberg. — * Derived from one-month "at the money" call options.

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Counterparty risks and market impact of foreign financial institutions and hedge funds

Counterparty risks and financial market influence ...

The traditionally high level of external openness of the German financial system has contributed to close interlinkages with foreign financial institutions as well as with international financial markets. Large and complex foreign financial institutions, as well as

hedge funds, which are continuing to grow rapidly, play a prominent role in this respect. There are two channels through which these market participants impact on Germany's financial system: as direct counterparties, and through their major influence on financial market developments, especially on the cross-border transfer of market events. Shocks that either affect these agents or are triggered by them can also quickly spill over onto the German financial system.

Large and complex foreign financial institutions³³ play a key role in the international financial system as intermediaries in the interbank and OTC derivatives markets, in the reallocation of risks and the provision of liquidity. Their capacity to absorb or amplify shocks is particularly relevant. The increasing homogeneity of movements of these institutions' share prices and credit default swap premiums since 2003 indicates that they are exposed to similar risks or that close business ties exist.

... of large and complex foreign financial institutions

According to market indicators, these foreign financial institutions' resilience seems to have increased (see Chart 1.1.12). It is reflected in the largely positive trends in share prices and credit default swap premiums as well as ratings over the past few months. In addition, the profitability of this group of institutions saw the posting of record results in the first

Favourable movement of market indicators and profitability reflect improved resilience ...

³³ The foreign institutions under review here are ABN Amro, Bank of America, Barclays, Bear Stearns, BNP Paribas, Citigroup, Crédit Agricole, Credit Suisse Group, Goldman Sachs, HSBC Holdings, ING Bank, JP Morgan Chase, Lehman Brothers, Merrill Lynch, Morgan Stanley, Royal Bank of Scotland, Société Générale and UBS. These institutions were chosen according to 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.

half of 2006,³⁴ although the market corrections in May and June put a damper on earnings. Earnings growth was driven by above-average profits in investment banking and proprietary trading. These more than offset falling net interest income caused by the flatter yield curve. The waning momentum of mortgage lending in the United States and rising credit defaults have had merely a marginal impact on the overall results of most institutions. On the whole, the size of the expanded capital buffers and the institutions' high level of profitability seem sufficient to withstand a deterioration in the business environment.

... yet increase in VaR could indicate higher risk appetite and ...

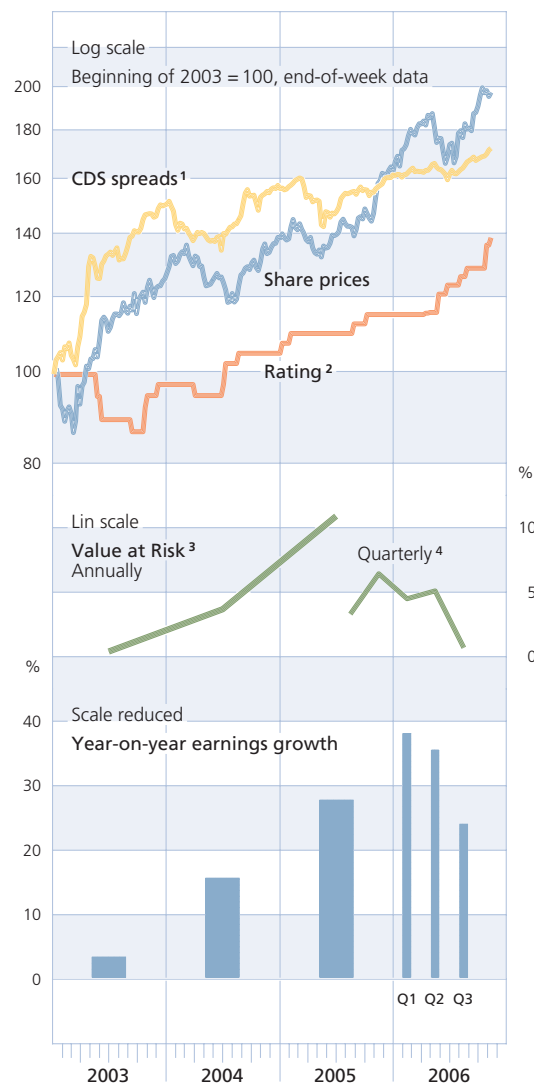
However, if the Value at Risk (VaR) in the trading book is taken as an indicator of risk appetite, the increase in proprietary trading income could have coincided with a rise in the amount of risk assumed in a market environment considered to be favourable. The institutions under review thus generally saw a further increase in their VaR in the first half of 2006, which, irrespective of a temporary rise in market volatility in the second quarter, indicates a clear expansion of risk positions. Against this background, an abrupt increase in market volatility could result in a liquidation of trading positions, thereby amplifying market trends.

... together with growing dependency on market movements, could lead to increased vulnerability

The increasing dependency of earnings on investment banking and proprietary trading is, moreover, making financial intermediaries more vulnerable to adverse market developments, as was shown by the market episode

Chart 1.1.12

INTERNATIONAL FINANCIAL INSTITUTIONS' RESILIENCE



Sources: Bloomberg and financial institutions' annual reports. — * A group of 18 institutions selected according to four criteria: the volume 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. Higher values indicate a more positive development of the large complex foreign financial institutions. — **1** Credit default swap spreads (inverted). — **2** Average issuer rating assigned by S&P, Moody's and Fitch. — **3** Average growth of aggregate Value at Risk. — **4** Figures available for 14 institutions.

³⁴ Average year-on-year earnings growth for the group of large and complex foreign financial institutions under review was 38% and 35% for the first and second quarters of 2006 respectively. For 2005 the annual earnings growth stood at 29%.

earlier this year, which dampened institutions' earnings.³⁵ In this context, the growing earnings-related relevance of transactions with hedge funds and private equity funds merit particular attention.

Major significance of hedge funds for financial market dynamics ...

Unfavourable trends in the hedge fund industry could also engender direct counterparty and investor risks to the German financial sector. However, any influence caused by hedge fund activities on price dynamics and market liquidity in the financial markets is likely to be of greater importance.

... given a further increase in market share ...

A visible increase in net capital inflows in the first two quarters of 2006 and high transaction volumes further increased the significance of hedge funds for market developments (see Chart 1.1.13). Hedge funds are now estimated to make up around 15% of the entire volume of transactions in fixed-income securities (and their derivatives) in the US market.³⁶ They have gained a particularly large share in trading volume in less liquid market segments with the promise of higher margins, such as below-investment-grade bonds (25%), emerging market bonds (45%), leveraged loans (32%) and credit derivatives (58%). Although hedge fund activities do create liquidity, this is also associated with a greater dependency on the part of these market segments on investors whose investment behaviour is generally marked by very short response times.

... as well as leveraged positions and homogeneous market strategies

Hedge funds can amplify market dynamics especially if they are forced to adjust their portfolios quickly and collectively, such as in the case of leveraged positions³⁷ and homogeneous trading strategies. Hedge funds' risk appetite and investment behaviour cannot

be directly observed because of the limited transparency of the industry. The correlations between hedge fund returns are therefore often taken as indicators of the possible co-movement of hedge fund portfolios.

The average correlation between the returns of all hedge funds showed no further increase during the observation period. However, given the diversified investment strategy across the various hedge funds, the correlation coefficient for funds of hedge funds, at 0.69 in October 2006, still stood at quite a high level.³⁸ A comparison of various hedge fund strategies, nevertheless, produces a mixed picture. With regard to the "event-driven" investment strategy (which is the second-most important strategy in terms of volume relative to the assets under management), there is a recognisable decline in correlation at the current end, whereas the "long/short equity hedge" investment strategy (which is the most important strategy in terms of volume) has been showing a steadily increasing co-movement in the past two years.

High correlation between hedge fund returns ...

The closeness of the relationship between general market developments and hedge fund returns is also relevant to risk analysis. Since the beginning of 2004, the average monthly return of the funds of hedge funds has consistently correlated closely with developments

... as well as co-movement with market trends, indicate potential for market disruptions

³⁵ Additional risks in connection with market activities are becoming more and more important; examples include liquidity, model, basis and operational risks, as well as potential legal and reputational risks.

³⁶ See Greenwich Associates, loc cit. The Credit Derivatives Report 2006 published by the British Bankers' Association also confirms the important role of hedge funds in the market for credit derivatives.

³⁷ See Deutsche Bundesbank, Financial Stability Review, November 2005, p 38ff.

³⁸ The correlation is calculated as an unweighted mean of the pairwise correlations between the monthly returns of the individual funds over a moving 12-month window.

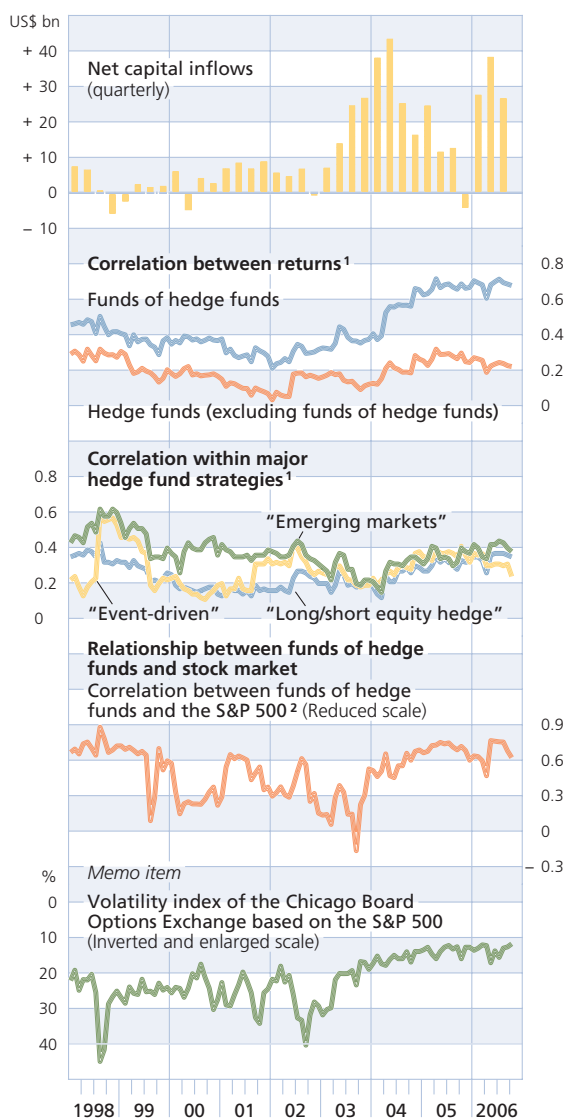
in the stock market. This is typical of a market period with low volatility since many hedge funds then presumably concentrate on a small number of major market trends. The heightened correlation between the returns of funds of hedge funds and the development in the S&P 500 in May 2006 is, however, a clear illustration of the fact that co-movement can rise even in a setting characterised by a relatively sharp increase in volatility – as could be briefly observed at that time. To that extent, there is still the potential for market disruptions to be caused by co-movement of hedge funds in their capacity as an influential group of market players. This is indicated by the fact that, even in phases of slight disruptions, the correlation between hedge funds' results are either still high or even rising further.

Hedge fund's misguided speculation shows significant weaknesses in risk management

Despite the fact that the massive losses sustained by a hedge fund³⁹ in the natural gas futures market in September have been absorbed by the financial system quite well, this is still not sufficient evidence that hedge funds' potential for systemic risk is lower than it was at the time of the 1998 LTCM incident. Rather, it must be noted that this misguided speculation occurred in a generally robust market environment and that the leverage applied was apparently relatively low. However, this case revealed significant weaknesses in the risk management practices of a large hedge fund. These included a high concentration of risk as well as miscalculation of relative market price movements for different delivery dates and regarding market liquidity, the drying-up of which made it difficult to close out

Chart 1.1.13

**HEDGE FUNDS:
NET CAPITAL INFLOWS AND
CORRELATION BETWEEN RETURNS**



Sources: TASS, Bloomberg and Bundesbank calculations. Owing to expanded data base, the calculations deviate slightly from the prior-year figures. — 1 Unweighted mean of the pairwise correlation coefficients of the monthly returns of funds over a moving 12-month window. — 2 Correlation coefficient of the monthly average returns of the funds of hedge funds with the monthly return of the S&P 500 over a moving 12-month window.

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³⁹ Through misguided speculation, the Amaranth Advisors LLC hedge fund lost around US\$ 6 billion, or around two-thirds of its assets, within one week.

positions. One positive effect of this incident, at any rate, should be to bolster market discipline.

Greater transparency necessary in hedge fund industry

In view of the risk potential associated with the growing importance of hedge funds in the international financial system, measures to reinforce market discipline should be very much welcomed. In addition, the increasing size of the financial interests being held by institutional investors is probably raising the pressure on hedge funds to improve their disclosure practices.⁴⁰ Rating agencies could support a market-driven process towards improved transparency. It would be desirable for the hedge fund sector to give itself a code of conduct – which would need to be more binding than the current Sound Practices⁴¹ – and which would not only address important aspects of corporate governance and risk management but also contain more ambitious transparency rules. At the same time, the dialogue between public authorities and hedge funds should be further intensified with the objective of better identifying potential systemic risks.⁴²

Interplay between market-related risks

Given increasing significance of market price, market liquidity and counterparty risks ...

Major price adjustments in individual market segments or a fundamental revaluation in the financial markets owing to a turnaround in expectations and risk tolerance levels also contain the danger of an unfavourable market momentum. A key factor in this respect is the possible interplay between market price risk, market liquidity risk and counterparty risk, which can amplify asset price adjustments and restrict market liquidity. These risks have be-

come more important as the financial systems have become increasingly market-oriented.⁴³

The potential interactions can be regarded as a sort of “second-round” effect. For example, a reassessment of the risks associated with corporate bonds will probably not only push up risk premiums on these bonds but also cause sellers of credit protection to withdraw from the credit derivatives market. The increased activity of non-traditional, and potentially highly leveraged, buyers of credit risk – especially hedge funds – is a particular source of uncertainty.

... second-round effects should not be overlooked

A withdrawal of major protection sellers could significantly reduce market liquidity in this segment, which would cause prices to respond correspondingly strongly. This would put pressure on those market players whose risk management practices require continuous availability of liquidity in this market segment. If they have to observe risk caps (such as VaR limits) or are subject to fair-value accounting (marking-to-market), they could be forced to liquidate risk positions if prices fall. A similar result may ensue if margin calls need to be met;⁴⁴

Threat to market liquidity through withdrawal of key protection sellers

⁴⁰ According to a survey undertaken in the United States, 29% of foundations listed a lack of transparency as a barrier to investing in hedge funds. See Greenwich Associates, Hedge Fund Market Trends, 2005.

⁴¹ See, for instance, Managed Funds Association, Sound Practices for Hedge Fund Managers, August 2005.

⁴² See (UK) Financial Services Authority, Hedge funds: A discussion of risk and regulatory engagement, Feedback on DP05/4, March 2006.

⁴³ On the other hand, this structural change is also having certain stabilising effects, for instance, owing to a potentially greater dispersion of risk. To that extent, amplification effects which could put stability at risk are not inevitable, as was demonstrated by the fact that the share price losses in the financial markets in May and June of this year were limited in terms of their extent and impact.

⁴⁴ Margin requirements have been acquiring growing importance in the OTC derivatives market for years; at the end of 2005, 63% of the total volume of all risk positions there was backed by collateral (2003: 29%), around three-quarters of which was cash. See ISDA Margin Survey 2006.

this danger rises if only a small initial margin is required at the time the deal is closed and balance sheet liquidity is vulnerable. Dynamic hedging strategies, too, can contribute to positive feedback trading in the case of risk positions in options. On the whole, such mechanisms can amplify the prevailing market price dynamics.

Higher adequacy standards for risk management

In addition, increased risk aversion and portfolio shifts triggered by market tension could coincide with higher volatility and a change in correlations, which represent key risk management parameters. At the same time, increased counterparty risk could be expected. This underscores the need for market players' risk

management practices to also take due account of the interaction of different types of risk in periods when the markets are not favourable; in particular, stress tests should also cover factors such as market liquidity.

At present, none of the individual market-related risks poses an acute threat to the German financial system. However, owing to the potential interaction between different types of risks, the aggregate macro-risk potential emanating from the international financial system should be assessed as being greater than the sum of individual micro-risks. These interrelationships thus need to be monitored carefully.

Continued monitoring of potential interplay between risks

Stability situation in the German banking system

Credit risks

Positive influences on portfolio quality

In the current year, the quality of the German banks' credit portfolios has benefited from a number of positive developments in the general economic environment. For example, there has been an improvement in the financial position of enterprises and – at least, on average – households. The positive economic setting should also help to stabilise the situation in the German real estate market in the course of this year.

Cyclical upturn The cyclical upturn in the German economy has gained considerably in momentum and depth since the autumn of 2005. Fixed investment now forms the second pillar of the cyclical upturn alongside exports, which set the recovery process in motion. Overall, economic growth is likely to be robust this year (see Chart 1.2.1). An increase in real gross domestic product of 2½% is quite a realistic prospect. From the banks' point of view, this implies a further improvement in the conditions for lending to enterprises¹ as well as an improvement in credit quality, especially in the sectors with an increased volume of new orders.

The cyclical upturn has now reached the labour market. The number of persons in work has shown an appreciable increase in the past few months and unemployment is showing

a trend decline. Increasing employment will probably stabilise households' credit quality in the medium term.

Essential conditions for a continuation of the recovery process in Germany are in place. Owing to their good overall competitive position, German exporters will benefit from the ongoing global economic stimuli. Furthermore, given continuing favourable financing conditions, investment in machinery and equipment is likely to remain on an upward trend. This should also benefit industrial construction, although the upturn will be dampened by the large amount of vacant office buildings and industrial sites. However, it is doubtful whether housing construction will be able to maintain its positive trend as the abolition of the grant to homebuyers at the start of the year has led to increased construction of owner-occupied housing in 2006 with the possibility of a matching setback in 2007.

Recovery process in Germany continues

In terms of private consumption, the additional purchases of durable goods this year (anticipatory effects owing to the increase in VAT) will probably be missing next year, thereby leading to higher volatility in the growth process. The improvement in the labour market gives hope that private consumption will gain momentum in the medium term. Nevertheless, fiscal policy will, on balance, place strains

¹ See Deutsche Bundesbank, Recent developments in German banks' lending to domestic enterprises and households, Monthly Report, July 2006, p 25.

on the consumers, and this will restrict their purchasing power.

Slowdown in economic growth next year

The upturn may therefore be expected to slow down for a time in 2007. Even so, the German economy is now on a sound enough footing to cope with the contractionary fiscal impulse *per se*. Nonetheless, the German banking system will have to prepare itself for a weaker impetus from domestic economic activity next year.

Financial position of German enterprises

Declining level of debt in corporate sector

Over the past few years, German enterprises have pursued a path of consolidation, which has led to a falling overall level of indebtedness. Between 2003 and 2005, the volume of borrowed funds, relative to gross value added, fell by roughly 10 percentage points to 150%. This means that indebtedness is back to its level around the year 2000 (see Chart 1.2.2). The process of balance sheet adjustment therefore appears to have been completed. At the same time, the enterprises' net interest expenditure, at less than 10% of the operating surplus, has fallen to its lowest level since the early 1990s.

Further decline in corporate insolvencies

The improved condition of German enterprises is also reflected in the decline in corporate insolvencies (see Chart 1.2.3). In year-on-year terms, they fell by 6% in 2005 and by as much as 15% in the first six months of 2006. The lack of major insolvencies played a part in the estimated volume of credit losses in 2005 showing an even clearer fall on the year (8½%) than the number of insolvencies.

Chart 1.2.1

ECONOMIC GROWTH IN GERMANY

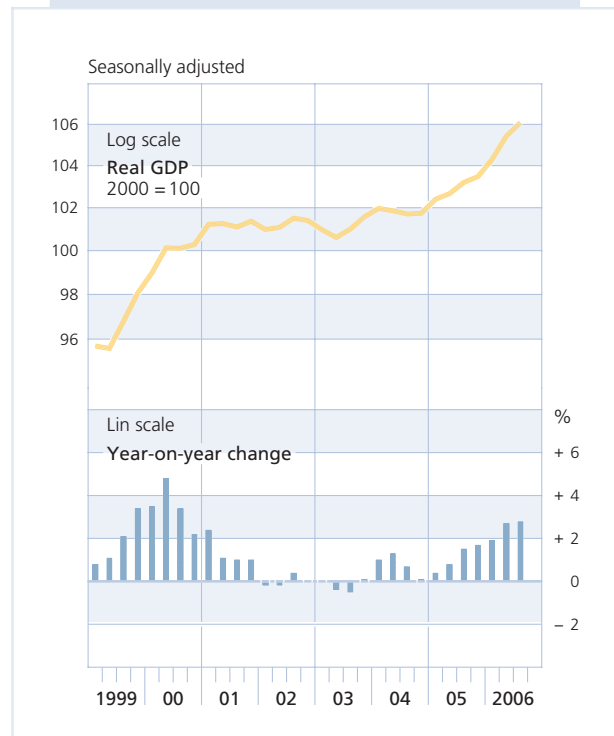


Chart 1.2.2

GERMAN ENTERPRISES' FINANCIAL INDICATORS

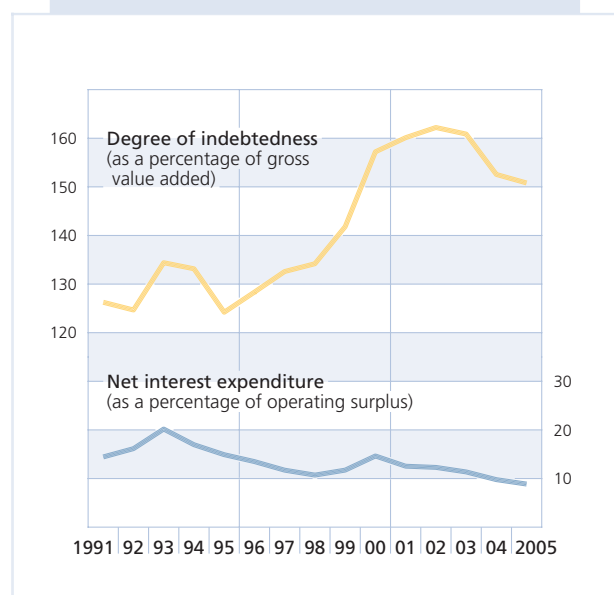


Chart 1.2.3

COPORATE INSOLVENCIES*

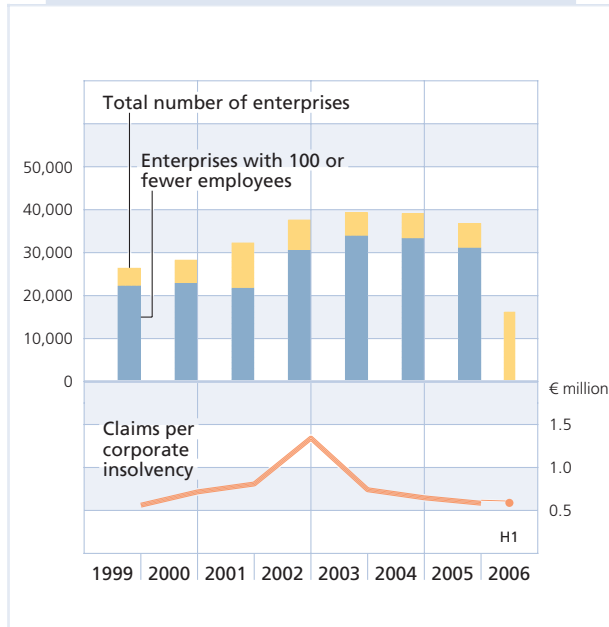
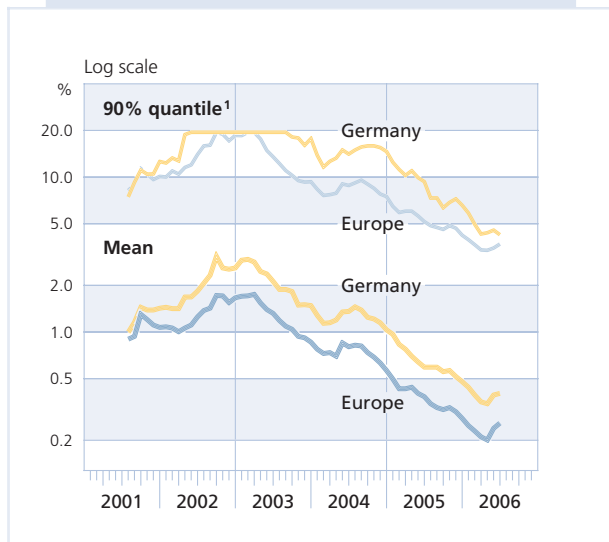


Chart 1.2.4

EXPECTED DEFAULT FREQUENCIES OF LISTED ENTERPRISES**



* Source: Federal Statistical Office and Bundesbank calculations. — ** Expected default frequency (EDF) according to Moody's KMV. The maximum EDF is 20%. If an EDF of more than 20% is calculated in purely mathematical terms, it is capped at 20%. — ¹ Threshold which 90% of the enterprises do not overshoot.

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The large, listed enterprises continue to be in robust shape. The average expected default frequencies (EDFs according to Moody's KMV) for listed non-financial enterprises in Germany have continued to fall during the year to their lowest level for five years (see Chart 1.2.4). The slight rise at the current end is probably due, not least, to greater stock market volatility in the second quarter of 2006, which is included with a relatively large weighting in the relevant indicator. The markets for corporate credit risk, too, present a positive picture.

Financial markets expect high credit quality

The future development of the world economy will, however, be of major importance for the credit quality of large enterprises. A perceptible weakening of the global pace of growth next year – as discussed above as a risk scenario – could trigger a marked turnaround in the credit cycle and push up the risk premiums for corporate bonds.

Given better average profitability and a strengthened equity capital base, an improved risk position is emerging in the case of small and medium-sized enterprises (SMEs). There has been a decline in the number of enterprises which have less than 10% equity capital, while the number of enterprises with a capitalisation of more than 30% has increased.²

Profitability and capitalisation of SMEs

Business expectations remain positive. According to surveys by Creditreform, for example, 75% of enterprises are assuming stable or increasing income.³ The KfW-Ifo business climate index is still 17 percentage points up on

Business expectations remain positive

² See Creditreform, *Wirtschaftslage und Finanzierung im Mittelstand*, a twice-yearly survey of around 4,000 small and medium-sized enterprises (employees < 500, turnover < €50 million) and KfW 2006 corporate survey respectively.

³ See Creditreform, loc cit.

its prior-year level. Nevertheless, with regard to next year, account has to be taken of the fact that the 3 percentage point increase in VAT will have a temporarily dampening impact on consumer demand and profit margins.

Financial position of households

Households' financial position improves

Last year, households, as a whole, continued to pursue a sound course characterised by caution (see Chart 1.2.5). Their debt has been declining for five years and, at the end of 2005, was still about 105% of disposable income. Net financial assets rose to 184% of disposable income, thereby reaching the highest figure since German reunification. Interest expenditure remained unchanged on the year at 4% of disposable income.

Further rise in consumer insolvencies

Nonetheless, there was a further sharp increase in consumer insolvencies in 2005 with the figure going up by 40% to almost 69,000 cases (see Chart 1.2.6). As before, the most likely reason for this rapid increase is that this instrument was not introduced until 1999 and that its widespread use has been encouraged by the possibility of deferring the costs of court proceedings (since 2002). This is suggested by the fact that there has been a further fall in the average size of claim per case of insolvency.

Foreclosure sales

In the first six months of 2006, there was a slight fall in the number of foreclosure sales involving real estate after the figure had remained almost unchanged in 2005 (see Chart 1.2.7). In 2005 and the first half of 2006, there was only marginal year-on-year change in the total market value.

Chart 1.2.5

HOUSEHOLDS' FINANCIAL ASSETS AND INDEBTEDNESS

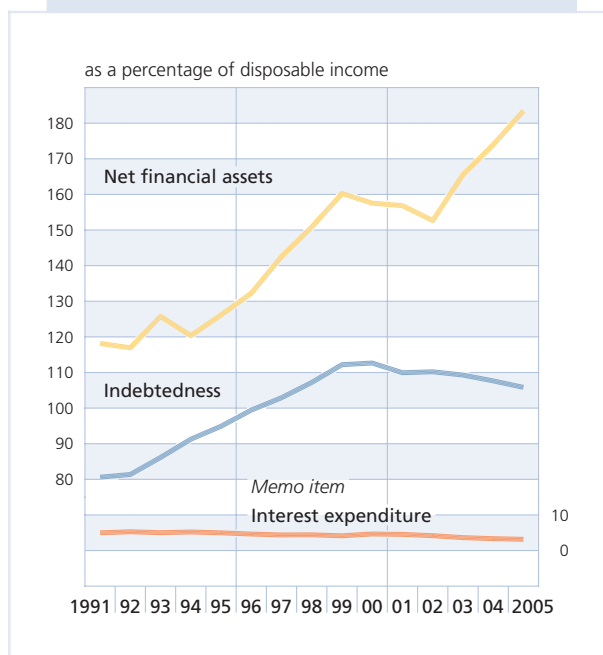
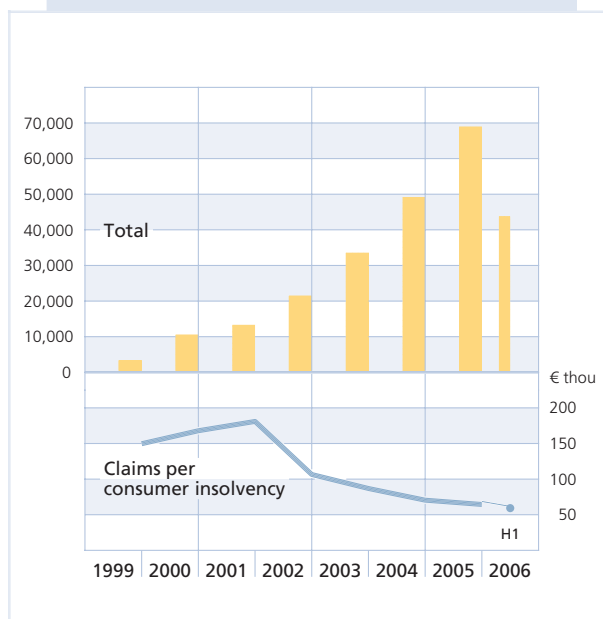


Chart 1.2.6

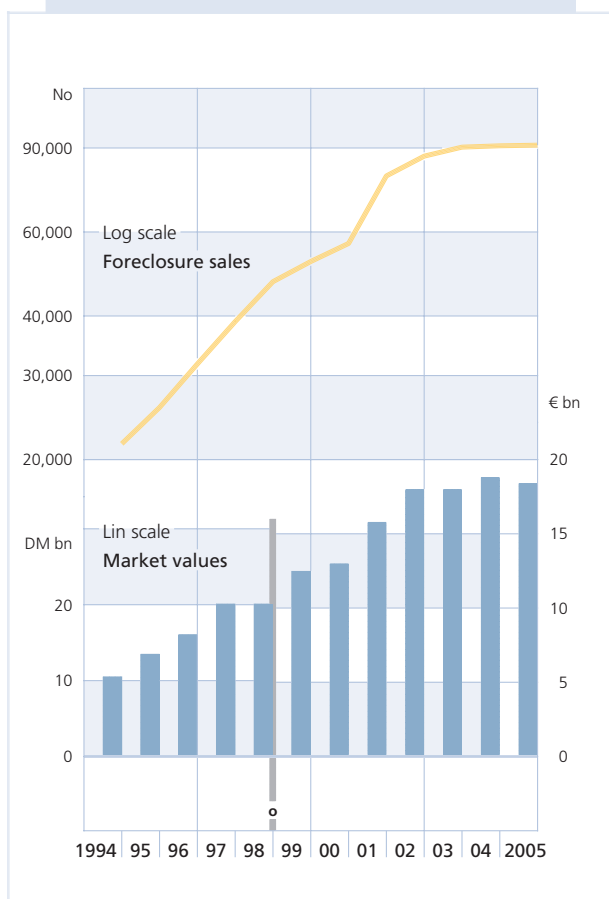
CONSUMER INSOLVENCIES*



* Source: Federal Statistical Office and Bundesbank calculations.

Chart 1.2.7

FORECLOSURE SALES OF REAL ESTATE IN GERMANY



Source: Argetra GmbH, Ratingen. — ◦ From 1999, data in euro.

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Developments in the German real estate market

Owing to the role of real estate as loan collateral, developments in the real estate market are a major determinant of credit quality. Following a long period of sluggish real estate market performance, some segments, at least, are showing a tendency to pick up. The cycli-

cal upturn should tend to have a positive impact on the market as a whole.

There is still no evidence of a clear reversal of trend in private housing, however. The housing price indicators calculated by the Bundesbank on the basis of data from BulwienGesa AG, which refer to standardised reference units, show yet another decline (second-hand housing) and stagnation (new housing) for 2005 (see Chart 1.2.8). By contrast, price indicators from GEWOS,⁴ which determine selling prices irrespective of differences in quality and location, show a rise as early as last year, and this rise appears to have continued in 2006.

Performance of private residential real estate

The market for office buildings has been showing a gradual improvement. Peak rents were rising for the first time again last year and this rise actually accelerated in the first six months of 2006. There are also initial indications of a slight increase in average rents. Nevertheless, large regional differences exist, and this movement is often driven by big individual contracts.

Gradual improvement in the market for office buildings

Indicators of portfolio quality ...

The portfolios of non-performing loans in the German banking system – measured as loans with a loss provision requirement⁵ – showed a noticeable decline in 2005 (see Chart 1.2.9). Their share of the gross volume of non-bank

Reduction in portfolios of non-performing loans

⁴ Institut für Stadt-, Regional- und Wohnungsforschung GmbH.

⁵ As there is still no standard international definition of NPLs, this figure is not comparable internationally. For more detailed information, see “Financial Soundness Indicators: a contribution to improving the worldwide availability of data for financial stability analysis” on page 103–122.

loans fell to 4.1%. This decline occurred as a parallel development in all sectors of the German banking system and is therefore broadly based. The wave of non-performing loans which emerged at the start of the decade as a result of the sluggish economic growth in Germany, and which peaked in 2003 with a share of 5.3%, has therefore essentially subsided.

Sectoral differences when seen over the longer term

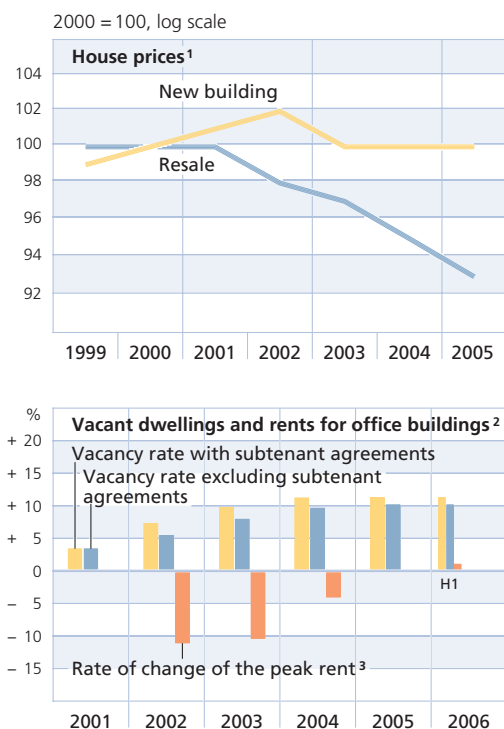
In a longer-term view, however, sectoral differences become apparent. Those categories of institutions which are particularly geared to lending business with SMEs reveal a structurally larger share of non-performing loans, albeit with comparatively larger interest margins. These institutions, too, are not yet that far advanced in reducing their NPLs and are still above the level reached at the end of the 1990s. By contrast, the commercial banks are clearly undershooting their earlier figures. Some of these banks have taken specific measures, such as selling non-performing loans to interested investors and increasingly hedging credit risk by means of credit derivatives.

Progress in risk management

Progress in risk management has played a key part in the easing of the risk situation in lending business. Many banks have been able to make a considerable adjustment to their loan portfolios in this way. Above all, however, they have noticeably expanded their set of instruments for measuring the credit risk involved in new lending business. About 50 credit institutions and/or groups of institutions from all three sectors have now announced that, in future, they will be using internal, rating-based methods in their lending business.⁶ These institutions account for more than 60% of the German banking system's total assets.

Chart 1.2.8

REAL ESTATE MARKET IN GERMANY



1 Source: Bundesbank calculations based on BulwienGesa AG data. — **2** Weighted office area average in Berlin, Düsseldorf, Frankfurt am Main, Hamburg, Munich and Wiesbaden. Source: Jones LangLasalle and Bundesbank calculations. — **3** First half of 2006 compared with 2005 as a whole.

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... in corporate credit

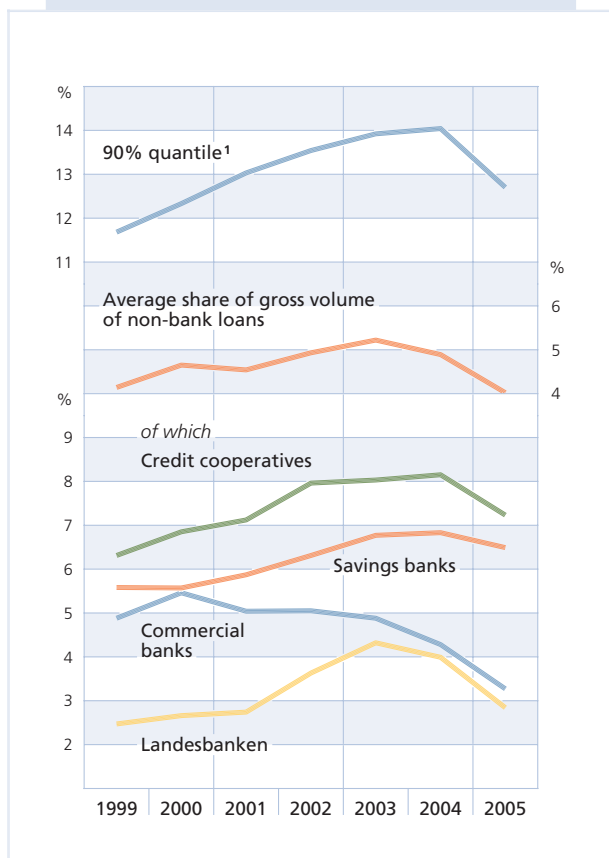
In the second quarter of 2006, loans to enterprises accounted for just under 37% of the banks' lending business.⁷ A further 18% or so

6 More than 40 of these institutions/groups of institutions have already filed an application for approval of their IRB models in preparation for the new capital accord (Basel II). More than ten banks intend to apply the advanced approach.

7 Loans to government and interbank loans are excepted.

Chart 1.2.9

**NON-PERFORMING LOANS*
IN THE GERMAN BANKING SYSTEM**



* Loans with a specific provision requirement as a percentage of the gross volume of non-bank loans. —
¹ Threshold which 90% of all credit institutions do not overshoot.

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however, the average ratio relating to the largest single borrower in each case fell from 21.5% to 16.5%. Concentration risk appears to be manageable on the whole, although developments in single-borrower concentrations should continue to be observed carefully.

Three factors are having a positive effect on the risk situation of SMEs: the pick-up in domestic economic activity, enterprises' improved capital adequacy and the declining number of corporate insolvencies. This is also evident in the quality of SME portfolios – measured, in this instance, by the large exposures of savings banks and credit cooperatives.⁸ Following a marked decline in earlier years, the average shares of large exposures in risk categories 2 and 3 have shown no more than a marginal decline to 1.0% and 0.6% respectively in the past 12 months. Nevertheless, this means that a level has been reached at which there is hardly likely to be any further downward improvement (see Chart 1.2.12). In the case of institutions with weaker portfolios (90% quantile),⁹ at the current end a marginal increase has emerged in large exposures which are prone to risk or for which specific loss provisions have been made.

Improvement in the quality of SME portfolios

of the credit volume was granted to self-employed persons (see Chart 1.2.10).

Concentration risks

Disregarding credit risk mitigation techniques, the average single-borrower concentration of the ten largest German banks has now increased slightly year on year to around 160% of the liable capital (see Chart 1.2.11); two of the banks included in this group even posted figures of more than 205%. At the same time,

⁸ Large exposures account for around 30% of savings banks' and credit cooperatives' commercial portfolios, which means that their credit quality is a good indicator of the quality of these banks' commercial credit portfolios. The analysis has to be confined to large exposures since these are broken down by risk category (risk category 1: sound; risk category 2: prone to risk; risk category 3: specific provisions have already been made).
⁹ 90% of banks have lower ratios.

... in private housing loans and consumer credit

Households accounted for 45% of German banks' lending (excluding loans to government and interbank loans; see Chart 1.2.10). More than three-quarters of this (77%) consists of housing loans.

Trend increase in credit risks from housing loans

The credit risks stemming from private housing loans are at a traditionally low level in Germany. Besides the collateral requirement, the major importance of fixed-rate loans contributes to stability since it means that households bear only limited credit risks.¹⁰ Recently, however, there appears to have been a tendency for credit risks in this area to increase. This is indicated by the development in building and loan associations' non-performing loans, which have been showing a slightly rising trend since as long ago as 1999. This may have been due not only to the still unsatisfactory performance of residential real estate in some parts of Germany, but also to general economic factors, such as high unemployment. The pattern described is consistent with the observation that the number of foreclosure sales almost doubled between 1999 and 2005.

Picture of consumer finance mixed

A mixed picture emerges with regard to the risk situation in the area of consumer finance. While the share of non-performing loans in the gross credit volume of selected consumer credit banks is declining slightly again, following two years in which there was a rise, the banks active in this area increased

Chart 1.2.10

STRUCTURE OF GERMAN BANKS' DOMESTIC LENDING BUSINESS BY CATEGORY OF DEBTOR*

June 2006

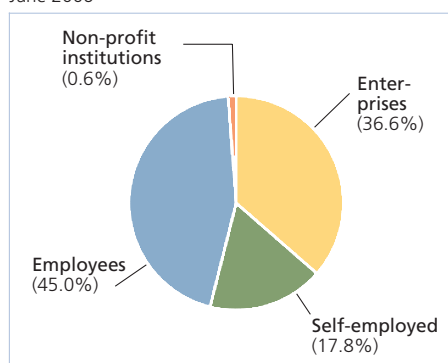
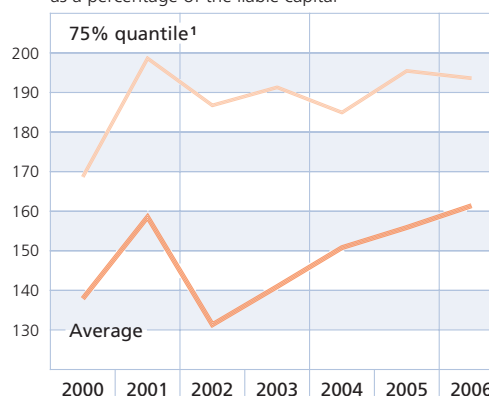


Chart 1.2.11

LOANS BY THE TEN LARGEST GERMAN BANKS TO THEIR RESPECTIVE 50 LARGEST BORROWERS**

as a percentage of the liable capital



* Excluding loans to government and interbank loans. — ** Source: central credit register for loans of €1.5 million or more pursuant to section 14 of the German Banking Act. Calculated on the basis of book values plus specific provisions and excluding collateral and other credit risk mitigation techniques. — ¹ Threshold which 75% of the banks do not overshoot.

¹⁰ By contrast, shorter interest rate fixation periods or forgoing prepayment penalties may be detrimental in terms of the impact on economic activity and systemic stability resulting from a higher interest rate sensitivity of household incomes and housing prices.

Box 1.2

RISKS ARISING FROM THE FINANCING OF LEVERAGED BUY-OUT TRANSACTIONS (LBOs)

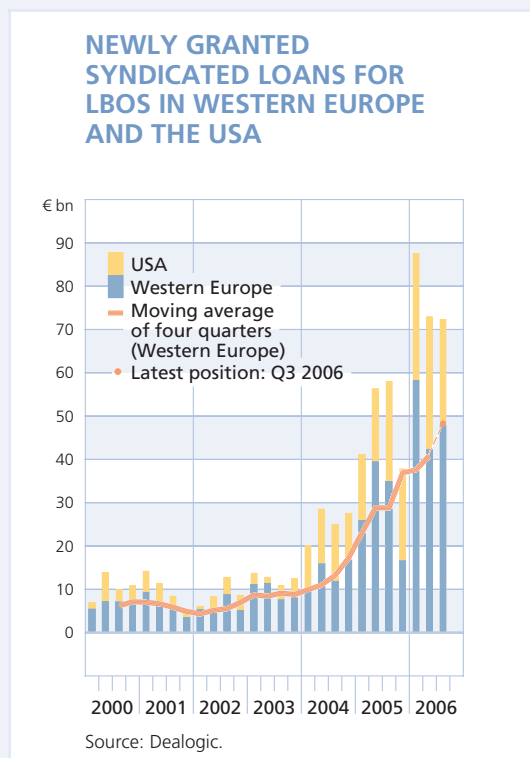
Over the past few years, German banks have greatly stepped up their lending for the financing of leveraged buy-outs. As part of an initiative of the Banking Supervision Committee (BSC) of the European System of Central Banks, the Deutsche Bundesbank and the Federal Financial Supervisory Authority therefore surveyed six German banks that are active in this line of business about the associated risks.¹

This must be viewed in the light of the fact that both the number of LBOs conducted and the volumes of new loans granted for LBOs are currently at a record high (see adjacent chart). The driving forces behind this are the still ample liquidity on the financial markets, low debt financing costs and the high demand from institutional investors. The recent sharp rise in the share of borrowed funds for LBOs should be seen as an early sign of overheating. Recapitalisations are also becoming more important, ie new owners receive high special dividends that are financed by additional debt, sometimes receiving several special dividends within a short period.² In addition, investors are recouping their employed capital ever faster.³

LBOs can be detrimental to the enterprises' original creditors if their loans are not repaid in the course of the transaction and the debt ratio consequently rises.⁴ Because of the ad-

ditional borrowing, some of the acquired enterprises could be driven close to insolvency if the economic situation deteriorates. The rise in the ratio of debt level to operating result (EBITDA)⁵ is a warning sign in this respect. Initial studies carried out by rating agencies show a comparatively high default rate for enterprises affected by recapitalisations.⁶

The survey confirms that German banks, too, are expanding their LBO business. One noteworthy aspect is the great importance of large transactions (ie over €1 billion), which make



¹ The reporting date of the survey was the end of June 2006. — ² Recapitalisations are mainly financed by bank loans. In the first half of this year, there were 63 recapitalisations in

the USA and in Europe, which resulted in dividends of US\$25.4 billion. Of this, US\$24.1 billion was financed by bank loans and US\$1.3 billion by bonds. See S&P RatingsDirect, The Dividend Recap Game: Credit Risk vs. the Allure of Quick Money, 7 August 2006. — ³ In the first half of 2006, LBO investors in Europe

up 29% of all transactions financed by the surveyed banks.

However, the German institutions surveyed state that they keep only a small part of the loans granted on their own books, 90% of which is senior debt from the enterprises' perspective. This confirms the market sentiment that institutional investors, such as hedge funds, are acquiring a continuously growing proportion of subordinate debt, in particular. Even if the loans are quickly passed on to other investors, the banks – in their function as underwriters – remain exposed to the risk of a market swing during the holding period (warehousing risk).

The majority of banks also report a perceptible increase in leverage multiples⁷ and see this as the main risk factor for the LBO market, particularly in the event of a rise in interest rates. Even if the loan agreements in LBO financing deals normally comprise interest rate hedges with multi-year maturities for substantial parts of the credit volume, restructurings on account of high interest expenditure reportedly cannot be ruled out. The fact that the investment horizons and creditor interests of institutional investors, such as CDO funds or hedge funds, are different from those of banks could also cause problems. The surveyed banks state that this potential conflict could have an impact on voting patterns concerning restructuring measures.

The banks make use of various risk management tools. For example, they set limits for individual LBO transactions that are based on the results of internal rating procedures. In addition, the banks carry out stress tests for the individual exposures before granting the loan. Among other things, these tests examine the extent to which certain events (eg changes in interest rates) would have an impact on the ability of the acquired enterprise to service its debt.

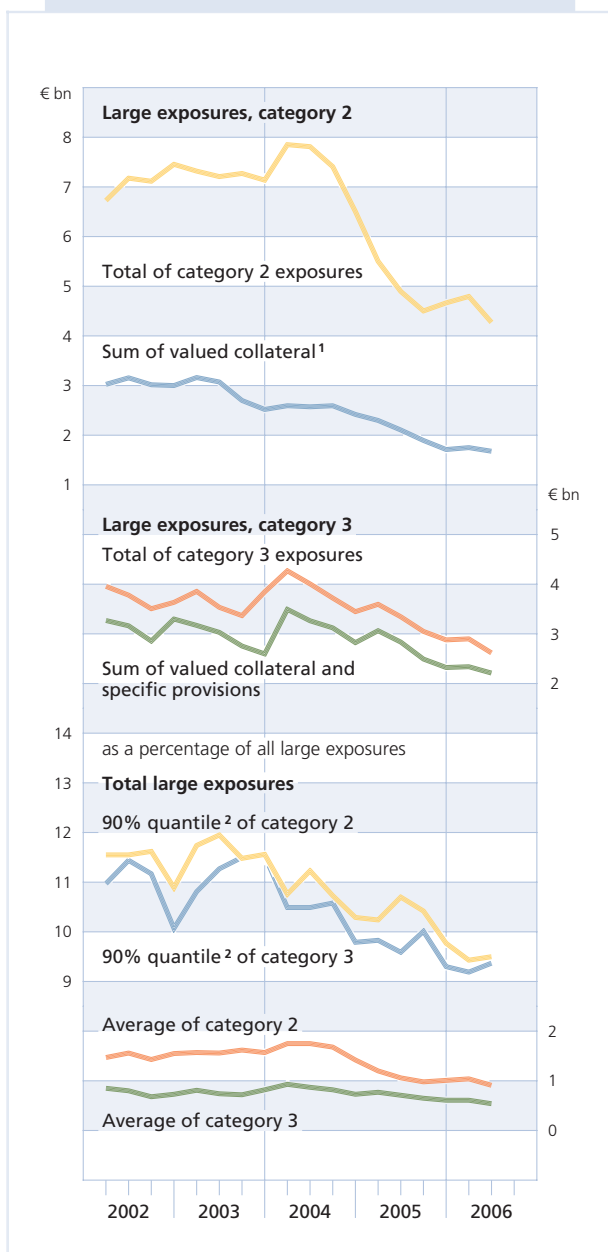
The survey supports the presumption that the banks only keep a small part of the credit risks arising from LBO transactions on their own books. But the survey cannot, of course, provide any assessment concerning the adequacy of the credit standards. The fact that institutional investors outside of the banking sector take on a considerable part of the credit risks should be seen as positive in view of the resulting risk diversification. However, it can also lead to reduced transparency concerning the dispersion of potential losses. It is not clear whether the banks will still manage to pass on risks that were taken on in the context of LBO transactions in a changed market environment. Independently of this, it still remains to be seen whether the banks will indirectly reassume some of the transferred risks by granting loans to hedge funds and other institutional investors.

withdrew 86% of their employed capital within just under two years by means of recapitalisations (on average). See Fitch Ratings, Keep on Churning: Recapitalised LBOs in 2006, 23 August 2006. — ⁴ Owing to the increased use of non-amortising loans, it is increasingly the case that there is no interim reduction of debt

in these transactions. — ⁵ Earnings before interest, taxes, depreciation and amortisation. — ⁶ See S&P RatingsDirect, loc cit. — ⁷ Leverage multiples are defined as the debt-to-equity ratio or as the ratio of debt to the enterprise's EBITDA.

Chart 1.2.12

ANALYSIS OF LARGE EXPOSURE PORTFOLIOS*



Sources: central credit register for loans of €1.5 million or more pursuant to sections 13, 13a and 13b of the German Banking Act. Data from savings banks and credit cooperatives. — * Large exposures are broken down into three risk categories: category 1, sound; category 2, prone to risk; category 3, specific provisions have already been made. — 1 Specific provisions have been made to only a very limited extent. — 2 Threshold which 90% of all banks do not overshoot.

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the specific loss provisions in relation to the volume of non-bank lending (see Chart 1.2.13).

The German credit markets for households – for both mortgage loans and consumer credit – appear to be rather competitive at the moment. In line with this, the Bank Lending Survey shows falling margins for consumer credit of average risk.¹¹ As credit risks are increasing slightly, the earnings potential could therefore be somewhat squeezed. Even so, the fact that the banks are turning more and more to households in Germany as a group of customers does not necessarily have to be seen negatively from a stability point of view. A stronger “anchoring” in the German retail market, where the banks evidently still find the margin gains attractive, could also act as a buffer against volatile developments in other business segments.

Intensely competitive credit markets for households

Country risk

The German banks are still among the most important lenders for developing countries and emerging economies. According to the data reported pursuant to the Country Risk Regulation, at end of the second quarter of 2006,¹² German banks had outstanding exposures amounting to around €190 billion to countries with an S&P rating of BBB+ and lower. The 15 countries under consideration here accounted for roughly 87% of this. About half

Ratio of country-specific risk provisions still in line with medium-term trend

¹¹ See Deutsche Bundesbank, Bank Lending Survey – Results for Germany, October 2006.

¹² Pursuant to the Country Risk Regulation, credit institutions whose lending volume to borrowers domiciled outside the EEA, Switzerland, the USA, Canada, Japan, Australia and New Zealand exceeds a total of €10 million report their outstanding volume of foreign credit in accordance with section 25 (3) of the Banking Act.

of this volume is backed by collateral. If the banks' specific loss provisions for counterparty and country risks are also taken into account, the German banks' value at risk vis-à-vis the countries in question amounted to € 75 billion at the end of the second quarter. At 0.75%, the country risk provision ratio is at its lowest value for six years (see Chart 1.2.14). At the same time, however, the average quality of German banks' lending to foreign borrowers has improved somewhat. This means that the country risk provision ratio remains in line with its medium-term trend. Overall, there has been only minor change in the German banks' position vis-à-vis developing and emerging countries. Their country risk therefore remains limited.

Stress tests

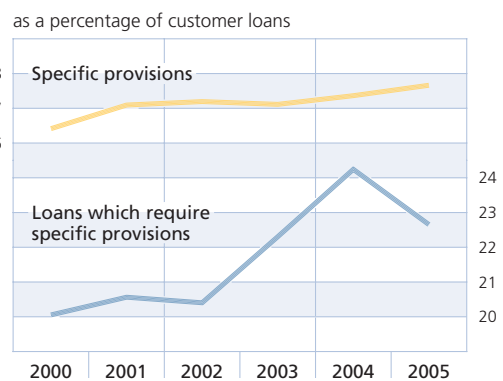
Economic development as risk

Unfavourable developments in the real economy or in the financial markets may affect the banks through several channels. These include an increase in the default risk in the credit portfolio, depreciation of assets in the trading book, a decline in operating income due to changed interest rates and falling demand for loans and bank services. For some years now, the Bundesbank has been regularly conducting various stress tests in order to test the resilience of the German banking system. In the tests, scenarios are assumed which are very unlikely to materialise in the short and medium term but which are, nevertheless, plausible.

The individual stress tests differ *inter alia* in the transmission channels they highlight. The macro stress test analyses the impact of

Chart 1.2.13

QUALITY OF CREDIT PORTFOLIOS OF SELECTED CONSUMER CREDIT BANKS *



* Sixteen institutions. For each of these institutions the share of consumer credit in the sum of all credit to non-banks amounts to 80% or more. Together, the 16 institutions account for more than 21% of all consumer credit in the German banking system.

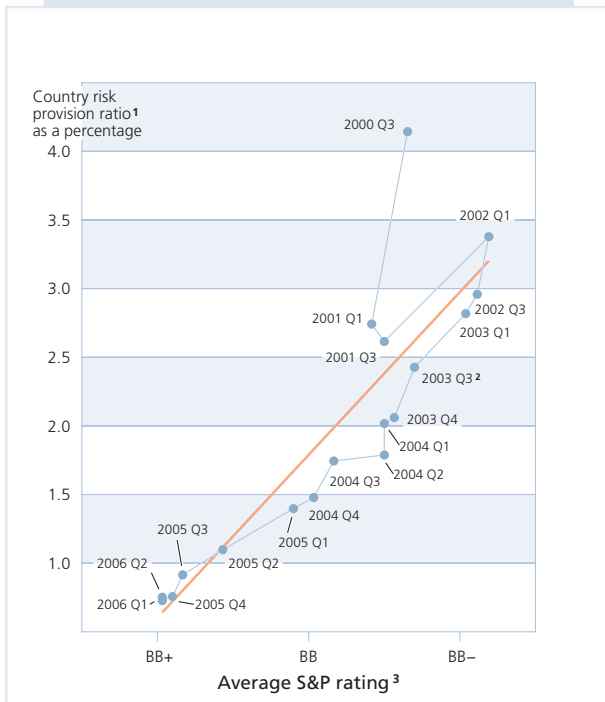
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macroeconomic cyclical and interest rate developments on loss provisions and net interest received. The credit risk stress test investigates the effect of changes in the creditworthiness of individual borrowers, sectors and categories of assets on the quality of the credit portfolio. The market stress test analyses the impact of abrupt changes in market prices (for example, interest rates, exchange rates and spreads) on the value of the assets in the trading and banking books. What all stress tests have in common is that the simulated losses are, in the end, set in relation to a capital ratio in order to state how far the shocks appear to be manageable for the institutions.

Stress tests are an extremely important instrument for making quantitative assessments of

Chart 1.2.14

COUNTRY RISK AND RATING*



Sources: Country Risk Regulation, S&P and Bundesbank calculations. — * Chart covers the 15 countries with the largest foreign credit volumes and with an S&P rating of BBB+ and below. The composition of the group of countries under consideration has changed slightly since last year. Owing to an upgrading, China is no longer included in the category “BBB+ and below” whereas Egypt has been added to it. — ¹ Quotient of country risk provisions and the volume of risk-prone claims for each country, each weighted by the volume of risk-prone claims. — ² From 30 September 2003, changeover to quarterly reporting. — ³ Weighted by the volume of risk-prone claims.

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the potential for risk. However, they are also subject to conceptual limitations. First, they each cover only one part of the transmission channels. Second, the assumed stress scenarios are much less complex than real shocks. For these reasons, the Bundesbank publishes the results of a number of stress test approaches.

Macro stress tests

Compared with the baseline scenario, which essentially reflects the assessments of the economic situation described above, two shock scenarios based on major macroeconomic risk factors are simulated. The shocks affect the banks through a subdued growth in gross domestic product (GDP). The interest rates are assumed to remain unchanged in both scenarios. In a third scenario, a decline in GDP with likewise constant interest rates is assumed. Specifically, the scenarios are as follows.

Baseline scenario and three assumed stress scenarios

- Scenario 1: oil price shock. The scenario posits an 80% increase in the price of crude oil starting from US\$60 per barrel. As a result, German GDP in 2007 and 2008 respectively is just under 1½% and roughly 2% lower than in the baseline scenario.
- Scenario 2: abrupt adjustment of global imbalances. External shocks – as presented in the macroeconomic risk analysis – could emanate from a slump in US growth. Nevertheless, an abrupt adjustment of global imbalances with a resulting exchange rate shock would probably have a stronger impact. Against this backdrop, the second scenario describes a sustained effective 30% depreciation of the US dollar.¹³ As a result, compared with the baseline scenario, German GDP falls by more than 1½% in 2007 and by 2½% in 2008.
- Scenario 3: deep recession. This scenario is designed to model a “maximum” cyclical

¹³ This results from an assumed depreciation of more than 44% in the US dollar against all Asian and European currencies.

shock: German GDP declines by 1% in both 2007 and 2008.

Subdued growth leading to lower provisions and falling credit demand

In the applied model, any slowing of the growth path has two negative effects on the banks. First, there is an increase in write-downs of loans. Second, there is a decline in net interest received owing to weaker credit demand. Admittedly, such an analysis does not take account of the mitigating effects of a possibly accommodating monetary policy. Naturally enough, the third “deep recession” scenario shows the severest deviations from the baseline scenario. Mean credit growth declines by roughly 36% in 2007 and by almost 40% in 2008 (see Table 1.1). The write-downs increase by 30% in 2007 and by 42% in 2008. Net interest received declines by 9% and 17% respectively.

Both effects combined lead to severe strains. However, even for fairly weak banks, profitability is generally adequate for cushioning the emerging strains without touching the capital.

The scenarios for the oil price shock and the adjustment of global imbalance have correspondingly smaller effects owing to the moderate weakening of the growth path. In the second scenario, for example, the write-downs increase by 20% in 2007 and by almost 15% in 2008 compared with the baseline scenario. In the “oil price shock” scenario, they go up by over 15% in 2007 and by more than 10% in 2008.

The results of the stress tests suggest that there would have to be a severe economic slump in Germany for the limits of the Ger-

Table 1.1

RESULTS OF THE MACRO STRESS TESTS

Scenarios	Credit growth		Net transfers to specific provisions (median) ¹		Interest margin (median) ²	
	2007	2008	2007	2008	2007	2008
Baseline scenario	5.56	5.90	9.10	9.14	2.68	2.79
Oil price shock	4.48	5.36	10.48	10.07	2.55	2.63
Adjustment of global imbalances	4.16	5.12	10.92	10.47	2.51	2.57
Deep recession	3.57	3.57	11.79	13.01	2.43	2.32

Table 1.2

RESULTS OF THE SECTOR STRESS TEST

Percentage distribution of the size of expected loss/capital

Scenarios	Median	90 % percentile
Baseline scenario	1.84	2.74
Recession	2.93	4.42

¹ In relation to core capital. — ² Net interest received as a percentage of the balance sheet total.

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man banking system’s resilience to be tested. Nonetheless, with regard to interpretation, it should be noted that the interest rates – and therefore the term structure – are assumed to remain unchanged. In particular, a flattening (or, in fact, an inversion) of the yield curve in the context of a macroeconomic shock would place an additional burden on the banks’ net interest received. Furthermore, such strains could also have a cumulative impact given

combinations of various negative features from the scenarios.

Nuanced representation of a deep recession

The “deep recession” scenario can also be presented in a more nuanced way. The starting point for this is the consideration that macroeconomic shocks do not affect individual borrowers – and, indirectly, their banks – to the same extent. Thus, the portfolio of loans to enterprises should be much more sensitive to cyclical shocks than are, say, private mortgage loans.

The following disaggregated approach therefore concentrates on the German banks’ portfolio of loans to enterprises and makes use of additional information on their sectoral structure. The loan portfolios are subdivided into 20 sectors. A bank’s expected loss from lending to enterprises of a single sector is given by the volume of loans outstanding, the relevant sector-specific insolvency rate¹⁴ and loss given default (LGD)¹⁵. Added up across the 20 sectors, this produces a bank’s expected overall loss, which is set in relation to the liable capital.

The “nuanced recession” scenario assumes that the insolvency rates of the sectors increase by double the maximum annual rise suffered by the sector in question in the past 12 years. The outcome is that, for one bank in ten, the expected losses exceed 4.4% of the liable capital (see Table 1.2). This means that the expected losses would be roughly 60% higher than in the situation without stress. However, the German banking system would be well able to cope with this shock, too.

Market risks

The German banks have contracted slightly larger market risk positions in the past 12 months. The commercial banks and the central institutions of the savings bank and credit cooperative sector have increased their equity price risk in particular. In the case of the medium-sized and smaller banks, it is mainly interest rate risks which have gained in importance compared with the previous year. However, there is no identifiable excessive build-up of risks in the market sector.

Slightly higher market risk potential

Capital requirements for market risk

In terms of quantity, the regulatory capital required for market risk positions in the trading book is distinctly less important than the liable capital, which is needed to back risk assets in the banking book. Thus, the share of regulatory market risk capital in the total regulatory capital of those German banks using their own market risk models has remained quite stable in the past two years at 3%.¹⁶ In turn, the interest rate risk position is the most important of the market risks.

On an average of the past four quarters, the risk potential of market risks has risen slightly.¹⁷

Increase in capital requirements due primarily to equity risks

¹⁴ The starting values are the insolvency rates published by the Federal Statistical Office for 2005.

¹⁵ LGD is assumed to be set constant at 50%.

¹⁶ This does not include the counterparty risks of the trading book.

¹⁷ All of the following data pertain to a group of currently 15 banks, which are allowed to use their own risk model to determine the amount of regulatory capital required to cover the market price risks in their trading book. This covers a large part of the German banks’ market activities. The market price risks are quantified as a result of the risk models used by the banks. The concept of VaR is used as a measure of the risk stating the maximum loss which, given a holding period of 10 days, has a 99% probability of not being exceeded.

This was due mainly to developments in the final quarter of 2005 and the first quarter of 2006, which led to an average 8.2% increase in the value at risk (VaR) for the representative bank. The increase in the overall market risk position was driven especially by the sharp average rise in the equity price risk in the first quarter of 2006. However, most banks recorded a slight reduction in their market risk position again in the second quarter of 2006. Ultimately, they are likely to have made hardly any increase on balance in their stock market position in the trading book since, despite greater stock market volatility towards the end of the second quarter of 2006, there has been no more than a slight rise in capital requirements (see Chart 1.2.15).¹⁸

Capital charges for market risks still spread widely across the banks

A positive factor from a risk perspective is that the relative changes in capital charges for market risks are spread broadly across the banks concerned. This is an initial indication that the banks' unmatched risk positions differ significantly from each other.

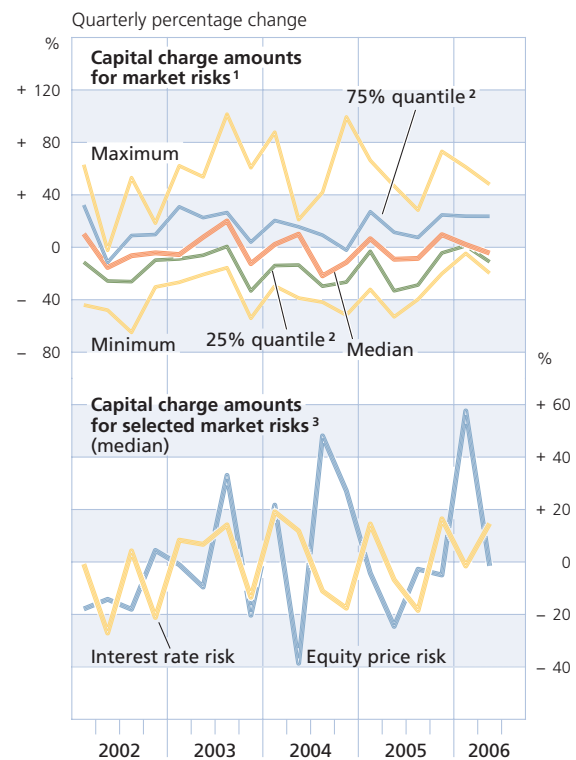
Co-movement as risk

Co-movement inside and outside the banking system as a potential source of risk

For a banking system, a co-movement of market risks can harbour systemic risks which may strike in the event of tensions in the financial markets. The co-movement problem has two aspects. First, co-movement may occur within the banking system under consideration if banks which are active in the market have similar market positions. A shock event would adversely affect the trading results of these banks simultaneously. Second, in the event of a crisis, even co-movement outside the system – ie in the positioning of the market players in

Chart 1.2.15

MARKET RISKS IN BANKS' PORTFOLIOS



1 Pursuant to Principle I for banks using their own market risk models. — **2** Threshold undershot by 75% (25%) of credit institutions. — **3** Based on those banks which use their own market risk models and also explicitly model the relevant risk.

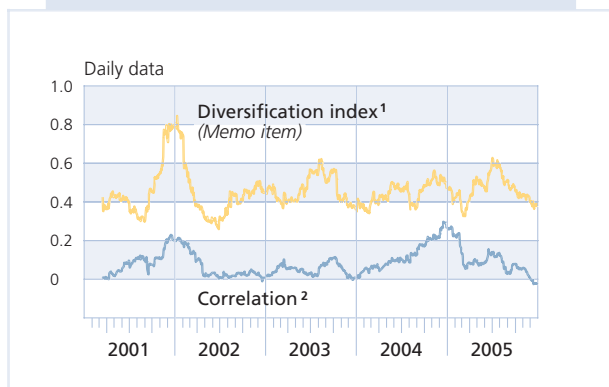
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the international financial markets – may have repercussions for the banks, say, as a result of liquidity shortages or suddenly changing correlations.

18 When assessing developments in market risks, it should be noted that both market-driven factors (prices, volatility and the correlations between the market prices of the financial instruments) and banks' individual decisions (adjustments of unmatched positions and improvements to the market risk model used) exercise an influence on the market risk position.

Chart 1.2.16

CO-MOVEMENT IN TRADING RESULTS OF GERMAN BANKS*



* Based on the daily data of 11 institutions using their own credit risk models. — **1** The diversification index is an indicator of the degree of diversification of the market risk within the German banking system. A value of 1 denotes a lack of diversification; a value of 0 denotes complete diversification. — **2** The correlation is calculated as an unweighted mean of the pairwise correlations of the daily returns from own-account trading over a moving 50-day window.

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Declining correlation in German banks' own-account trading results

Both aspects have become more important for market risk analysis over the past few years. This is due to the fact that the correlation of German banks' trading results has shown remarkable similarity to the increasing co-movement of hedge fund returns since early 2002. The correlation in the trading results of German banks active in the market showed a marked increase in the course of 2004 (see Chart 1.2.16).¹⁹ In December 2004, it reached its highest point within the five-year observation period with a coefficient of 0.3. This high degree of correlation between the trading results reversed entirely during 2005. This is a welcome development in terms of stability. Even so, the sharp upward and downward movements in the pattern of correlation observed in the past two years call

for heightened vigilance. This is because, with the exception of the stress situation surrounding 11 September 2001, there has been no historically comparable trend rise and subsequent decline.

The diversification index developed at the Research Centre of the Deutsche Bundesbank makes it possible to undertake a sophisticated assessment of the risks that may occur given a strong co-movement of events in the banks' proprietary trading. The index aims to derive the aggregate market risk of the German banking system from information on the projected daily loss potentials and from the actually realised returns on the banks' portfolios. Diversification effects among the banks' various proprietary trading portfolios are also taken into account.²⁰

Diversification index shows risk-mitigating portfolio effect

The outcome is a confirmation of the impression gained from the correlation analysis: the path of the diversification index in 2005 indicates that, at present, there is no identifiable excessive co-movement in the proprietary trading results of the banks active in the market. The effect of portfolio diversification among the banks reduces the banking sector's overall market risk position and, thus, the potential systemic risks emanating from the market sector. The risks that exist within the German banking system emanating from a possible co-movement of market positions have therefore decreased. As the analysis of

Decline in co-movement risks within the German banking system

¹⁹ The correlation is calculated as an unweighted mean of the pairwise correlations of the daily returns from the proprietary trading of 11 German banks using their own market risk models over a moving 50-day window.

²⁰ On the design of the diversification index, see C Memmel and C Wehn, Supervisor's portfolio: The market price risk of German banks from 2001 to 2004: Analysis and models for risk aggregation, in Journal of Banking Regulation, No 7 2006, pp 310-325.

the correlations of hedge fund returns above has shown, however, there still exists the potential for market disruptions owing to a co-movement in the positions of major market players outside the German banking system.

Market risk stress test

Market risk stress test also shows slight rise in market risk potential

The Bundesbank carries out stress tests to evaluate the risks posed by extreme changes in market prices, such as those which can arise from the above-mentioned scenarios relating to asset price adjustments in various financial market segments. In contrast to the analyses which have just been discussed, these tests comprise a wider selection of smaller banks as well.²¹ Owing to the greater significance of maturity transformation for the smaller banks' business model, the interest rate risk becomes more important than the share price risk. As expected, the greatest potential loss is therefore to be found in the extreme scenario of a parallel upward movement of 150 basis points in the term structure within the category of small and medium-sized banks. If such a scenario were to occur, the liable capital of this banking category would decline by about 15% on average whereas, given the same scenario, the category of commercial banks and central institutions would suffer a loss of no more than 3.7%.²² The problem could be exacerbated if other negative scenarios arose.

In the risk analysis relating to the macroeconomic situation and the financial markets

Box 1.3

MODIFICATIONS TO THE MARKET RISK STRESS TEST

In order to improve the assessment of market risk, the Bundesbank has enhanced the stress tests that it has been performing on a regular basis for some years in terms of both the number of banks included and the scenarios to be analysed. The principle behind the analysis remains the same, which means that the impact of extreme market developments on banks' banking book and trading book positions as a whole will continue to be simulated. This shows whether the banks have sufficient liable capital to cope with the assumed stress situations without the need for countermeasures. Owing to the modifications, which are briefly outlined below, the results of the current assessment are only partially comparable with the results of previous years.

The number of participant banks has now virtually doubled to 29. Furthermore, these banks have been reclassified, which means that the former group "Large, internationally operating banks" has had to be renamed "Commercial banks and central institutions of the savings bank and credit cooperative sector". The name of the "Small and medium-sized banks" group did not need to be changed, however. As a result of these modifications, the data series for earlier years have been adjusted accordingly for both banking groups. Owing to the lack of data history, the newly included group "Pfandbrief banks" has not yet been integrated into the analysis.

The most important adjustments with regard to the stress scenarios were made in the area of interest rate risk. The effect of an interest rate shock resulting from a parallel shift of 70 basis points in the yield curve has been supplemented by the more extreme scenario of a shift of 150 basis points. A scenario which assumes a differentiated widening of the credit spreads in the various rating classes has been integrated as a new component.

In the increasing volatility scenario, the magnitude of the shock has been adjusted and the shock in both stock market volatility and exchange rate volatility has been supplemented by a similarly high increase in interest rate volatility. By contrast, the scenarios for price level developments in the stock markets and foreign exchange markets have remained unchanged.

²¹ See Box 1.3 for a number of modifications to the stress test since last year.

²² A survey on interest rate risk carried out in the autumn of 2005 in connection with the implementation of Basel II confirmed the magnitude of these results for a considerably larger bank sample.

Table 1.3

**RESULTS OF THE STRESS TESTS
IN MARKET RISK**

Changes in market value as a percentage of liable capital (weighted mean)

Scenarios	2003	2004	2005	2006
Commercial banks and central institutions¹				
Yield curve				
Twist (+)	- 1.08	- 0.27	- 0.43	- 1.51
Parallel shift (+)	- 0.84	- 0.28	- 0.02	- 1.66
Parallel shift (++)	-	-	-	- 3.67
Twist (-)	1.06	0.28	0.56	1.46
Parallel shift (-)	0.74	0.37	0.29	1.48
Euro appreciation	- 0.21	- 0.01	- 0.31	- 0.61
Euro depreciation	0.18	0.23	0.48	0.88
Fall in share prices	- 6.75	- 5.75	- 6.46	- 7.30
Rise in volatility	- 0.57	- 0.04	0.21	0.64
Credit spread expansion	-	-	-	- 2.26
Medium-sized and smaller banks²				
Yield curve				
Twist (+)	- 2.90	- 4.19	- 3.57	- 4.87
Parallel shift (+)	- 3.43	- 5.56	- 5.26	- 7.19
Parallel shift (++)	-	-	-	- 14.95
Twist (-)	2.84	4.34	3.88	4.64
Parallel shift (-)	3.45	5.87	5.72	7.48
Euro appreciation	- 0.01	- 0.95	0.06	- 0.16
Euro depreciation	- 0.94	0.51	- 0.05	0.15
Fall in share prices	- 2.03	- 3.96	- 4.45	- 5.38
Rise in volatility	- 0.29	0.01	- 0.07	0.01
Credit spread expansion	-	-	-	- 3.02

the prevalent scenario tends to be that of a flat term structure. The stress test scenario "twist (+)" illustrates the fact that the potential losses arising from the flattening of a term structure by 70 basis points – given a parallel upward shift of 40 basis points in the term structure itself – are much lower than in the extreme upward-moving scenario. In this case, the commercial banks and central institutions would have to cope with a loss of 1.5% of their liable capital and the small and medium-sized banks with one of 4.9% (see Table 1.3).

In comparison with previous years, it is striking that there is now an increase in risk in the event of interest rate shocks, especially in the case of the small and medium-sized banks. The notable lengthening of the average maturity of assets in this bank category over the past few years is likely to have played a large part in this development. In a more competitive market setting, this reflects these banks' efforts to increase earnings from maturity transformation by assuming an increased interest rate risk. In the case of the commercial banks and the central institutions, however, the higher upside interest rate risk tends to suggest that these banks have now been hedging against rising market interest rates to a lesser extent than in previous years.

Both bank categories show rises in interest rate risk ...

Table 1.4

EXPLANATION OF SCENARIOS³

Changes in basis points

Scenarios	Short-term ⁴	Medium-term ⁵	Long-term ⁶
Yield curve			
Twist (+)	110	60	40
Parallel shift (+)	70	70	70
Parallel shift (++)	150	150	150
Twist (-)	- 110	- 60	- 40
Parallel shift (-)	- 70	- 70	- 70
Euro appreciation / depreciation	15% appreciation /depreciation of the euro against all currencies		
Fall in shares	Simultaneous 30% fall in share prices across all markets		
Rise in volatility	50% increase in the volatility of interest rates, share prices and exchange rates		
Credit spread expansion	Credit spread expansion in basis points: AAA + 10, AA / A + 20, BBB + 50, BB / B + 100, CCC and worse + 200		

In the past three years, the share price risk has likewise become more important for both categories of banks. A sharp decline in share prices – in the simulated scenario, this amounts to 30% within one day – would use up 7.3% of the liable capital in the category of commercial banks and central institutions. However, this is at least partly offset by hidden reserves, especially in the case of the banks' equity holdings

... and in share price risk

¹ Fifteen institutions. — ² Ten institutions. — ³ Occurrence of each scenario within one day as of 31 March 2006. — ⁴ No more than three months. — ⁵ More than three months but no more than five years. — ⁶ More than five years.

in the banking book. The changes in market value shown in Table 1.3 are therefore likely to overstate the actual share price risks somewhat.

Other stress scenarios with rising potential loss start from low level

In all of the banking categories analysed, a widening of the credit spreads in the various rating classes leads to a marked loss in market value. A data record that will be built up over the next few years will allow a more accurate analysis of the relevant risks. The stress scenarios with an appreciation / depreciation of the euro and with an increase in foreign exchange market, stock market and bond market volatility have comparatively little effect on the bank balance sheets. Even so, the doubling of losses in the event of a 15% euro appreciation, namely from 0.31% to 0.61% of the liable capital of the category of commercial banks and central institutions, is considerable.

Stress test passed

Overall, the results of the market risk stress test show that the institutions surveyed are able to withstand the assumed shocks in market prices.

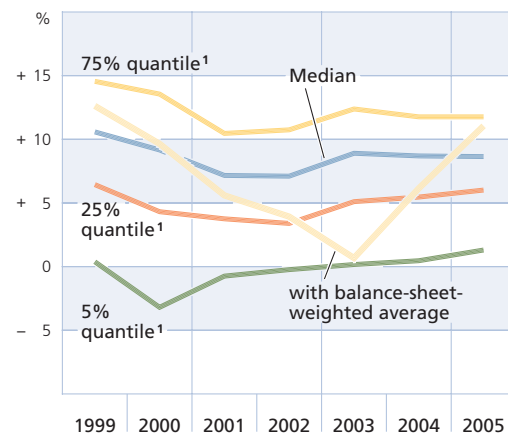
Risks posed by legal disputes

Causes of rise in legal risks

Legal risks, as manifest in judicial and extrajudicial disputes, have always been an integral part of banking business. Competitive strategies in fighting for customers and areas of business actually allow for legal imponderables, especially as these strategies are often also associated with significant earning opportunities. The legal disputes can be seen, for example, in conflicts with individual counterparties / business customers or with a large number of retail customers, in regulatory / prudential procedures and in disputes with employees.

Chart 1.2.17

DISTRIBUTION OF GERMAN BANKS' RETURN ON EQUITY*



* Ratio of the pre-tax profits to the balance sheet capital. — ¹ Threshold which 75% (25%, 5%) of all credit institutions undershoot.

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Judicial and extrajudicial disputes have increased recently mainly for the following reasons.

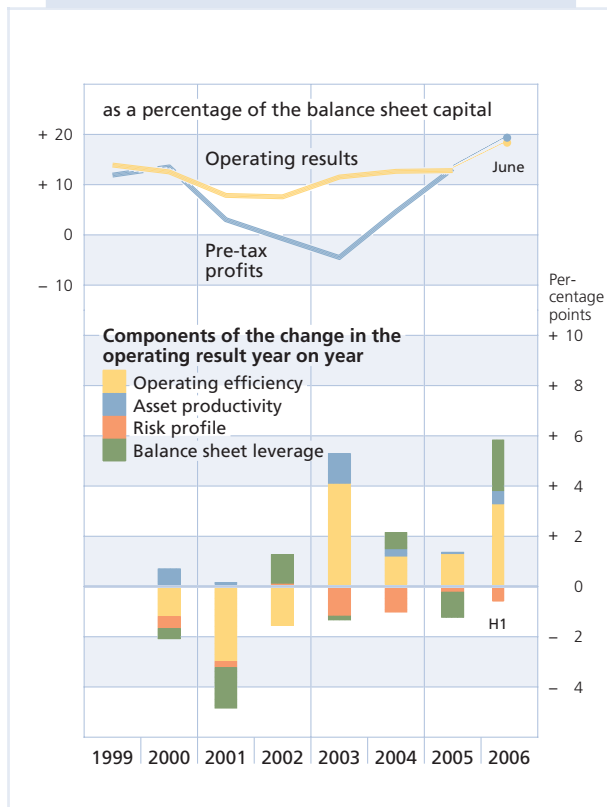
- Internationalisation of banking business

Owing to the question of which jurisdiction is applicable, the risks of legal disputes increase along with the banks' increasing cross-border activities. Furthermore, banks, especially those operating in Anglo-Saxon jurisdictions, may be exposed to considerable indemnity claims owing to the legal instrument of punitive damages.

- Complexity of business operations / financial instruments

Chart 1.2.18

RETURNS ON EQUITY OF BIG INTERNATIONALLY ACTIVE GERMAN BANKS*



* The aggregate comprises a total of eight German banks, which come from all three sectors, have a group balance sheet total in excess of €250 billion in each case and are active as major participants in international markets.

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The danger of legal disputes increases in line with the growing complexity of modern financial instruments. In the light of this, too, the backlog problem in the case of derivative confirmations deserves attention.

- Reinforcing consumer and investor protection in legislation

During the past few years, both European and German legislators have deliberately strengthened the position of consumers and investors through, for example, the Markets in Financial Instruments Directive (MiFID) and the Act improving investor protection (Anlegerschutzverbesserungsgesetz).

- Increasing electronification

The growing importance of electronic banking harbours not only settlement and reputational risks but also a number of legal risks. One example is how to handle attacks by hackers on bank customers' PCs, an issue which has not been definitively settled.

Even if the precise extent of risks arising from legal disputes and the associated reputational risks are very difficult to quantify, it can be said that these risks have increased considerably. The banks have reacted to this in various ways (for example, by using standardised forms / contracts, taking out insurance and creating reserves). In view of the adequate safeguards in place and the efficiency of management mechanisms, the risks described do not appear to be systemically relevant. However, with respect to possible legal risks, it is absolutely essential to achieve transparency at all levels up to senior management. This is particularly true when taking on new types of business and when operating in areas that are especially prone to conflicts of interest.

Legal risks not systemically relevant at present

Risk-bearing capacity

The risks which credit institutions take on are to be measured against their risk-bearing

capacity, ie against the buffers that are created to absorb negative shocks. In the first instance, these buffers include current earnings, risk provisions and capitalisation. Inter-bank protection agreements and guarantee schemes are a second line of defence.

Owing to the – in some cases substantial – increase in earnings and a further improvement in capitalisation, the German banking system's risk-bearing capacity may generally be described as quite robust at the moment. In view of prevailing cyclical risks, however, it cannot simply be assumed that the present level of profitability can be sustained in the future. In the light of the current level of risk-provisioning, which in the case of some banks is low, it also remains to be seen whether any future deterioration in credit quality can be absorbed.

Performance

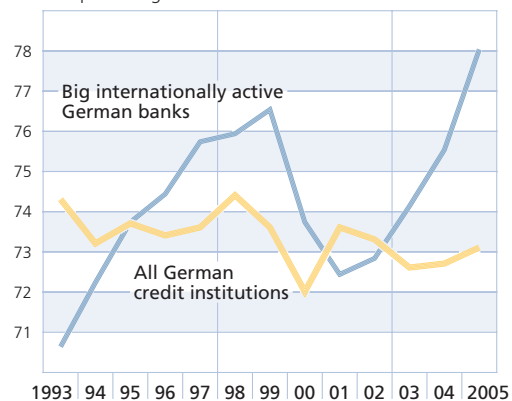
*Profitability
much improved*

The profitability of the German banking system has improved significantly. The average return on equity (before tax) rose to approximately 12.7% in 2005 compared with 4.2% in 2004 and only 0.7% in 2003.²³ From a stability point of view, it is particularly gratifying that such an improvement has been sustained not just by those institutions which typically generate strong returns. Thus, the 5% of banks with the lowest returns showed the most marked increase in the return on equity (see Chart 1.2.17). The distinct rise in the institutions' balance-sheet-weighted return on equity, which is now somewhat up on its level in 2000, is, in turn, a reflection of the substantial expansion in the profits of some of the big internationally active banks. In the banking

Chart 1.2.19

COST EFFICIENCY BASED ON STOCHASTIC FRONTIER ANALYSIS*

as a percentage from 1993 to 2005



* See M Koetter (2005): Measurement matters – input price proxies and bank efficiency in Germany, Research Centre, Deutsche Bundesbank, Discussion Paper, Series 2, Banking and Financial Studies, No 01/2005.

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system as a whole, strong income growth, especially in net commissions received and proprietary trading, was achieved in 2005. By contrast, there was only a slight rise in net interest received. The further decline in risk-provisioning was offset by an almost equivalent increase in general administrative spending. The annual pre-tax profit was more than three times greater than in 2004 while net profit more than doubled.

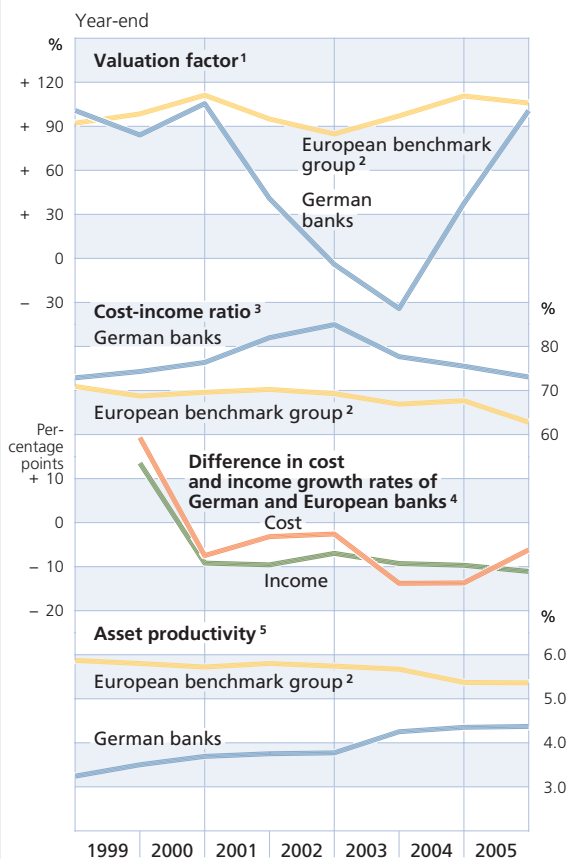
For banking stability purposes, the decline in spending on risk-provisioning and the matching decline in the loan loss provisions in lending to non-bank customers deserve special

*Risk-provisioning
still adequate
despite declining
expenditure*

²³ See Deutsche Bundesbank, The performance of German credit institutions in 2005, Monthly Report, September 2006, p 15.

Chart 1.2.20

COMPONENTS OF THE RETURN ON EQUITY OF BIG INTERNATIONALLY ACTIVE GERMAN BANKS*



Source: Bankscope and Bundesbank calculations. — * The aggregate comprises a total of eight German banks, which come from all three sectors, have a group balance sheet total in excess of €250 billion in each case and are active as major participants in international markets. — **1** Ratio of pre-tax profits to the operating result produced by the sum of net interest received, net commissions received and the net trading result (operating income) less general administrative spending. — **2** Fifteen banks with a balance sheet total of more than €250 billion each. Reduction of benchmark group by one bank due to the acquisition of a German bank. — **3** Ratio of general administrative spending to operating income. — **4** Cost-income growth rates of German banks less cost-income growth rates of European banks. A relative improvement of German banks vis-à-vis European banks is evident when the differences in income growth rates exceed the differences in cost growth rates. — **5** Ratio of operating income to the risk-weighted assets.

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attention: at a first glance, both are signs of a less conservative provisioning practice. In historical terms, however, risk-provisioning has not yet reached an exceptionally low level. In the case of some institutions, sales of non-performing loans have also been adding to the observed decline. Furthermore, some institutions have improved their risk management following the large losses at the beginning of the decade and, at the same time, have been much more restrictive in their new lending.

Indicators of borrowers' creditworthiness show that credit quality is now relatively good, a development which, in the present situation, justifies a lower level of risk-provisioning. However, credit quality could have reached a cyclical high or be close to it. In that case, the need for value adjustments will probably increase again in the not-too-distant future and the easier profit situation will be reversed. Monitoring value adjustment regimes and the appropriate level of risk-provisioning will therefore continue to be one of the special challenges facing banking supervisors and stability analysts.

Big internationally active banks

The big internationally active banks²⁴ increased their profitability significantly in 2005 and in the first six months of 2006. However, they were benefiting from favourable underlying conditions, which cannot be assumed to last for ever. Stock market developments and the

Internationally active banks very successful in 2005

²⁴ The aggregate considered here comprises eight German banks from all three sectors, which have a group balance sheet in excess of €250 billion in each case and are major participants in international markets.

low market interest rates, in particular, provided a considerable “tailwind”. These factors are important determinants of proprietary trading and commission business – areas in which these banks are heavily involved. In the light of this, the question arises as to whether the improvement in profitability is due primarily to the short-term favourability of the underlying conditions or also to sustained structural improvements.

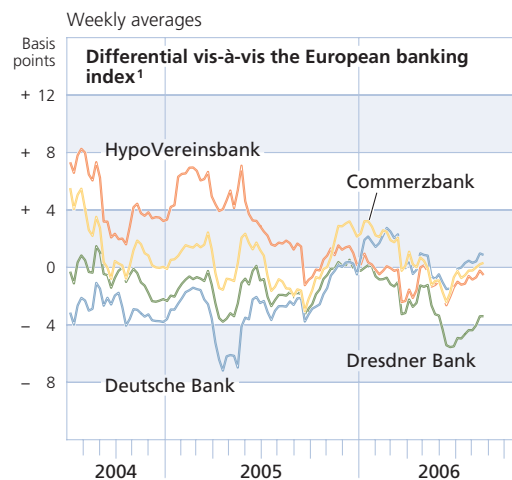
Component breakdown shows sustained improvement in profitability

The breakdown of the return on equity into individual profitability components²⁵ indicates that the composition of the operating result is generally “healthy” (see Chart 1.2.18). The pre-tax profit is much the same as the operating result (valuation factor close to 1), which indicates that special factors in the valuation no longer have a major impact on the overall picture. The operating efficiency (ratio of the operating result to the operating income) has been making a positive contribution to growth in the operating profit since as far back as 2003 and showed a further marked rise in the first six months of 2006. The fact that asset productivity made a greater contribution to growth is especially gratifying: the more favourable ratio of the operating income to the risk-weighted assets reflecting an improvement in profitability in relation to the risk taken might be an indication of a structural enhancement of the risk-bearing capacity. However, higher asset productivity is also to be seen in the light of the institutions’ steadily reducing their risk profile since 2003 and their total assets therefore expanding faster than the risk-weighted assets.

A study using stochastic frontier analysis²⁶ confirms the generally favourable picture of

Chart 1.2.21

CREDIT DEFAULT SWAP PREMIUMS OF GERMAN BIG BANKS



Source: Bloomberg. — ¹ Based on Dow Jones iTraxx CDS indices.

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higher profitability in the banking sector (see Chart 1.2.19). It shows rising cost-efficiency: in other words, the institutions – under fixed underlying conditions – generated a given output (eg a €1,000 loan) at a lower cost than in the previous year. The big commercial banks and the Landesbanken performed especially well in this context: their efficiency improved by 2½ percentage points, which indicates that the restructuring measures of the past few years are paying off for these banks.

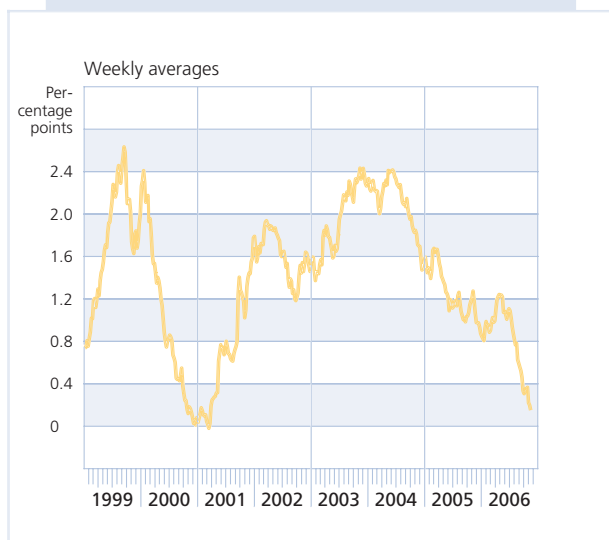
Efficiency measurement also shows increase

²⁵ This is usually done in the form of an expansion of the expression for the return on equity along the lines of return on equity = valuation factor • operating efficiency • asset productivity • risk profile • balance sheet leverage. For a detailed description of this technique see Deutsche Bundesbank, Financial Stability Review, November 2005, Box 1.9, p 68.

²⁶ See M Koetter (2005): Measurement matters – input price proxies and bank efficiency in Germany, Research Centre, Deutsche Bundesbank, Discussion Paper, Series 2, Banking and Financial Studies, No 01/2005.

Chart 1.2.22

GAP BETWEEN SHORT-TERM AND LONG-TERM INTEREST RATES*



* Ten-year interest rate estimated using the Svensson method for a (hypothetical) zero-coupon bond without a credit default risk less three-month Euribor.

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By contrast, the improvement in the cost-efficiency of all German banks in the aggregate averaged no more than ½ percentage point and remains below the peak figures of earlier years.

Yet profitability increases still moderate by international standards

In view of the risks taken, the German banks managed to achieve a disproportionately large increase in their profits, narrowing the asset productivity gap between them and their international competitors. In the cost-to-income ratio, by contrast, the German institutions were unable to make any further progress in matching other European internationally active banks (see Chart 1.2.20). While the cost-to-income ratio fell by approximately 5 percentage points at the other European institutions, it improved by only 2½ percentage points in the case of

the German banks. This was due primarily to the income side rather than the cost side: as the growth in earnings of the German banks was about 10 percentage points below that of the control group, the slower increase in expenditure was insufficient to make up the gap in the cost-to-income ratio. Evidently, higher spending by the international competitors was due partly to bonus payments and was therefore directly linked to the larger profits.

Further signs of the banks' resilience can be obtained from studying market indicators which directly reflect the banks' probability of default. Credit default swap premiums reflect market assessment of the likelihood that the bank concerned may not be able to meet its contractual credit obligations.²⁷ Their current movement suggests that the big banks' risk situation is favourable (see Chart 1.2.21).²⁸ The premiums are at their lowest level for years and do not show any significant deviation from the European benchmark either.

Low credit default swap premiums

Landesbanken

Just a year after the elimination of the Landesbanken's public underwritten liability (*Gewährträgerhaftung*) and the modification to maintenance obligation (*Anstaltslast*) their profitability ratios are still obviously being influenced by special items, which complicates the assessment of their medium-term prospects. In some cases, they still benefited from

Assessment of Landesbanken difficult owing to special items

²⁷ However, this indicator is also influenced by market conditions such as market liquidity which have nothing to do with the risk situation, and this somewhat restricts the indicator's reliability.

²⁸ As credit default swap premiums are available only for big banks, only this bank category can be analysed here.

the liquidity which they had stockpiled the year before, thereby keeping their interest expenditure relatively low. There were hardly any changes to the rating agencies' credit ratings last year: two upgradings of Landesbanken and one downgrading.

Business models vary

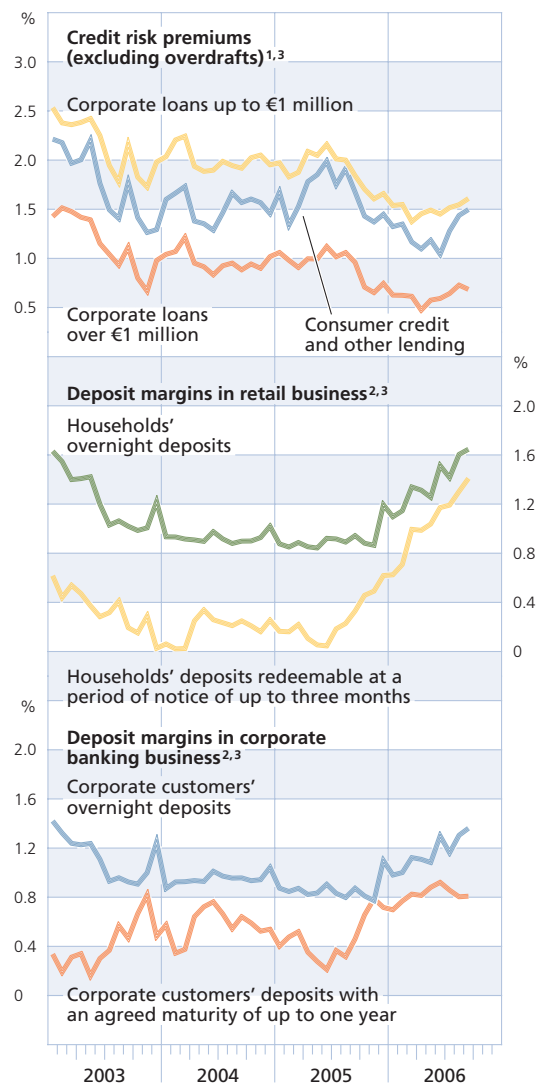
Overall, the Landesbanken made notable progress in adapting their business models. As a result of the transformation process, the Landesbanken, as a category of banks, are becoming increasingly heterogeneous with respect to their business models, implying that an aggregate analysis tends to lose its explanatory power. Some institutions are focusing more and more on retail business while others are striving to build up their presence abroad or establish a marked presence in specific lines of business. The business models also vary considerably with respect to their scope and intensity of cooperation with the regional savings banks. Continuing divergence in profitability trends is therefore to be expected in the future.

Current and possibly future structural changes in the Landesbanken sector merit particular attention. Here, too, the trends vary: on the one hand, the very recent sale of a major participation in a Landesbank to private investors and thoughts about initial public offerings and, on the other hand, efforts to merge Landesbanken while retaining general government support under public law. Finally, there is the impending sale of a federal state's 81% share in a Landesbank where it is still not known whether the purchaser is from the private or public sector.

The options described have possible implications for stability. These depend not only on

Chart 1.2.23

INTEREST MARGINS IN GERMAN BANKS' NEW LENDING BUSINESS

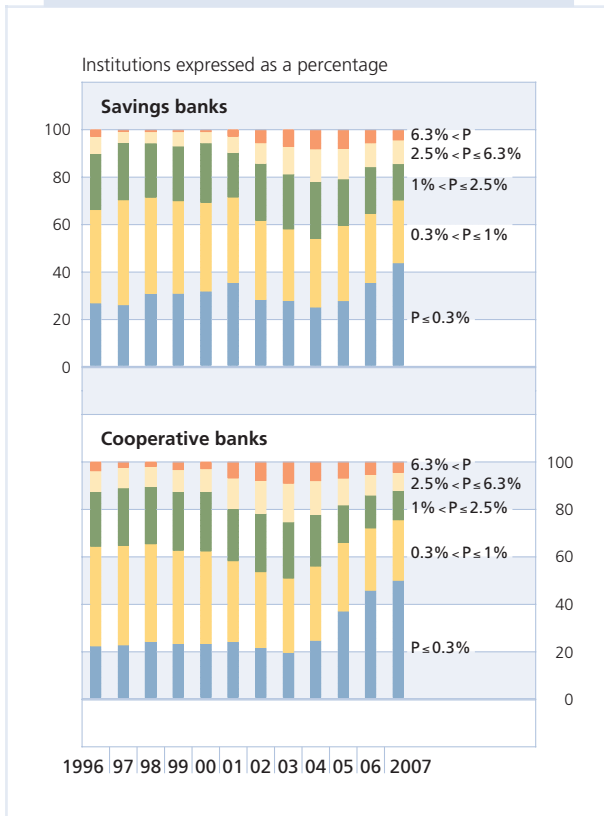


Sources: MFI interest rate statistics, Bloomberg and Bundesbank calculations. — **1** The risk premiums are calculated on the basis of individual time bands as the differential vis-à-vis maturity-appropriate yields of European government bonds and aggregated over all maturities weighted by volume. — **2** The margins for non-overnight deposits are calculated on the basis of the dominant maturity in new business as the differential vis-à-vis bank bonds of the same maturity. — **3** In order to eliminate volume effects over time as far as possible, the volume weightings are kept constant.

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Chart 1.2.24

**HAZARD RATE MODEL:
DISTRIBUTION OF THE
PROBABILITIES (P) OF
A CRITICAL DEVELOPMENT***



* Estimated probability that an institution's existence will be endangered within the coming year without support measures.

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the circumstances of this individual case but also on several other factors which should be judged only in terms of how they interact with the rest of the banking system. These include a potential greater orientation to returns by private investors and its possible implications for competition, risk policy and profitability as well as the matter of continued membership of institutional protection schemes.

Savings banks and credit cooperatives

Although the banks organised as a network of affiliated institutions also increased their profit for the year after tax considerably in 2005, their profitability growth generally remained well below that of the big internationally active banks. The operating result of the savings banks and credit cooperatives was actually down on the year. This was primarily a result of their interest business, which, so far, has been the main reliable source of profits for the networked institutions. The "cyclical tailwind" discussed above also affected the networked institutions through much lower valuation expenditure and higher net commissions; however, these effects are naturally limited as the networked institutions obtain less than one-quarter of their operating results from commissions and own-account trading.²⁹

Profitability of networked institutions less favourable

The medium-term earnings outlook of the savings banks and credit cooperatives is uncertain, especially as their business model is essentially based on maturity transformation. The core element of retail banking – long-term lending which is refinanced through revolving short-term deposits – contracts, as a rule, in periods of rising interest rates. Earnings are curbed because the higher market rates affect the average rate of interest on loans more slowly than interest rates on the deposit side where maturities are shorter and outstanding agreements expire more quickly. For the banks this implies that their refinancing costs generally increase sooner than their earnings from lending, ie the net interest received is lower

Higher market rates make business related to maturity transformation difficult

²⁹ By way of comparison, the big banks earned only 46% of their income from interest business last year.

for a time.³⁰ A persistent flat term structure could make it even more difficult to achieve returns from maturity transformation (see Chart 1.2.22): interest rates on retail products are very largely determined by market rates of the same maturity; this means that the interest rates on deposits – which tend to have shorter maturities – are not based on the same market rates as the longer lending interest rates. Consequently, a flat term structure is frequently accompanied by an equally flat scaling of retail interest rates, a fact that tends to curb the earnings from maturity transformation.

For these reasons, a further decline in the net interest received by savings banks and credit cooperatives cannot be ruled out this year and probably not next year, either. It is true that the interest rate margin in deposit business – money market rate less the (approximated) average interest rate on deposits – has grown sharply in the past few months, a development which has reduced the interest expenditure of the networked institutions (see Chart 1.2.23). However, credit margins have also been squeezed – probably, first and foremost, owing to more intense competition in lending business³¹ – leading to a substantial decline in interest income, too. There has been no general shift to new higher-yielding sources of income even though the institutions are making greater efforts to sell such products.

Even so, the networked institutions also benefited last year from the gradual improvement

Box 1.4

CAPITAL STRESS TEST BASED ON BASEL II QIS DATA

The data collected from over 100 participating banks during the fourth and fifth Quantitative Impact Studies (QIS) allow a stress test to be carried out using an approach in which the impact of changes to the input parameters on capital ratios is assessed directly. Two different stress scenarios – a moderate stress scenario and a severe stress scenario – were examined. The probabilities of default (PDs) for all exposures were increased by 30% in the moderate stress scenario and by 60% in the severe stress scenario. Lower add-ons were applied to the PDs for retail exposures (moderate scenario 15%, severe scenario 30%), as the cyclical fluctuations of the PDs are likely to be lower for this asset class. The assessment showed a considerable reduction of the average capital ratio for large internationally active banks (group 1) and for small and medium-sized banks (group 2), especially in the severe stress scenario. Capital adequacy ratios, however, are still clearly above the required minimum of 8% of risk-weighted assets for both categories of banks.

CAPITAL RATIOS DEPENDING ON STRESS INTENSITY

	Average capital ratios (%)		
	No stress	Moderate stress	Severe stress
Group 1	12.2	11.4	10.8
Group 2	14.2	13.4	12.8

For banks intending to use the Advanced Internal Ratings-Based Approach (A-IRB) of Basel II, these stress scenarios can be enhanced so that an increase in the loss given default (LGD) is also assumed – as is likely to be the case in a cyclical downturn. This alternative approach would result in a further reduction of average capital ratios. However, even in this scenario, a sufficient capital buffer in excess of the minimum regulatory capital requirements is retained.

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³⁰ Experience has shown, however, that net interest received recovers one to two years after an interest rate trough. See Deutsche Bundesbank, The impact of changes in short-term interest rates on the performance of German credit institutions, Monthly Report, September 2005, pp 18-19.

³¹ However, the more relaxed risk situation will probably reduce risk premiums.

Box 1.5

THE TRANSPARENCY OF IFRS-BASED FINANCIAL STATEMENTS IN THE GERMAN BANKING INDUSTRY

Pursuant to the International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) applicable to publicly traded enterprises in the EU, listed credit institutions have been obliged to prepare their consolidated financial statements in accordance with IAS/IFRS since 2005, and from 2007 this will become mandatory for issuers of quoted debt securities, too.

The standardisation of annual account information, which is one aim behind the introduction of IAS/IFRS, also depends on the enterprises' accounting practices. While German commercial law contains explicit provisions on the structure of the balance sheet and the income statement, the formal requirements laid down by IAS/IFRS are fairly rudimentary. In addition to various options concerning the recognition and measurement of balance sheet items, there is – as the table on page 65 illustrates – considerable discretion concerning the disclosure of financial information in the primary formats (balance sheet and income statement), in the Notes to the financial statements and in the statement of changes in equity.

For the financial year commencing on 1 January 2005, a total of 12 deposit-taking credit institutions produced consolidated financial statements in accordance with IAS/IFRS. Their combined balance sheet volume on 31 December 2005 was €2,152 billion, with the sum of the individual balance sheets in the entire banking system amounting to €8,568 billion. It is striking that the credit institutions based their classification format more or less closely on the requirements laid down by IAS 30, which expires at the end of this year. These requirements are far less stringent than those of the current Regulation on the Accounting of Credit Institutions (*Kreditinstituts-Rechnungslegungsverordnung*) pursuant to section 340a (2) second sentence of the German Commercial Code (*Handelsgesetzbuch*). Moreover, the credit institutions

only partly recorded financial instruments according to the valuation categories specified in IAS/IFRS and did not follow a uniform approach.

For example, some institutions aggregate the financial instruments measured at fair value through profit and loss in a single item on either side of the balance sheet. By contrast, others make more or less detailed breakdowns according to the individual categories in this form of fair value accounting (held for trading, instruments designated as at fair value under the fair value option (FVO), as well as hedging derivatives). Some institutions subsume those asset and liability items to which they have applied the FVO under the trading portfolios. In certain cases, the financial instruments designated as at fair value are recorded in the balance sheet together with similar instruments which, however, are valued at acquisition cost, such as loans to customers. Moreover, of the ten institutions which used the FVO, only one disclosed the effect on the overall result separately in the income statement. All the other FVO users included this effect in the result from financial investments, net interest income, or the trading result, not always mentioning the precise amount.

There are also differences in the way in which provisions are recorded. Most of the institutions record them as a single item. Only a minority distinguish between individual types of provisions.

Furthermore, the majority of institutions do not record the contribution made by hedge accounting to the overall result separately in the income statement. Instead, they include it in the result from financial investments, net interest income, the trading result or other income. IAS/IFRS envisages three hedge accounting models (cash flow hedge, fair value hedge and macro hedge on interest rate risk). As, in reality, a perfect

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COMPARISON OF SELECTED INFORMATION IN THE CONSOLIDATED FINANCIAL STATEMENTS OF CREDIT INSTITUTIONS REPORTING ACCORDING TO IAS/IFRS FOR THE FINANCIAL YEAR 2005

Position	Banking group											
	BHF-Bank	BHW	Commerzbank	DAB Bank	Deka-Bank	Dresdner Bank	Euro-hypo	HSBC Trinkaus & Burkhardt	Hypo Real Estate	Hypo-Ver-eins-bank	Post-bank	Sal. Op-pen-heim
Assets												
Financial assets measured at fair value						x						x
Trading assets	x	x	x	x	x		x	x	x	x	x	
Assets designated as at fair value (fair value option)					x							
Positive values from hedging derivatives	x		x		x						x	
Financial investments	x	x		x	x	x	x	x	x	x	x	x
Investment and securities portfolio			x									
Shares in enterprises valued at equity					x	x	x					x
Liabilities												
Financial liabilities measured at fair value						x						x
Trading liabilities	x	x	x	x	x		x	x	x	x	x	
Liabilities designated as at fair value (fair value option)					x							
Negative values from hedging derivatives	x		x		x						x	
Provisions	x	x	x	x	x		x	x	x	x	x	x
Other provisions												x
Provisions for deferred taxes						x						x
Pension provisions												x
Provisions and other liabilities						x						
Statement of changes in equity (valuation changes not affecting the result)												
Total revaluation reserves	x	x	x	x	x							x
Cash flow hedges			x				x	x		x	x	
Tangible assets								x				
Financial instruments available for sale							x	x	x	x		x
Actuarial result								x				

match between the underlying transaction and the hedging transaction cannot be achieved, the standards tolerate a fluctuation margin of 80%-125% as the yardstick for an effective hedge. It should be noted that the effect on the overall result of this unmatched (residual) position arising from hedging is not immediately recognisable in the case of many institutions.

A lack of uniformity can also be seen in the way in which fair value effects are recorded in the statement of changes in equity. Roughly half of the institutions

examined recorded the changes in the revaluation reserves as an aggregate amount. By contrast, the others break them down, in most cases in considerable detail, according to individual determinants or valuation categories.

Much the same applies to the scope and structure of the explanatory remarks contained in the Notes to the financial statements. Although the institutions provide supplementary information on the subjects specified under IAS/IFRS, their explanations are not structured

Box 1.5 (cont'd)

THE TRANSPARENCY OF IFRS-BASED FINANCIAL STATEMENTS IN THE GERMAN BANKING INDUSTRY (CONT'D)

uniformly. Generally, however, the information in the Notes to the financial statements is roughly divided into notes on recognition and measurement methods, the balance sheet and the income statement.

Even on their own, the examples cited make it clear that the objectives behind the introduction of IAS/IFRS – increased corporate transparency and easier comparability of financial statements with regard to both the primary formats and the other mandatory components under IAS/IFRS – have not yet been achieved. It is true that in most cases the information required pursuant to IAS/IFRS is provided, for example, in the Notes to the financial statements. However, it usually requires a great deal of analysis and, thus, for the average practised balance-sheet reader is not immediately decipherable. It would therefore be welcomed if, after the repeal of IAS 30, the International Accounting Standards Board (IASB) were to develop an alternative requirement for the disclosure of credit institutions' financial statements, at least for the medium term.

In the meantime, it can only be hoped that the institutions will make further progress towards harmonising their financial statements, not least under pressure from those reading them. Another decisive factor in the future will be the way in which the banking industry handles the more detailed depiction of risk data required once application of IFRS 7 becomes mandatory in 2007. In any case, the Committee of European Banking Supervisors (CEBS) has since drawn up an EU-wide harmonised regulatory reporting concept for IAS/IFRS-consolidated balance sheet data (FinRep). While the implementation of this concept is still under discussion, using FinRep for disclosure purposes could also make a considerable contribution to improving comparability and transparency. In its paper "Supervisory guidance on the use of the fair value option for financial instruments by banks", the Basel Committee

on Banking Supervision (BCBS) likewise called for an adequate degree of transparency concerning the use of the FVO. The national supervisors should ensure that they have this information available.

Experience to date shows that, in general, the new accounting rules have not had any major impact on regulatory capital and therefore the institutions' risk-bearing capacity as deduced from their balance sheets. It is true that the changeover to IAS/IFRS tends to increase the balance sheet capital. However, by applying prudential filters the supervisors eliminate the main undesirable effects for solvency supervision. In fact, in terms of quality, IAS/IFRS promotes risk sensitivity and in turn the institutions' risk-bearing capacity as enhanced market transparency has a disciplinary effect on the behaviour of market participants, thus increasing risk awareness at management board level.

The introduction of IAS/IFRS accounting allows a relatively good analysis of individual institutions. However, the inadequate direct comparability of financial statements impedes comparisons between institutions and, consequently, a systemic analysis compared with the accounting approach under the German Commercial Code. From a systemic point of view, further steps towards transparency are needed because they tend to have a stabilising effect on the market. For this very reason, the most uniform and detailed disclosure possible of information in the financial statements is also an issue for the authorities concerned with financial stability analysis. A complete changeover of the accounting system and the associated new and different type of disclosure of financial information undoubtedly also involves a learning process for the credit institutions, analysts and other readers of balance sheets.

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in credit quality in terms of reduced risk-provisioning; this helped them to build up substantial contingency reserves.

But hazard rate model shows that difficulties less likely

Against this background and in view of the – in most cases – thoroughly adequate capital base, the Bundesbank’s hazard rate model actually shows that the situation of the networked institutions has improved. The model uses various indicators³² to estimate the probability of an institution’s existence being endangered within a period of one year without support from the institution’s affiliated network (see Chart 1.2.24). On the basis of last year’s balance sheet data, more than 40% of both the savings banks and the credit cooperatives now come within the best risk category, ie the category with a default probability of less than 0.3%. At the same time, there has been a continuation of the trend decline in both types of institution falling into the two worst risk categories.

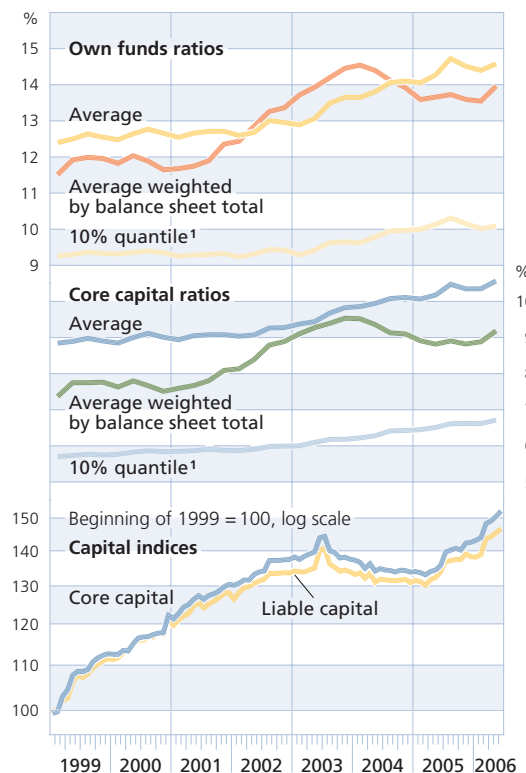
Solvency

High capital ratios in medium term

As capital resources have to absorb those risks which cannot be covered by current earnings, solvency is the second determinant of the risk-bearing capacity. However, the capital base should not be seen as the “continuous” measure of the risk-bearing capacity. In other words, although a higher capital ratio at first sight appears to indicate greater resilience, it reduces the amount of “working” capital and therefore profitability, too. Smaller earnings, in turn, have an adverse effect on the risk-bearing capacity. For this reason, it is necessary to retain a capital base that is commensurate with potential risk. The regulatory requirements set a binding lower limit for

Chart 1.2.25

GERMAN BANKS’ OWN FUNDS AND CORE CAPITAL*



* Pursuant to section 10 of the German Banking Act; all banks, individual-institution data. — 1 Value achieved or overshoot by 90% of banks.

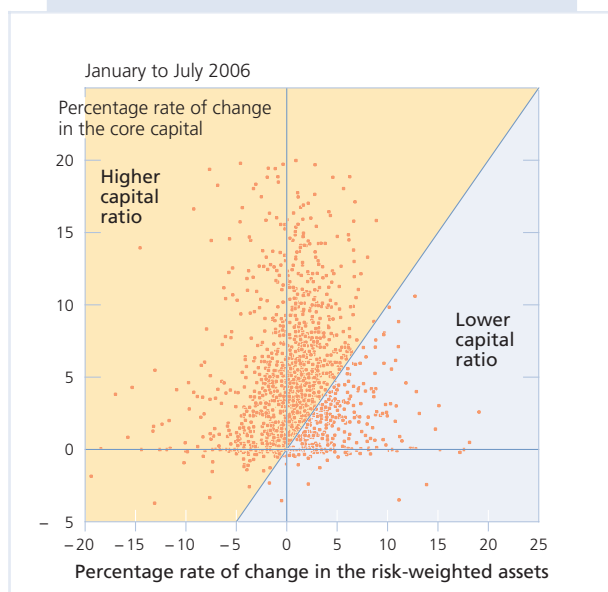
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this. However, exceeding these requirements to a certain degree is useful, first, as a fluctuation reserve, and, second, because market players and analysts – especially the rating agencies – often expect and demand a clear

³² The determinants are based on the CAMEL ratings and reflect the capital adequacy, profitability, credit risk and market risk of each savings bank or credit cooperative. These are supplemented by regional and macroeconomic factors. See Deutsche Bundesbank, Report on the stability of the German financial system, Monthly Report, October 2004.

Chart 1.2.26

COMPARISON OF RISK-WEIGHTED ASSETS TO CORE CAPITAL OF GERMAN BANKS



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overcompliance with the regulatory requirements.

The capital base of German banks continued to run at a fairly high level last year and during the first six months of this year (see Chart 1.2.25). Weighted by the balance sheet total, the medians of the own funds and core capital ratios have increased during this year. The minimum regulatory requirements are being met with a sufficient safety margin. The 10% of institutions with the lowest capital ratios still show an own funds ratio of 10.3% and a core capital ratio of 6.9% in the (quantile) median, which means that they are almost matching – or even exceeding – their all-time highs. Stress tests based on data from the Basel II Quantitative Impact Studies confirm that,

even in the event of a significant deterioration in credit quality, adequate capital buffers are in place (see Box 1.4 on page 63).

The increase in the average core capital ratio was achieved by a large number of institutions (see Chart 1.2.26). Furthermore, it occurred primarily through increasing the equity capital rather than through reducing risk assets, which would indicate a downturn in business. Most institutions succeeded in increasing their core capital during the first six months of 2006, and these increases were much larger on average than in the case of the few banks whose capital base declined. Moreover, risk assets were increased more frequently (albeit offset by a disproportionate increase in the capital base) than they were reduced. Overall, this hints at a fairly balanced development.

In addition to the individual risk-bearing capacity of each institution, the protection and guarantee schemes safeguard the existence of the cooperative institutions and the savings bank financial group, thereby adding to their risk-bearing capacity. The guarantee scheme of the credit cooperatives underwent a comprehensive reform in 2003, and since the beginning of this year the public sector institutions, too, have included the banks' individual risk in the assessment of the fees for their guarantee scheme. Thus, besides other new measures to encourage the prevention of crises within a monitoring system, a multiplier based on the sum of risk-weighted assets has been included in the calculation of contributions. First, this will probably help to ensure that members of the association are generally more aware of risk, and, second, the fund's resources will be managed more efficiently.

BOX 1.6

ANALYSING THE WEAK MARKET PERFORMANCE OF OPEN-END REAL ESTATE FUNDS AT THE TURN OF 2005-06

Based on daily data for the period from 15 December 2005 to 31 July 2006, various factors have been examined in an attempt to explain the large capital outflows relative to the fund volumes. It is expected that this will give an insight into the extent to which investors differentiated between the various funds when withdrawing capital.¹ The following explanatory variables were used:

Orientation: value is 1 if more than 50% of the fund is invested in real estate in Germany, otherwise 0.

Institutional investors: total of all capital outflows and inflows relative to the fund volume.² A strong presence of institutional investors should tend to increase the transaction volume.

Liquidity: (liquidity ÷ statutory minimum liquidity). The aim of this variable is to measure the importance of the "rush to the exit" phenomenon because, if liquidity is low, then the risk of suspending withdrawal appears much higher.

Debt financing ratio: (liabilities ÷ fund volume). The debt financing ratio is an indication of the investment strategy. A fund can be expanded further by debt financing and thus improve its performance as long as the return on the real estate exceeds the cost of borrowing. Debt financing is also a source of liquidity that is used particularly in times of crisis. However, the Investment Act limits the extent to which debt financing can be used.

Return: (calculated according to the BVI³). For a given level of risk, funds with higher returns should record lower capital outflows.

The results for the entire observation period shown in the first column of the following table indicate that investors discriminate between funds based on potential returns and the shares' liquidity. High liquidity or high returns have a dampening effect on capital outflows. By contrast, a higher debt financing ratio will lead to an increase in the volume of shares returned.⁴ The significant positive sign for institutional investors suggests that funds that were more heavily frequented in the past by institutional investors had a higher capital outflow.

Columns 2 to 4 repeat the estimates for three sub-periods. Period 1 begins when the first open-end real estate fund was closed and ends before the second fund was closed. Period 2 represents the time period in which two further funds were closed. Period 3 represents the time period in which – in terms of outflows – most of the shocks have been accommodated.

Results show that the temporary closure of the fund in the first period was a new phenomenon for investors. They returned

their shares without discriminating between the funds in terms of liquidity or debt financing ratio. The impending real estate revaluation led to a general increase in perceived risk for all open-end real estate funds. Institutional investors were also surprised by the developments in December 2005. Funds which previously had a large transaction volume recorded higher capital outflows.

The results for the sub-periods indicate that the "rush to the exit" behaviour was already prevalent in the first phase, thereby obscuring the relationship between liquidity and the debt financing ratio.

This analysis also shows the dubious role of institutional investors. The record outflows in January 2006 coincided with the period in which institutional investors accounted for a major proportion of the individual capital outflows. This could – exercising all due caution with regard to the informative value of this model – support the theory that avoiding a sudden withdrawal of capital by institutional investors is an important aim of the debate about reforming the future of open-end real estate funds.

FACTORS AFFECTING CAPITAL OUTFLOWS FROM OPEN-END REAL ESTATE FUNDS⁵

	Total period of time	Period 1: up to 15 Jan	Period 2: 15–27 Jan	Period 3: from 27 Jan
Liquidity ÷ total minimum liquidity	– 0.17*** [4.66]	– 0.01 [0.08]	– 0.40** [2.57]	– 0.18*** [4.61]
Orientation	0.03 [0.53]	– 0.18 [0.97]	– 0.18 [0.75]	0.08 [1.34]
Institutional investors	0.62*** [10.67]	0.49*** [3.56]	0.61*** [4.15]	0.66*** [9.84]
Debt financing ratio	0.47*** [10.62]	0.13 [1.16]	0.80*** [4.55]	0.48*** [9.89]
Return	– 0.48*** [16.28]	– 0.38*** [6.35]	– 0.08 [1.10]	– 0.52*** [14.87]
Constant	– 1.04** [2.12]	– 2.45*** [3.46]	– 1.53** [2.34]	– 2.76*** [8.39]
No of observations	3,354	425	211	2,718
R ²	0.37	0.21	0.43	0.28

¹ A total of 23 non-specialised funds are included in the analysis. All variables are entered as logarithms. The variable for liquidity is daily, whereas the debt financing ratio and the returns are monthly. — ² Average over the months from January 2004 to November 2005. — ³ Bundesverband Investment und Asset Manager e.V. (German Investment

and Asset Management Association). — ⁴ To control for a possible endogeneity of the debt financing ratio, a lagged value was used as an instrument. However, the results do not differ from those values in the table. — ⁵ Source: BVI and Bundesbank calculations. Robust t-statistics in parentheses; significant at the * 10%, ** 5% and *** 1% levels.

Chart 1.2.27

FUNDS FLOWING TO AND FROM OPEN-END REAL ESTATE FUNDS*

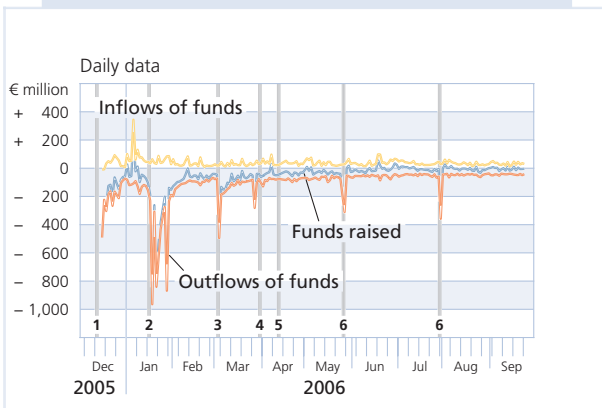
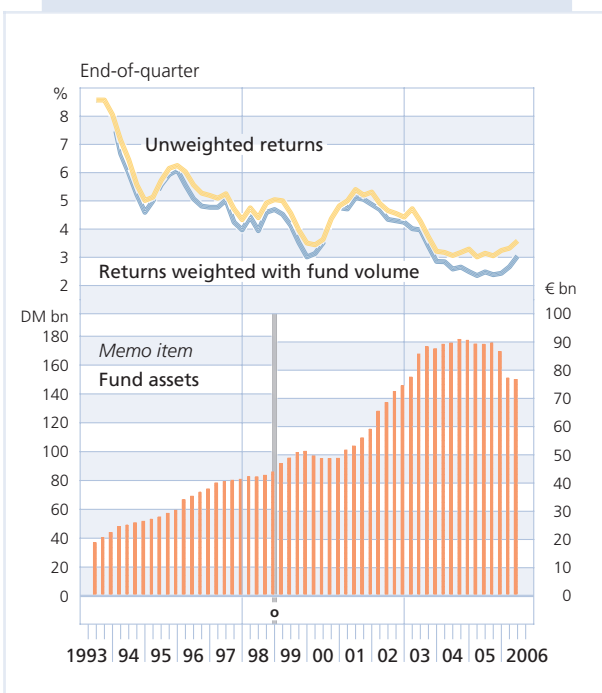


Chart 1.2.28

RETURNS OF OPEN-END REAL ESTATE FUNDS**



* Source: BVI. — 1 On 13 December 2005 closure of DB grundbesitzinvest. — 2 From 17 to 19 January 2006 closure of KanAm Fonds. — 3 On 3 March 2006 opening of DB grundbesitzinvest. — 4 On 31 March 2006 opening of KanAm grundinvest. — 5 On 13 April 2006 opening of KanAm US-grundinvest. — 6 On 26 May 2006 and 31 July 2006 sale of shares by Deka-Bank. — ** Source: BVI and Bundesbank calculations. — ○ From 1999, data in euro.

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Open-end real estate funds

Especially since the beginning of the 1990s, open-end real estate funds have developed into one of the most important forms of indirect capital investments in office real estate and commercial properties. Open-end real estate funds attract the investor through the high recoverability of the funds' assets, relatively stable earnings and the permanent liquidity of the shares. Annual growth rates averaging 10% since 1993 had enabled the funds' assets to grow to more than €90 billion by 2004. In the spring of 2005, however, there were for the first time fairly large outflows of funds although these were limited to only a few funds.³³

From November 2005 lower earnings by individual funds and uncertainty with respect to the future value of fund properties led – in some cases – to substantial outflows of funds. Consequently, no fewer than three funds temporarily stopped redeeming shares. This, however, put public pressure even on those funds which were not directly affected at the time, with the result that some of them likewise recorded significant returns of shares: in December 2005 and January 2006 shares worth a total of more than €10 billion were taken back. Although the situation stabilised somewhat later, the net amount of funds raised³⁴ showed a further decline in the first six months of 2006 (see Chart 1.2.27).

Developments in past few months

The events at the turn of the year showed the spillover effects and repercussions that some

Funds vulnerable owing to structure

³³ See Deutsche Bundesbank. Financial Stability Review, November 2005.

³⁴ Funds raised = inflows of funds less outflows of funds.

investment products have on financial stability. The guaranteed redemption at any time opened up the possibility of a veritable run on mutual funds, leading to a relatively quick reduction in even generously proportioned liquidity buffers and temporarily affecting companies which had favourable profitability growth. Thus, the correlation between yield and funds raised actually turned negative in January 2006 (see Chart 1.2.29).³⁵

Risks for banks limited

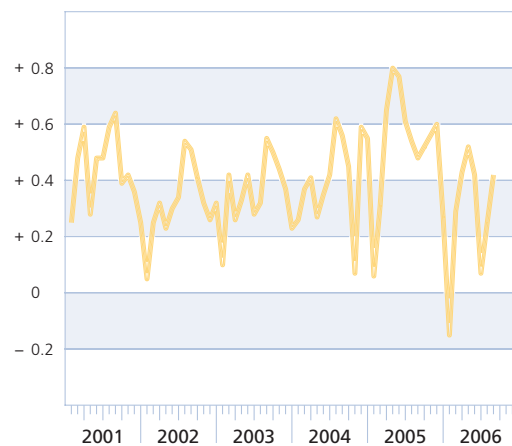
At the same time, banks whose investment company subsidiaries launch open-end real estate funds were also affected by the aftermath. The direct credit risks from lending to the funds were limited owing to the value of the real estate used as collateral. However, to avoid further reputation losses – which would have been possible, especially if more funds had been shut down – some banks felt compelled to take over significant holdings of shares. They were nonetheless able to cope with the associated downturn in earnings owing to the considerable improvement in their profitability.

Recent increase in yields

The developments at the beginning of the year demonstrated the structurally determined liquidity risks of the open-end real estate funds. However, the gradual reduction in loans and the sale of real estate that have taken place since underline the flexibility of the open-end real estate funds. The managed volume of funds of all the open-end real estate funds operating in Germany has now

Chart 1.2.29

CORRELATION BETWEEN YIELDS OF AND FUNDS RAISED BY OPEN-END REAL ESTATE FUNDS



Source: BVI and Bundesbank calculations.

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stabilised at €77 billion. Growth in the yields of real-estate funds also had a positive impact. From November 2005 until August 2006 the weighted average return rose by about 90 basis points (see Chart 1.2.28).³⁶ The open-end real-estate funds focusing on investment in Germany achieved disproportionately high yields, thereby converging with the real estate funds which invest mainly abroad.

³⁵ Cross-section correlation of all funds in one month between funds raised and return.

³⁶ The average yield was calculated by weighting it with the fund volume.

Stability situation in the German insurance industry

Risk factors

Changes, ... The German insurance industry is undergoing a process of radical change. Restructuring measures and takeovers are intended to reduce costs in the medium term and to improve market positions. This is a result not just of intensified competition but also, possibly, of regulatory changes. For instance, the introduction of the International Accounting Standards (IAS)/International Financial Reporting Standards (IFRS) as well as the Solvency II risk capital standard, which the EU envisages will come into effect in 2010, are likely to contribute to increasing consolidation pressure, especially on smaller and medium-sized insurers.

... the impact of the IFRS ... In 2005 already, the different methods of valuing insurance assets and liabilities¹ as well as the associated accounting-related volatility in earnings and equity made it difficult to gain a clear picture of internationally operating insurers' business activity. Any further developments with regard to the application of the IFRS will depend especially on the formulation of the rules for measuring liabilities. Detailed proposals are scheduled to be published at the end of the year. In this connection, the International Association of Insurance Supervisors' guidance on the accounting treatment and transparency of financial reinsurance contracts is to be welcomed, especially as the demand for such contracts is likely to rise owing to the IFRS-induced restrictions on creating equalisation reserves. Greater transparency of

reinsurance companies would be desirable in general.

The implementation of Solvency II will also have an impact on insurance business. The aim of Solvency II is to gear future capital requirements more closely to insurers' actual risks. Many insurers are already likely to be facing extensive current and medium-term preparatory measures and challenges, particularly in the area of risk management. Moreover, it is expected that, in future, capital investment portfolios will be restructured in favour of low-volatility fixed-income securities, which could intensify the pressure on insurers' results in the prevailing low interest rate environment.

... and Solvency II ...

In addition, planned legislative changes and political initiatives may have a marked impact on the general framework in which insurance companies operate. The bill on the reform of insurance contracts law which was recently adopted by the Federal Cabinet envisages substantial changes, in particular for life insurers. For instance, pursuant to section 153 of the German Insurance Contracts Act (*Versicherungsvertragsgesetz*), life insurance companies would, in future, be obliged to disclose the hidden reserves in their capital investments and, upon expiry or termination of an insurance contract, to pay out half of

... as well as new statutory provisions are having a marked effect on the insurers' environment

¹ During a transitional period, only insurers' assets are to be measured at fair value using the IFRS, while liabilities are still to be reported according to national rules.

the reserves generated from the policyholder's premiums. Aspects of relevance from a stability viewpoint include the possible follow-on effects on the buffer function of the reserves, on insurers' investment behaviour (by encouraging them to favour less volatile investments) and on customers' termination behaviour, possibly involving greater cancellation risks. Added to this are mounting challenges with regard to the acquisition of new business. The planned obligation to disclose acquisition and administration costs is likely to significantly increase the competition among insurers as well as with other capital market players.

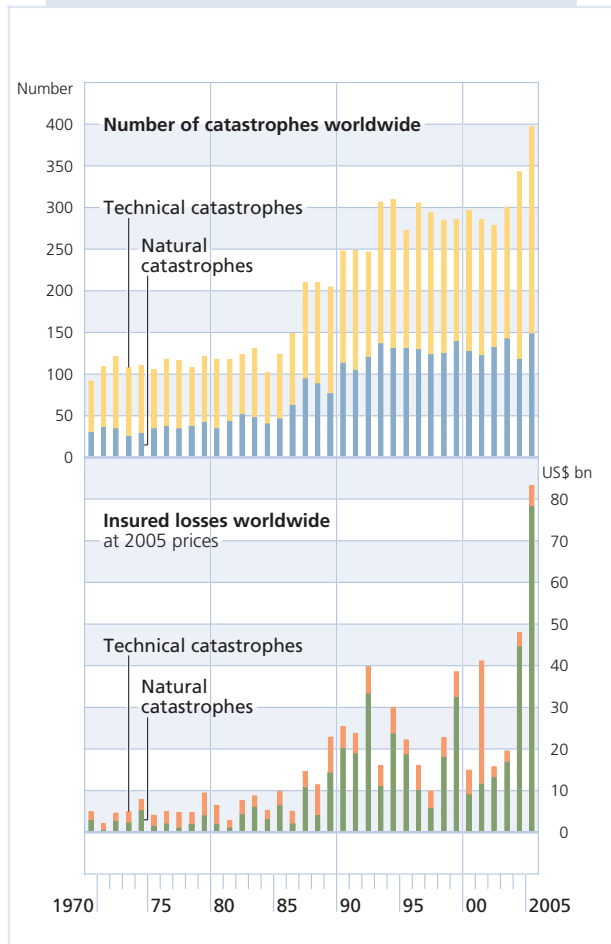
Additional risks, such as a low interest rate environment ...

Besides these political risks, the insurance industry is also facing earnings risks as a result of the current capital market environment. The low interest rate level and the flat yield curve are making it difficult for life insurers to generate – partially guaranteed – returns on policyholders' funds. Although the evident interest rate increase is likely to have eased the situation somewhat, it has also brought with it an erosion of hidden reserves from fixed-income securities.

A not totally inconceivable pandemic could also lead to future burdens for the insurance sector.² The insurance companies are currently examining the possible implications and taking them into greater account in their risk management procedures. Various studies have reached the conclusion that the insurance sector as a whole could cope with a pandemic according to scenarios which seem plausible from a current perspective, although the insolvency of weaker companies could not be ruled out. Life insurers and their reinsurers are likely to be most severely affected.

Chart 1.3.1

LOSS FREQUENCY AND SEVERITY



Source: Swiss Re, sigma No 2/2006.

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Furthermore, the reinsurance sector is facing higher loss risks. A rising trend in the frequency of severe storms has been recorded over the past two decades. In the past two years in particular, there has been a sharp increase in the sum of insured losses resulting from natural

... and a greater number of insured losses ...

² According to the World Health Organisation (WHO), a total of 256 people have been infected with the H5N1 virus since 2003. 152 of these cases have been fatal. The H5N1 virus has been transmitted from human to human in only one known case.

catastrophes (see Chart 1.3.1). This pattern is also likely to continue in the coming years in view of the increasing population density and value concentration as well as property development in high-risk zones. Moreover, owing to the large losses resulting from hurricanes in 2005, there has been a noticeable reduction in reinsurance options on the retrocession markets.³ The reinsurance companies have adjusted by taking measures such as more selective risk underwriting, changing risk models and raising prices, above all in regions and sectors likely to be affected by storms, as well as increasingly securitising risks.

... could also spill over onto banks through cross-shareholding

Over the past few years, banks and insurers have been noticeably deconcentrating their cross-shareholding activities. Nonetheless, considerable interactions still exist: at the end of 2005, credit institutions – predominantly big banks, Landesbanken and the central institutions in the credit cooperative sector – held participating interests in insurance companies with a nominal value of €538 million.⁴ While the big banks have built up mostly subsidiary relationships, the savings bank and credit cooperative sectors also hold participating interests of less than 50%. By contrast, the nominal value of the insurance companies' participating interests in credit institutions is considerably lower, although the holdings are significant in some cases. There are, however, important cross-shareholding ties resulting from insurers' capital investment business. Finally, common distribution channels are playing an increasing role. While bancassurance is still relatively sidelined in the non-life insurance markets, banks write 25% of new life insurance business.⁵ The distribution of insurance has thus developed

into a key pillar of banks' net commission income.

Risk-bearing capacity

Life insurance companies

Despite the radical changes described above, in 2005 the German life insurance companies managed to improve their risk-bearing capacity and their solvency, thus further boosting their financial strength (see Chart 1.3.2).⁶ This is substantiated by the stress tests conducted by the Federal Financial Supervisory Authority (BaFin). In contrast to 2005, when three companies had negative scenario results, this year all of the companies passed the various stress scenarios. The return on equity of the 50 largest life insurers rose from 8.3% in 2004 to 15.4% in 2005. However, it should be borne in mind that the results for 2005 were severely distorted in some cases owing to changes in the tax treatment of life insurance at the turn of 2004-05. For instance, premium growth, at 7.1% (2004: 2.9%), was rather high owing not only to the marked increase in single premium annuities but also to the fact that most

Results distorted by the effects of the Retirement Income Act (Alters-einkünfte-gesetz)

³ Retrocession involves the transfer of a part of an underwritten risk to another reinsurer for a premium. This secondary reinsurance serves the purpose of spreading the risk in economic and geographical terms.

⁴ This is equivalent to 0.3% of the nominal value of all the participating interests held by German banks. However, the figure does not reflect all of the participating interests between banks and insurance companies. Pursuant to section 24 (1) number 3 as well as section 24 (1a) of the German Banking Act (Kreditwesengesetz), credit institutions are obliged to report direct or indirect participating interests held via subsidiaries only if these interests exceed 10% of the capital of or voting rights in the other enterprise. Source: Deutsche Bundesbank.

⁵ See Towers Perrin Tillinghast press release, Ausschlussvertrieb von Lebensversicherungen verliert 2005 deutliche Marktanteile an unabhängige Vermittler, 19 September 2006. The study findings are based on 51 large life insurance companies, which represent around three-quarters of the life insurance market.

⁶ Source: Moody's. The companies' market share amounts to around 93%.

of the new business written at the end of 2004 did not lead to premium payments until the beginning of 2005. The substantial increase in sales of “Riester” private pension plans also contributed to this development: whereas only 295,000 contracts were concluded in 2004, 1.1 million policies were sold in 2005. The share of “Riester” private pension plan contracts in the overall number of new insurance contracts therefore rose from 2.3% in 2004 to 14.4% in 2005. This distinct rise is also continuing in 2006.⁷ A considerable share of this business growth is distributed among a comparatively small number of insurers, however. This is substantiated by the fact that 69 of the 93 insurers surveyed by the *Zeitschrift für Versicherungswesen* journal recorded lower premiums in new business compared with 2003. All in all, however, insurers were able to expand their operational insurance business. Despite rising insurance payments, underwriting expenses fell from 122.3% to 120% as a result of lower operating expenditure. Together with enhanced net investment income, this raised the industry’s adjusted income from 14.5% to 20.2% in 2005.

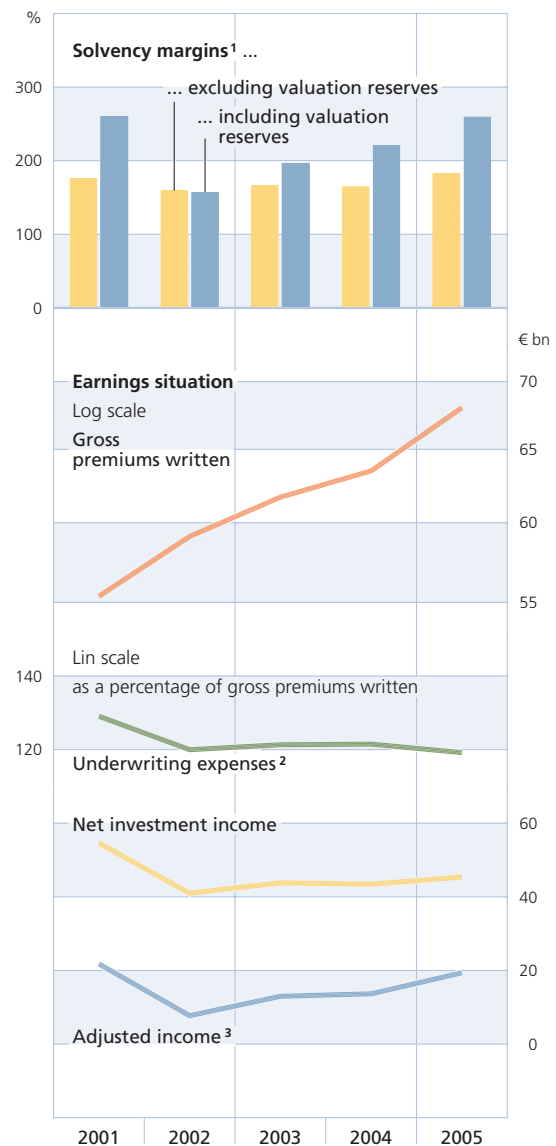
Owing to the altogether favourable developments in the capital market in 2005, the life insurance companies were able to expand their hidden reserves from 5.5% of total capital investments in 2004 to 10% in 2005.⁸

⁷ Demand for “Riester” pension plans is also being stimulated by means of a simplified incentive procedure (permanent supplement application) as well as substantial government assistance. 882,000 contracts were concluded in the first half of 2006, thus increasing the share of “Riester” private pension plan contracts in the overall number of new contracts to 23.2%. See the German Insurance Association (Gesamtverband der deutschen Versicherungswirtschaft or GDV), *Geschäftsentwicklung 2005, Die deutsche Lebensversicherung in Zahlen*, August 2006.

⁸ See BaFin, Annual Report 2005, p 36.

Chart 1.3.2

SOLVENCY AND PROFITABILITY OF THE 50 LARGEST GERMAN LIFE INSURERS

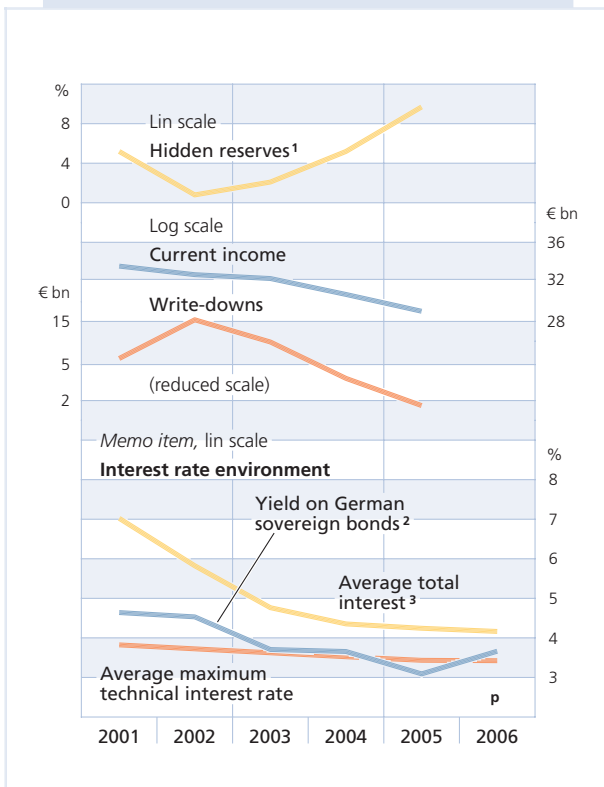


Source: Moody's. — **1** The solvency margin represents the ratio of an insurance company's own funds to certain insurance technical reserves, risk capital and premiums. Margins calculated on the basis of published annual reports. — **2** Insurance payments and operating expenditure. — **3** Profit for the year plus transfer to the reserve for premium refunds.

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Chart 1.3.3

SUB-ITEMS OF GERMAN LIFE INSURERS' CAPITAL INVESTMENT



Sources: Moody's, Assekurata, BaFin, GDV and Bundesbank calculations. — **1** Fair value less the book value in investments valued at cost as a percentage of the book value of all investments. — **2** Public sector bonds. — **3** Sum of the maximum technical interest rate and bonuses.

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However, as the bulk of investments are in fixed-income assets (around 80%), the net rise in capital market rates recorded in the current year has brought about a renewed marked contraction of hidden reserves.

In 2005, the life insurance companies managed to widen the gap somewhat between the overall interest on policyholders' credit balances (4.2%)⁹ and net interest on invest-

ments (2004: 4.9%, 2005: 5.2%).¹⁰ Nevertheless, this gap is still very narrow by historical standards which – against the background of persistently low interest rates – means that some insurers are, in the aggregate, likely to continue to experience problems in generating bonuses (see Chart 1.3.3). Moreover, the options for reducing the burdens from the guaranteed high interest rates under outstanding policies appear to be limited and unable to be put into effect in the short term, which means that the average guaranteed interest rate in the life insurers' portfolio fell only marginally from 3.51% to 3.50%¹¹ in 2005. The further official lowering of the maximum technical interest rate from its current level of 2.75% to 2.25% in 2007 will also affect only new business.

Low interest rates are impeding the generation of bonuses despite favourable capital market developments and ...

The increased marketing of unit-linked products, which transfer the capital investment risk to the customer, can also offer only limited relief: their share of the periodic premiums of the main insurance contracts in force stands at 13.5% (2004: 12.6%).¹² Furthermore, in view of the great importance of interest-bearing capital investments, the current income from life insurers' investments is also expected to diminish in the shorter to medium term. Older, higher interest-

... are continuing to place a strain on earnings

⁹ See Assekurata, Die Überschussbeteiligung in der Lebensversicherung 2006, February 2006.

¹⁰ See GDV, loc cit. The increase in net interest on investments is likely to be partly attributable to one-off effects from value adjustments.

¹¹ Just under 30% of the commitments entered into by the 58 companies surveyed by Assekurata vis-à-vis their insurance customers have a guaranteed technical interest rate of 4%. See Assekurata, loc cit.

¹² In 2005, unit-linked products accounted for 17% of net new business (2004: 20.6%). Although the number of unit-linked policies sold was down by almost 49% on the 2004 figure, it was nevertheless 11.5% higher than the number sold in 2003. Unit-linked annuities have become considerably more important. See GDV, loc cit.

bearing securities will mature and will have to be replaced on current low interest rate terms. In order to counter this development, financial derivatives are increasingly being used to hedge reinvestment risk. Insurers must take the risks associated with these instruments into account in their risk management strategies.

Increase in longevity risk

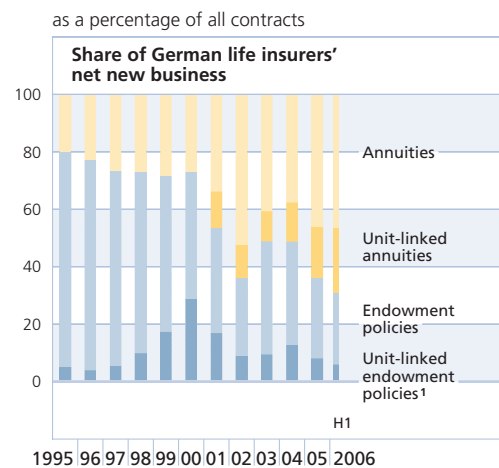
Generally, annuity contracts and consequently longevity risk are becoming ever more important (see Chart 1.3.4). As a result, the average duration of the contracts will become longer. In order to counter the increasing maturity differences between assets and liabilities, life insurers have lengthened the duration of their capital investments from a former average of five years to six years.¹³

Slight increase in the capital investment risk

At the same time, life insurers have slightly stepped up their risk propensity in their investment activities. Equity exposure rose from just over 10% in 2004 to somewhat more than 12% in 2005. The share of equity investments outside the EEA increased from 2% to more than 3%. Opposing tendencies are discernible in the bond portfolio. While the share of corporate bonds and debt securities issued by credit institutions in all listed debt securities declined from a total of just under 55% to 51.5%, the share of public bonds rose from just under 45% to 48% (see Chart 1.3.5). Investments in debt securities with a speculative grade rating or without a rating were somewhat intensified but, in accounting for a share of less than 1.5%, remain insignificant. The demand for alternative investment vehicles remains weak.¹⁴

Chart 1.3.4

ENDOWMENT POLICIES VERSUS ANNUITIES



Source: GDV. — ¹ Including unit-linked annuities up to and including in 2000.

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Non-life insurance companies

Moderate premium growth enabled the non-life insurance companies to achieve good underwriting results in 2005, too, despite a rise in the combined ratio from 93.2% to 95.6%¹⁵ (see Chart 1.3.6). Persistently intense price competition, above all in the areas of motor insurance and industrial property insurance, is likely to have a detrimental effect in the future, however.¹⁶ For instance, the premium

Increasing price competition among non-life insurance companies

¹³ Source: GDV.

¹⁴ The data on capital investments were provided by BaFin.

¹⁵ The loss ratio increased from 67.6% to 69.67% while the expense ratio tended to stagnate at 25.88%. Source: Moody's. The figures refer to the 50 largest German non-life insurers. The companies' market share amounts to around 77%.

¹⁶ Motor insurance is the industry's most important line of business. Motor insurance and industrial property insurance together account for just under 50% of non-life insurers' total business.

Chart 1.3.5

COMPOSITION OF THE LISTED DEBT SECURITIES HELD BY GERMAN LIFE INSURERS*

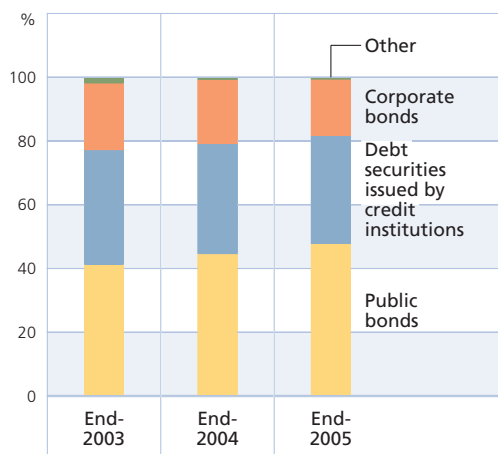
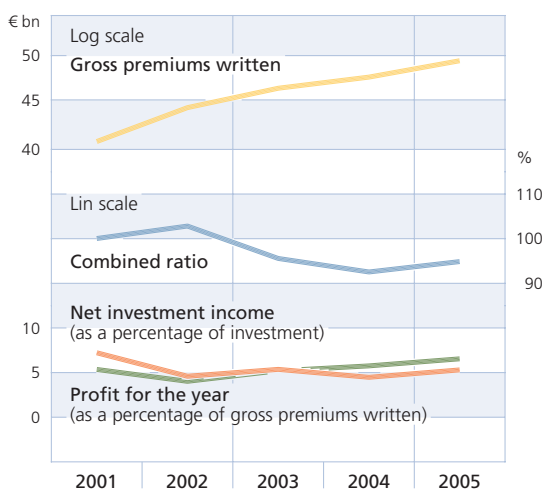


Chart 1.3.6

EARNINGS SITUATION OF THE 50 LARGEST GERMAN NON-LIFE INSURERS**



* Source: BaFin. — ** Source: Moody's.

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decline in the motor insurance sector still seems to be picking up speed.¹⁷ In expectation of a rise in the loss ratio, the combined ratio is likely to reach 100% for this insurance sector, a threshold at which the original insurance transaction is no longer profitable. However, despite the increase, the combined ratio for the industry as a whole should remain at a comfortable level in 2006, too, especially as insurers also generate investment income. Owing to the developments described, a premium decline of around 1.5% is expected for 2006.

If the loss burden increases, additional risks could also arise from the non-life insurers' larger retention¹⁸ in future. The share of risk retained in the insurers' books has risen continuously since 2003 from just over 74% to just under 78% in 2005.¹⁹ At present, however, BaFin's stress tests verify that almost all non-life insurers have an adequate risk-bearing capacity.²⁰

Reinsurance companies

Owing to the enormous damage claims in 2005, the combined ratios of the largest internationally operating German reinsurers rose significantly to more than 100%. However, these underwriting losses were absorbed through special earnings and improved net investment income; the overall financial situation

High losses withstood quite well

¹⁷ From -2.3% in 2005 to around -4.4% in 2006. See GDV, Schaden- und Unfallversicherung 2006, 22 June 2006.

¹⁸ The retention is the risk which non-life insurers do not transfer to reinsurers.

¹⁹ Source: Moody's.

²⁰ In 2005, only 3.2% of the 188 non-life insurers had negative results in all scenarios. See BaFin, Annual Report 2005. There are unlikely to have been any major changes in the current year.

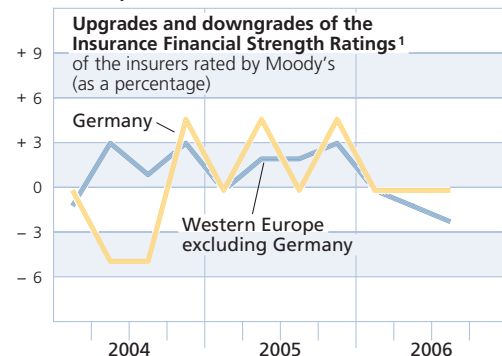
can therefore still be considered to be stable. Smaller reinsurance companies which operate within the group structure of international reinsurers and underwrite risks for their group parent companies by way of retrocession were also noticeably hit by the hurricanes in 2005. At the same time, the loss intensity in Germany and Europe as a whole increased again following a low loss volume in 2004.²¹ More selective risk underwriting and higher retentions by primary insurers resulted in only moderate premium growth in 2005 and the first half of 2006. While the area of life reinsurance continued to profit from the trend towards private pension plans, non-life reinsurance posted only muted premium increases or, in the case of smaller insurers, more negative movements. Furthermore, the increasing pressure on the premiums for motor insurance and industrial property insurance are spilling over onto the corresponding reinsurance sectors.

The stability of the sector will depend on how the revised risk models and negotiated price increases can capture or sufficiently cover future risks from catastrophe losses. Another important aspect will be the extent to which the price level can be retained even in the event of a lower loss volume. The renewal season in 2005 did not lead to the widely expected general hardening of the reinsurance markets outside the areas directly affected by major catastrophes; stable and, in some cases, declining premium income was also observed. In view of the capital requirements under Solvency II and increasing global risks from natural hazards, however, primary insurers' demand for insurance cover can be expected to continue to rise.

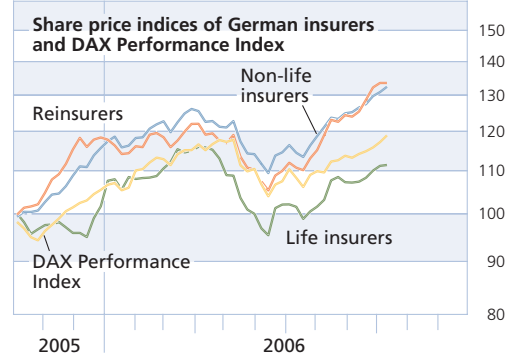
Chart 1.3.7

MARKET INDICATORS FOR GERMAN INSURANCE COMPANIES

Quarterly



Beginning of Oct 2005 = 100, weekly averages, log scale



Sources: Moody's, Thomson Financial Datastream and Bundesbank calculations. — ¹ A positive percentage stands for net upgrades while a negative percentage stands for net downgrades.

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Market indicators

The rating agencies deemed the financial strength of the rated insurers to be stable in 2005 and the first half of 2006 (see Chart 1.3.7). The prospects for the life insurance sector – in the light of the persistently high

Improved financial strength reflected in market assessments

²¹ The following information is based on data published by ten (annual figures) and four (semi-annual figures) of the largest German reinsurers.

pressure on earnings and various strategic challenges – range from “stable” to “negative”. The German non-life insurance market and reinsurance market are likely to continue their stable development.

The share price indices of the three major insurance sectors again showed positive growth – with the exception of the general price decline in the second quarter of 2006. However,

the market participants appear to be more sceptical in their evaluations of life insurers than of the other insurance sectors in the second half of 2006 as only life insurers have not yet managed to return to their first-quarter level. The investors’ reluctance could be attributable to the fact that the life insurance companies’ earnings situation could possibly be further negatively influenced by legislative measures.

Contribution to stability by the regulatory and financial infrastructure

Payment systems

Efficient, safe and highly available systems are necessary to ensure the smooth transfer of claims, settlement of liabilities and monetary settlement of transfers and shifts in financial assets within a financial system. Design errors or problems affecting the operation of payment systems harbour the risk of distortions for the financial markets or the participants and, in the worst-case scenario, endanger the stability of the financial system.

During the reporting period, nothing occurred to threaten the stability of individual payment systems. The foreign exchange settlement system CLS again increased its market share and the importance of the SWIFT communication infrastructure continued to grow steadily. The planned Payment Services Directive could result in changes to the risk situation for the European payments market in the future.

Operation of in-house systems

Operational stability increases

The operational stability of RTGS^{plus} and TARGET increased on balance during the period under review. This development is particularly positive given the upward trend recorded over the course of the year in the average daily

volume of payments settled via these systems (see chart 1.4.1).

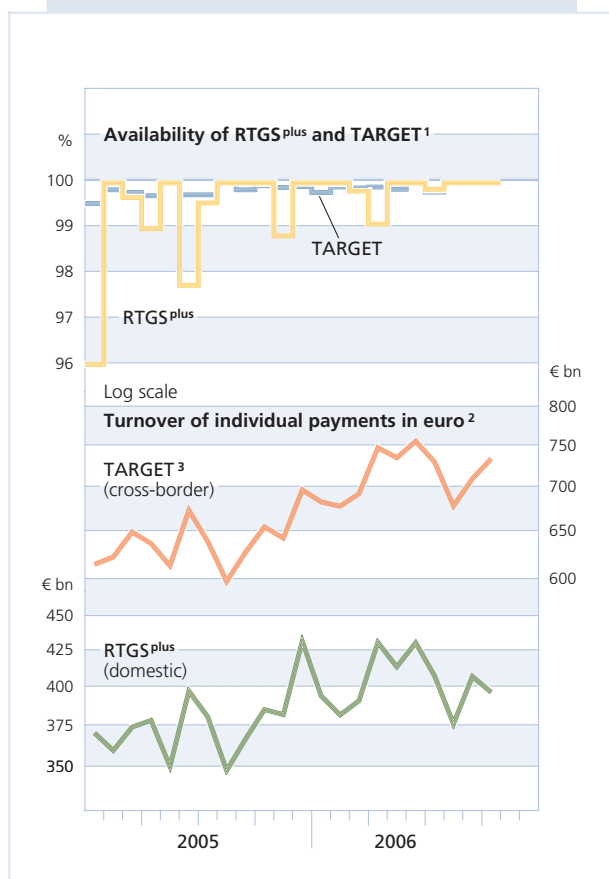
In particular, the RTGS^{plus} core application was extremely stable during the reporting period. It was the ancillary applications which experienced some problems affecting availability, primarily in connection with the transfer of payment messages. The ensuing disruption to the information flow in turn affected the processing of payments in RTGS^{plus} although it did not endanger the same-day settlement of submitted payments.

The Customer Access Mechanism (CAM), which was launched in December 2005, replaced the Euro Link System (ELS) and the cross-border payments system (AZV) and now acts as the standard point of access to individual payments for non-banks and, for a transitional period, also for credit institutions wishing to participate indirectly in RTGS^{plus} or TARGET. Moreover, CAM is used to settle incoming and outgoing euro and foreign currency payments in connection with the Bundesbank's correspondent banking activities. The teething problems experienced in the first few weeks after the launch were very limited and did not cause any friction in the individual payment systems. The application has since been functioning stably.

Successful introduction of the customer access mechanism

Chart 1.4.1

INDIVIDUAL PAYMENTS IN EURO



¹ Proportion of undisrupted operating hours in the entire operating period. — ² Working-day average. — ³ Including cross-border payments in RTGSplus.

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SWIFT

Global communications standard in individual payments

The communication services provided by the Society for Worldwide Interbank Financial Telecommunication (SWIFT) are increasingly becoming the accepted standard. They are now used for the exchange of payment messages by more than 7,900 banks, investment firms and other participants, such as providers of market infrastructures, in over 200 countries.

In 2005, the German banking industry was the third largest user worldwide. A fully functioning communication network is an essential requirement for the smooth functioning of the financial market infrastructure, therefore special attention must be paid to SWIFT with regard to the stability of the German financial system. It is positive that during the period under review SWIFT was able to demonstrate a very high degree of technical stability. For example, the availability of the most commonly used message format, SWIFTNet FIN, has been at 99.995% since the start of the year (last measured on 23 October 2006).¹

Continuous Linked Settlement (CLS)

CLS, the payment-versus-payment foreign exchange settlement system which has been in operation since 2002, last year managed to increase its share in the settlement of foreign exchange transactions from approximately 30% to 43%. The average daily settlement volume is equivalent to more than US\$2 billion. After the US dollar, the euro is the currency in which most transactions are settled in CLS. Since CLS commenced operations, the number of institutions around the world using the systems directly and indirectly has risen to more than 800. As the settlement risk is eliminated when transactions are settled via CLS, this is a welcome development, contributing significantly to the reduction of settlement risks in foreign exchange transactions as a whole.

Further reduction of the settlement risk in foreign exchange transactions

CLS's significance for the German financial system is demonstrated for one thing by

¹ Source: www.swift.com

Increasing interdependencies between CLS and TARGET ...

the fact that it is now the most important settlement system for the euro outside the Eurosystem – CLS Bank is domiciled in New York. However, this also means that the interdependencies between CLS and the European system TARGET have increased. For example, 15 direct RTGS^{plus} participants currently act as settlement banks and/or nostro agents and process their euro liquidity inflows and outflows via RTGS^{plus}. In order to avoid liquidity shortages in CLS, care is taken to ensure that these payments are settled as a high priority.

... but only very limited liquidity needs

There is nothing to indicate that the liquidity needs in the major settlement systems connected to TARGET, such as CLS, could lead to conflicting struggles for liquidity. In 2006, the average share of CLS pay-ins in all inpayments to RTGS^{plus} was well below 1%.

New legal framework for payment services

On 1 December 2005, the European Commission presented its proposal for a European Parliament and Council Directive on payment services in the internal market. The aim is to create a common legal basis for the planned Single Euro Payments Area (SEPA). The Commission's proposal is currently in the process of adoption by the European Parliament and the Council.

New risk situation as a result of planned participation of payment institutions

It may be assumed that the Directive will lead to changes in the risk situation in the payments market. In the future, only authorised service providers will be able to offer payment services. The intention is to create a

new type of payment service provider known as a "payment institution". Thus, on the one hand, under the Directive activities which have previously not required a permit will be subject to certain banking supervisory standards, thereby improving the risk situation for retail payments. For example, in future a licence will be required for the provision of payment services via mobile telephones. On the other hand, payment institutions will be able to offer almost all payment services – both for individual and retail payments. Thus, they will be competing with credit institutions without being subject to the same strict supervisory standards even though the risk is essentially the same. The discussions indicate that far lesser requirements concerning minimum initial capital will be made of payment institutions compared with traditional banks. Moreover, there is a general lack of solvency supervision requirements for payment institutions to limit (liquidity) risks in connection with the performance of payment services.

Furthermore, pursuant to the Commission's proposal, payment institutions will be able to act as participants in payment systems. Consequently, sufficiently large payment institutions could create systemic risks for the operation of a payment system. In view of this, the planned provision to allow payment institutions "non-discriminatory" access to payment systems is to be criticised. Thus, bearing in mind the systemic risks and the comparably less strict supervisory standards for payment institutions, the proposed exemption to this rule for systems within the meaning of the Settlement Finality Directive would seem appropriate; in Germany this

would include payment systems operated by the Bundesbank.

Financial market regulation

Regulatory framework requirements constitute rules for market players and, as such, have a considerable impact on the efficiency and stability of financial markets. The primary objective of financial market regulation is to mitigate systemic risks in markets. Effective financial market regulation promotes market integrity and enhances the stability of the financial system.

Financial services policy 2005 - 2010

At the European level, in December 2005 the European Commission presented its future policy and the priorities for further financial market integration in the "White Paper on Financial Services Policy 2005-2010".² The objectives for the coming years include the consistent application of the better regulation principles and enhanced supervisory cooperation and convergence.

Better regulation

In its endeavour to achieve better regulation, when preparing new legislative projects the Commission will perform detailed impact studies on costs and benefits and on possible consequences for financial stability, the functional viability of the markets and consumer protection.

MiFID

A key driving force behind European financial market integration is the Markets in Financial Instruments Directive (MiFID), which is to be transposed into national law³ by 31 January 2007 and in force by November 2007. With the MiFID, the new "rule book" for securities business, the Commission is pursuing the

ambitious aim of a fundamental reform and harmonisation of the single market for financial services in the EU. It also aims to improve investor protection and promote competition in the financial services sector, which is to be welcomed from a stability perspective. The implementation of the MiFID makes considerable demands on the financial sector as the rules have a far-reaching impact on the way in which business is conducted, on the internal organisation of operations and on the reporting system. There are also extensive requirements in terms of trade transparency. In future, financial services are to be provided in the best interests of the client in line with the "best execution" principle. Furthermore, financial service providers governed by the MiFID will be obliged to make effective organisational arrangements, in particular for risk management, internal audit and compliance. Moreover, they will also have to disclose their transactions to the competent supervisory authority for the purpose of market monitoring and to safeguard market integrity. Finally, a key element of the MiFID are the new detailed provisions on pre and post-trade transparency for securities trading platforms. In future, not only stock exchanges but also multilateral trading facilities (MTFs) and systematic internalisers will be subject to extensive disclosure rules for share trading. Here, the Commission is responding to the increasing importance of off-exchange securities trading and the ensuing fragmentation of securities markets. The aim is to establish a regulatory level playing field for trading systems to promote integration and efficiency in Europe's securities markets.

² COM (2005) 629.

³ See the draft Act Implementing the Financial Market Directive (Finanzmarkt-Richtlinie-Umsetzungsgesetz).

REITs in Germany Real Estate Investment Trusts (REITs) have developed into the international standard for real estate companies which are traded on the stock exchange. Like real estate funds, REITs offer the opportunity of indirect real estate investment but, thanks to their construction, they cannot run into the type of liquidity difficulties experienced by some open-end real estate funds in December 2005 and the following months. It is planned to introduce REITs in Germany in 2007. However, the legislative process is still underway. REITs would enrich the German capital market and could also benefit the real estate market. A functioning REIT segment would strengthen the market mechanism in the real estate sector, leading to allocative efficiency gains in the capital and real estate market. There is, nevertheless, a possibility that exogenous shocks via exchange-traded REITs could have a stronger impact on the real estate market and on property prices. However, given that the future REIT segment is likely to be of limited weight in the overall real estate market an increased susceptibility to crises in this sector is not expected.

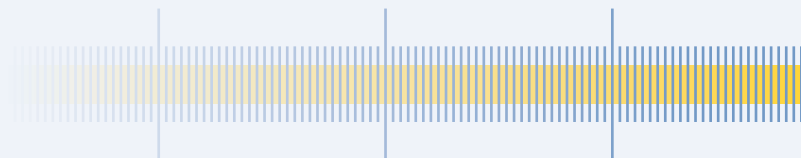
Open-end real estate funds should also benefit from the introduction of REITs as it is planned that purchased REIT shares be attributed to real property assets. This should increase the liquidity of open-end real estate funds' assets, reducing the risk of liquidity crises.

After a number of open-end real estate funds were obliged to forego the redemption of share certificates (see Box 1.6 on page 69), in January 2006 the Federal Association of German Investment and Asset Management Companies (*Bundesverband Investment und Asset Management e.V.* also *BVI*) presented a package of measures designed to win back investors' confidence in this investment category. On 13 April 2006, the members of the BVI signed a voluntary commitment, agreeing to increase the transparency of open-end real estate funds and to provide details about investment structure and borrowing, among other things. Furthermore, a new 12-month notice period for shares valued at €1 million or more (purchased after the new regulation took effect) is intended to reduce the risk of short-term illiquidity for open-end real estate funds when large investors withdraw funds, and to improve liquidity management. However, several investment companies have rejected the idea of holding periods on the grounds of alleged difficulties in monitoring them.

The measures to increase transparency should help to boost investors' confidence and strengthen the stability of open-end real estate funds. If, however, the envisaged self-regulation has only limited effect (as in the case of liquidity management), additional legislation may be necessary.

Reform proposals for open-end real estate funds

Articles



Banking consolidation in Germany – determinants and implications

| A notable process of mergers and acquisitions (M&A) has taken place in the German banking sector – essentially within rather than across the three pillars of the banking system. As a consequence, the number of credit institutions has more than halved during the past 15 years. Cross-institutional (and, in some cases, cross-pillar) cooperation and the additional consolidation effect produced by outsourcing have also been significant factors. Even so, the German banking market remains fragmented and has the lowest level of concentration in Europe.

From a financial stability perspective, the consolidation effect associated with mergers and acquisitions is to be seen in positive terms if more efficient and better diversified institutions are created. However, greater risks may also arise if takeovers lead to financial institutions venturing into new areas of business. Nevertheless, this aspect has been of very little significance so far in Germany since mergers and acquisitions have mainly taken place between neighbouring savings banks or credit cooperatives with a similar business structure. The available empirical studies for Germany show little evidence of a sustained improvement in efficiency in the case of the merged savings banks and credit cooperatives.

The stability implications of outsourcing business activities have hardly been studied so far, however. Supposed gains in (microeconomic) efficiency contrast with a possible increase in

systemic risks owing to a concentration on a small number of service providers.

Taking into account the academic debate, this article highlights the above-mentioned aspects of consolidation, focusing on mergers and acquisitions. Furthermore, other possible implications are discussed, such as a tightening of the credit supply with corresponding repercussions for the financial system, a deterioration in credit conditions, and a decline in the intensity of competition, which has an ambivalent impact in terms of financial stability. |

Forms of consolidation

Consolidation in general

In general, consolidation may be defined as the merging of business processes and business areas. With regard to the degree or depth of consolidation, the following order of consolidation options can be defined.

- consolidation by merger or acquisition
- consolidation by outsourcing and insourcing
- consolidation by cooperation between credit institutions
- consolidation by rationalisation within a single institution.

Outsourcing makes fixed costs “variable”...

Notable consolidation effects have emerged recently, in particular, through instances of cooperation between banks as well as through outsourcing activities. These consolidation options offer institutions the opportunity to reduce their fixed costs without having to surrender their legal autonomy. In the case of outsourcing, an institution delegates key functions to a service provider. This means that fixed costs are made “variable” – the bank pays only for the services which are actually used.¹ Nevertheless, outsourcing only makes sound business sense if significant economies of scale are to be expected. Otherwise, any positive effect will, in many cases, be outweighed by the not inconsiderable drawbacks which result from the outsourcing institution’s loss of control.

... but does not absolve the bank from its responsibility

Given the increasing standardisation of banking business, outsourcing is likely to become increasingly important in the future. From a

purely prudential angle, the outsourcing of business activities is to be assessed as neutral provided due account is taken of the relevant regulations.² In particular, the managers’ ability to manage and monitor business and services and the banking supervisors’ right to audit and monitor them must not be impaired as a result of outsourcing. The outsourcing institution’s right to issue instructions to the service provider is to be safeguarded contractually and the outsourced areas are to be included in the outsourcing institution’s internal monitoring procedures. Nevertheless, systemic stability may be affected by outsourcing if a significant part of the banking activities is concentrated on a small number of service providers. Given this situation, future developments in outsourcing need to be monitored more closely.

More particularly, consolidation is understood as the amalgamation of enterprises in the form of mergers and acquisitions. This article will therefore essentially focus on this type of consolidation.

Overview of mergers and acquisitions in Germany

Mergers and acquisitions are taking place in the German banking sector on a considerable scale. At the end of 2005, there were 2,089 credit institutions in Germany, of which 209 were privately owned commercial banks, 475

Sharp decline in number of institutions ...

¹ The significance of outsourcing for German credit institutions was studied in 2004 in a survey by E-Finance Lab. See Efinance Lab (2005), Kreditprozess-Management – Status Quo und Zukunft des Kreditprozesses bei Deutschlands 500 größten Kreditinstituten

² For the legal principles, see German Banking Act, section 25a (1) and (2), Securities Trading Act, section 33 (2), Reports Regulation, section 20 sentence 3 No 1, Circular 11/2001 of the Federal Financial Supervisory Authority (BaFin).

were public sector banks (savings banks and Landesbanken), and 1,295 were in the mutually owned cooperative sector. This means that the number of credit institutions in Germany has more than halved since 1990. The pace of consolidation is also noteworthy when compared with other European countries. Thus whereas the total number of credit institutions in the Eurosystem fell by almost one-third between 1995 and 2004, the number of credit institutions in Germany declined by more than 43% during the same period. Even so, measured in terms of the number of banks and bank offices³ *per capita* of the population, Germany is still at the top of the European league table.

... especially in the cooperative bank sector

The process of consolidation has taken differing courses in the three pillars of the German banking system. The number of cooperative institutions has fallen by nearly 62% in the past 15 years, while the number of public sector institutions has gone down by more than 39%. There have been some mergers among central institutions in both the cooperative and public sector – there are now two regional institutions of credit cooperatives and nine autonomous Landesbank groups. The number of commercial banks has fallen by almost 20% since 1990. In this sector, there have also been some takeovers by foreign banks.⁴ This is a reflection, not least, of the liberal legal framework in Germany.⁵

Mostly smaller and medium-sized institutions as acquisition targets

In the past, the acquisition targets have mostly been smaller and medium-sized institutions. As a rule, the acquiring institutions have been noticeably larger with the average size ratio being 3:1. However, medium-sized institutions have also formed a large share of the acquir-

Table 2.1

BANK CONCENTRATION IN THE EURO AREA

Country	Number of credit institutions		HHI ¹	CR5 ²
	1994	2005	in % 2005	in % 2005
Germany	3,785	2,089	1.74	21.6
France	1,469	854	7.58	53.5
Austria	1,041	818	5.60	45.0
Italy	970	792	2.30	26.7
Netherlands	648	401	17.96	84.8
Spain	506	348	4.87	42.0
Finland	381	363	27.30	83.1
Portugal	233	186	11.54	68.8
Luxembourg	220	155	7.95	53.2
Belgium	145	100	21.08	85.2
Ireland	56	78	5.00	45.0
Greece	53	62	10.96	65.6
Euro area	9,507	6,246	6.37	42.9

Source: ECB, EU Banking Structures, October 2006, and Monthly Bulletin 05/2005. — **1** Hirschman-Herfindahl index: sum of the squares of the market shares, measured by the balance sheet total. — **2** Market share of the five largest institutions, measured by the balance sheet total.

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ing institutions. This is hardly surprising in view of the fact that consolidation has taken place solely within each of the three respective pillars of the German banking system and given the high percentage of takeovers in the cooperative sector. Despite the rapid pace of consolidation among the credit cooperatives, there are still considerable differences in the comparative size of the institutions. While the primary credit cooperatives show an average

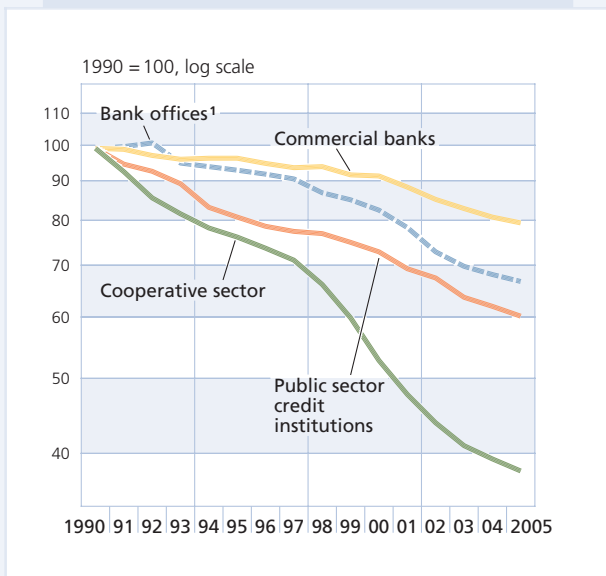
3 Legally autonomous credit institutions (main offices) and their branches.

4 Examples are the takeovers of HVB by UniCredit, of Diba by the ING Group, of BfG by the SEB Financial Group, and of the private bank Trinkaus & Burkhardt by HSBC.

5 So far, there has not been a single case where the German banking supervisory authorities (Federal Financial Supervisory Authority and Bundesbank) have prohibited a cross-border takeover. They decide on such cases solely in accordance with the regulatory framework set out in the German Banking Act and based on Article 16 of the EU Banking Directive.

Chart 2.1.1

NUMBER OF BANKS AND BANK OFFICES



¹ Total, excluding Postbank; prior to 1992, estimated.

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balance sheet total of around €446 million, savings banks achieve, on average, a balance sheet total of €2,089 million. The category of commercial banks – excluding the big banks – shows an average balance sheet total of €3,586 million. The big banks’ average balance sheet total amounts to €522 billion.

Increased concentration in Germany put into perspective by very low starting level

Overall, consolidation has noticeably increased the degree of concentration in the German banking sector, too, over the past few years, albeit starting from a very low level. Accordingly, international comparisons based on the Hirschman Herfindahl index or the cumulative market share of the five biggest banks shows that there is still a relatively low concentration in Germany. However, the information value of these measures of concentration is ques-

tionable given the peculiarities of the German banking landscape, since savings banks and credit cooperatives are counted as independent institutions, although they are *de facto* not in direct competition with each other.⁶

Cooperation as an alternative

At the same time, it should be borne in mind, however, that a part of the consolidation activity in the German banking industry takes a form other than mergers and acquisitions. Beyond the network structures, within which various different forms of consolidation already exist (such as joint computer centres), forms of cooperation – and thus consolidation – have emerged, especially in back-office functions, such as securities settlement and payments, which extend to the outsourcing of major business areas.

Determinants of consolidation

One of the most important motives for mergers and acquisitions is to achieve economies of scale and of scope. Ongoing technological change and, above all, the huge advances in IT performance have transformed banking in recent years. In this process, the opportunities for product innovation and managing bank operations have been expanded on a scale that would have seemed scarcely possible only a few years ago. Likewise, regulatory changes, such as the revision of capital requirements and accounting standards, have caused institutions to incur sizeable investment costs. In this respect, mergers and acquisitions can, in principle, help to lower unit costs and raise

Lowering unit costs, reduction of existing overcapacity in the branch network

⁶ On the problems associated with measures of concentration, see Deutsche Bundesbank, Financial Stability Review 2005.

earnings potential. This is especially true of areas where existing overcapacity has to be reduced.

The importance of economies of scale is indicated, for example, by a survey undertaken by the Group of Ten.⁷ This identifies economies of scale mainly in the cost-intensive areas of research, risk management and investment banking as well as in legal services and the back-office functions. This, however, has to be set against the (temporary) integration costs, such as restructuring cost and costs of blending different corporate cultures associated with mergers.

Greater potential
for achieving
economies of
scale

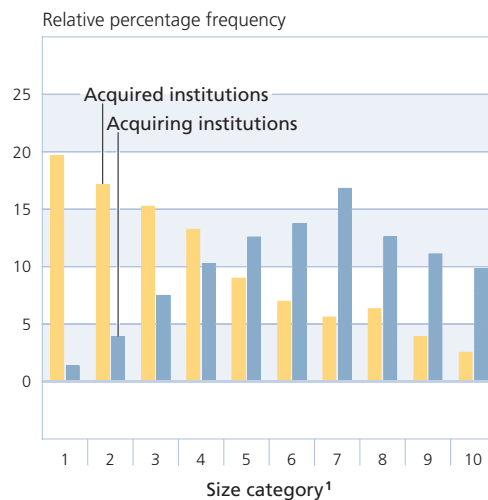
With regard to the existence of economies of scale, academic studies arrive on the whole at very different conclusions. While older studies find economies of scale, albeit ones which tend to be moderate overall, mainly in the case of smaller institutions, a number of more recent studies find that even big banks could lower their costs by up to 20%. All in all, it is possible to draw the cautious conclusion that the potential for achieving economies of scale is likely to have increased. Especially for Germany, various studies note, at most, minor size deficits.⁸

Diversification
motive

The possibility of better diversifying return and risk when combining business operations also plays a certain part in deciding on a merger or acquisition.⁹ With regard to the specifically German situation, this motive has been relatively unimportant up to now, however, since mergers and acquisitions among savings banks and credit cooperatives have taken place only between neighbouring institutions owing to the regional principle that applies *de*

Chart 2.1.2

SIZE DISPERSION OF BANKS INVOLVED IN ACQUISITIONS



¹ Measured as the decile of the balance sheet totals of all banks.

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jure (or, at least, *de facto*) to both categories of institutions. These institutions can diversify their risk more readily by means of risk transfer mechanisms within their own national networks than via mergers.

Improving the market position may be a further motive for consolidation in the banking *Improved market position*

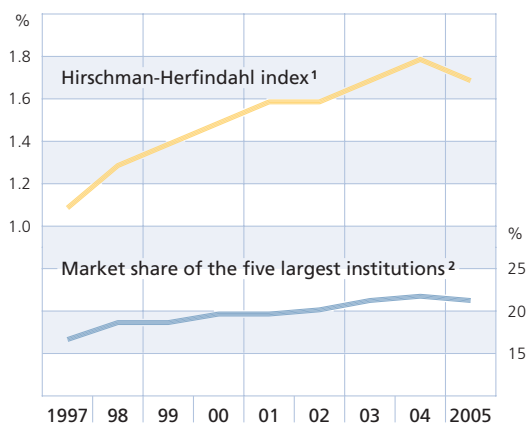
⁷ Group of Ten, Report on Consolidation in the Financial Sector; Bank for International Settlements, January 2001.

⁸ See inter alia L Allen and A Rai (1996), Operational Efficiency in Banking: An International Comparison, *Journal of Banking and Finance*, 20(4), 655-672; Y Altunbas, E P M Gardener, P Molyneux and B Moore (2001), Efficiency in European banking, *European Economic Review* 45, 1931-1955; V Venet (2002), Cost and Profit Efficiency of Financial Conglomerates and Universal Banks in Europe, *Journal of Money, Credit, and Banking* 34(1), 254-282; European Commission (1997), *The Single Market Review*, Subseries II, Vol 3.

⁹ See PH McAllister and DA McManus (1993), Resolving the scale efficiency puzzle in banking, *Journal of Banking and Finance* 17, 389-405.

Chart 2.1.3

CONCENTRATION OF THE GERMAN BANKING MARKET



¹ Sum of the squares of the market shares, measured by the balance sheet total. — ² Measured by the balance sheet total.

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sector. This applies particularly to larger institutions. However, improving their market position may also be an important motive for banks which operate at the regional level. If a bank achieves a significant position in a given market segment, it can – this is the traditional view – obtain more favourable business terms and conditions for itself. The strength of the size effect is likely to depend, not least, on the contestability of the market in question, ie on how high the actual barriers to entry are for potential competitors. Even if the number of direct competitors is rather small, a dominant institution may thus be forced to undertake competitive pricing. How strongly competition and market prices are shaped by the market structure is therefore ultimately an empirical question.

A number of studies confirm the view that the market structure influences banks' income. A connection of this kind in relation to lending rates has also been established for comparatively concentrated regional sub-markets in Germany, although the proven effects on interest rates and the banks' income tend to be small.¹⁰

Market structure influences competitive conduct

Mergers and acquisitions may also be undertaken with the objective of employing the means of production more efficiently with an otherwise unchanged level of output. In the economic literature, this form of efficiency is termed 'cost-efficiency' (or 'x-efficiency'). A low level of cost-efficiency points to shortcomings in the bank's management, which may be eliminated by a takeover. On the other hand, existing inefficiencies may also be the result of exogenous market factors, say, in the form of statutory and regulatory requirements which restrict the institution in its business activity. In this case, a merger would scarcely help to safeguard long-term profitability.

Cost-lowering potential through improved cost-efficiency

It does, in fact, prove to be the case that banks display considerable deficiencies in terms of their cost-effectiveness. An analysis undertaken by the European Commission¹¹ reveals inefficiencies for European banks averaging between 20% and 25% of costs. German banks occupy a mid-table position in this respect. The values for the German banking market are, in principle, confirmed by

X-inefficiency significant cost factor

¹⁰ K H Fischer and H S Hempell (2005), Oligopoly and Conduct in Banking – An Empirical Analysis, mimeo.

¹¹ European Commission (1997), The Single Market Review, Subseries II, Vol 3.

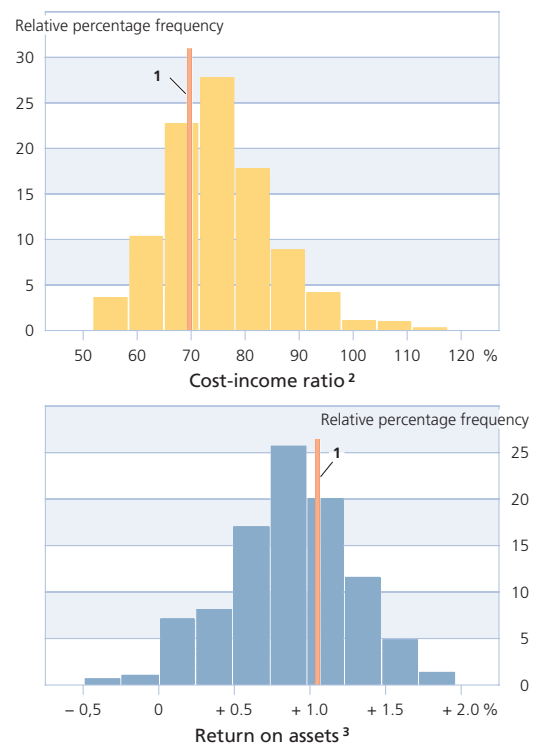
other studies.¹² A study by the Bundesbank's Research Centre shows average inefficiencies of between 10% and 25% depending on the category of institution.¹³ In the study, the Stochastic Frontier Analysis (SFA) method was used to estimate a common microeconomic cost function for the banks, which determines a bank's optimal costs with a given output and given factor prices.¹⁴ Inefficiencies are thus measured as the deviation from this (theoretical) benchmark. As is usual in efficiency studies, customer loans, interbank loans and securities were chosen as output variables and fixed assets, staff, deposits and capital were used as input variables. Comparing different categories of institutions is therefore not without its problems since the output factors may not fully capture the banks' differing business orientations. The study also shows that the scale of the measured inefficiencies depends heavily on the model specification, especially on the chosen factor prices. Since considerable cost deficits were demonstrated in most of the specifications, however, it may be reasonably concluded that German banks, too, show significant x-inefficiencies.

Relative efficiency hypothesis

Various studies in the 1990s show that the cost-efficiency of acquiring banks is, on average, above the efficiency level of acquired banks. This is an indication of the validity of the "relative efficiency hypothesis", which states that one key objective of acquisitions is to boost income by eliminating shortcomings in management. To a certain extent, the validity of the relative efficiency hypothesis can also be confirmed for the German banking sector. It is true that, when employing analyses using the SFA method, the differences in efficiency between acquiring and acquired institutions

Chart 2.1.4

DISPERSION OF ACQUIRED BANKS' COST-INCOME RATIO AND RETURN ON ASSETS



1 Median value of the reference group of non-merged banks. — **2** General administrative spending in relation to operating income. — **3** Profit for the financial year before tax in relation to the balance sheet total.

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¹² W B Bos, F Heid, M Koetter, J W Kolari, C J M Kool (2005), Inefficient or just different? Effects of heterogeneity on bank efficiency scores, Research Centre, Deutsche Bundesbank, Discussion Paper, Series 2, Banking and Financial Studies, No 15/2005;

M Koetter (2005), Measurement matters – Input price proxies and bank efficiency in Germany", Research Centre, Deutsche Bundesbank, Discussion Paper, Series 2, Banking and Financial Studies, No 01/2005.

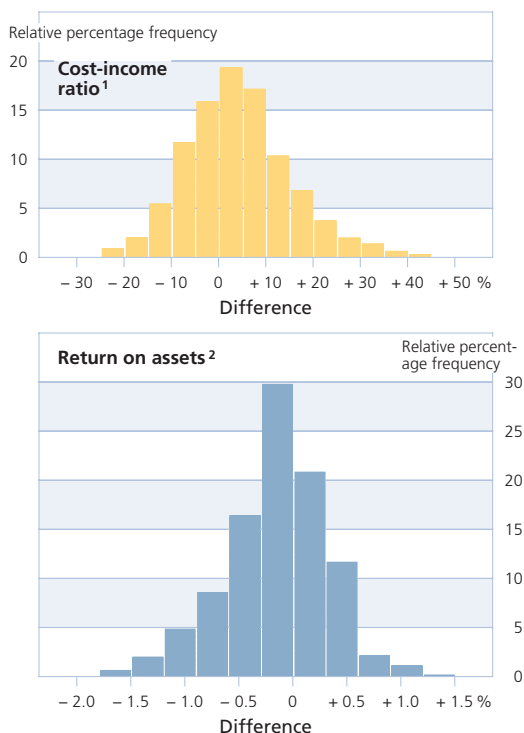
Y Altunbas, E P M. Gardener, P Molyneux and B Moore (2001), Efficiency in European banking, European Economic Review 45, 1931-1955.

¹³ M Koetter (2005), Measurement matters – Input price proxies and bank efficiency in Germany", Research Centre, Deutsche Bundesbank, Discussion Paper, Series 2, Banking and Financial Studies, No 01/2005.

¹⁴ The Financial Stability Review 2005 contains a detailed account of this.

Chart 2.1.5

DIFFERENCES IN EFFICIENCY AND PROFITABILITY BETWEEN ACQUIRED AND ACQUIRING INSTITUTION



¹ General administrative spending in relation to operating income. — ² Profit for the financial year before tax in relation to the balance sheet total.

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are relatively minor.¹⁵ Measured by the cost-income ratio and the return on assets, however, the differences in efficiency were quite considerable. The majority of acquired institutions showed an obviously poorer cost-income ratio and a poorer return on assets than the acquiring institutions.

clusion that the acquired banks are predominantly characterised by a low level of capitalisation, increased credit risk and comparatively low efficiency. (See box “Econometric study of the reasons for consolidation in Germany”.) This suggests that one major objective of acquisitions is to prevent or rectify problem cases.

Besides the objective grounds of cost-efficiency described above, there are a number of other motives for seeking acquisitions in the banking sector. For example, certain incentive structures may lead to the merger and takeover negotiations being shaped by the interests of the bank’s management, rather than those of the owners (principal agent problem). Merger talks may, for instance, be determined by the pursuit of size if the bank’s management is paid in accordance with the acquiring bank’s scale of business. It is difficult to furnish empirical evidence of such motives, however.

Other motives

Effects of consolidation on banks’ cost-efficiency and stability

In theory, mergers and acquisitions offer banks the opportunity to make greater use of economies of scale and of scope and to boost their income on a sustained basis. Another reason for mergers and acquisitions may be the advantage that, in principle, accrues from diversification. The banking system as a whole can fundamentally gain in stability in both ways.

Possible effects of higher efficiency and better diversification

Preventing critical situations

Studies for the German savings bank and credit cooperative sectors come to the con-

¹⁵ M Koetter, J Bos, F Heid, CJM Kool, JW Kolari, D Porath (2005), Accounting for distress in bank mergers, Research Centre, Deutsche Bundesbank, Discussion Paper, Series 2, Banking and Financial Studies, No 09/2005.

Box 2.1

ECONOMETRIC STUDY OF THE REASONS FOR CONSOLIDATION IN GERMANY

In many cases, it is difficult to directly determine the motives for mergers and acquisitions by means of surveys. An alternative, therefore, is to infer these motives from the available data by means of econometric methods. Of course, these methods can only give general indications; in individual cases, the indirectly inferred motives can deviate from the actual motives.

The econometric studies often use logit methods, which make it possible to estimate statistical probabilities that certain future events will occur (in this case: a merger of two banks). The Bundesbank's study assumes five possible events, particularly differentiating between the acquiring and the acquired institution, as well as whether the merger occurred owing to difficulties experienced by one of the institutions. The individual events are as follows.

- An institution acquires another institution (A).
- An institution is acquired by another institution (Z).
- An institution runs into difficulties but does not become involved in a merger (S).
- An acquiring institution runs into difficulties (SA).
- An acquired institution runs into difficulties (SZ).

The reference group is composed of the remaining banks (O).

On the basis of available information about the institution's financial status, the multinomial logit model used then estimates the probability that this institution assumes one of the "states" mentioned above. The regression equation is formulated as

$$P[Y=j] = \frac{e^{\langle \beta, x \rangle}}{1 + \sum e^{\langle \beta, x \rangle}}; P[Y=O] = \frac{1}{1 + \sum e^{\langle \beta, x \rangle}}, j=A, Z, SA, SZ, S$$

The above statistical model tries to derive these probabilities from financial ratios (combined in the x vector in the above equation). In doing so, the probabilities can be determined only relatively, ie in comparison to a control group – group O in this case. The ratios employed are the usual indicators for capitalisation, quality of financial assets, profitability and liquidity. In addition, cost and profit efficiency ratios were included, which were obtained using the econometric method of stochastic frontier analysis (SFA). The reason for this is that the frequently used measures "cost-income ratio" and "return on assets" have the major disadvantage that they can be considerably distorted by price effects. For example, an institution could be wrongly identified as inefficient on the basis of its cost-income ratio because it is confronted with above-average input prices. By contrast, the SFA allows a price adjustment of the figures and makes it possible to calculate the efficiency based on the respective bank's product mix.

The regression results show that the probability of an acquisition increases in line with a deterioration of the respective bank's financial profile. This even applies in cases in which difficulties are not the direct trigger of an acquisition (Z). The probability of an acquisition increases particularly in line with contracting hidden reserves and growing credit risks. It also turns out that less efficient banks are more likely to be acquired – at least when profit efficiency is considered. However, in the aggregate the parameter values are smaller than in the problematic cases (SZ, SA, S).

Only minor increases in efficiency in EU, USA ...

Despite the cost-lowering potential described in the previous section, the economic studies on the US and EU banking markets tend to be quite sobering, however, in terms of the gains in efficiency that are actually achieved as a result of mergers. Most of the studies reveal, at best, only minor improvements.¹⁶ In the case of “mega-mergers”, the positive efficiency gains are often counteracted by negative economies of scale since the optimal operating size is not uncommonly exceeded.¹⁷

... and in Germany

A similar result with regard to cost-efficiency is obtained for Germany, too. In the case of mergers in the savings bank and credit cooperative sectors, evidently no more than minor efficiency gains are achieved on average even after a transitional period of five to eight years.¹⁸ This finding is confirmed in a Bundesbank discussion paper in 2005, which shows that there is a roughly equal number of successful mergers which have led to greater efficiency and of unsuccessful mergers that have actually been followed by a decline in efficiency.¹⁹ The Bundesbank’s studies on the effects of mergers on the cost-income ratio even reveal a slight deterioration, especially in the year of the merger.

What ultimately determines the success of mergers is, admittedly, a contentious point. The fact that, in the cases studied, the acquiring institutions, too, were often below-average with regard to cost-efficiency and profitability is likely to have been of some significance. Furthermore, how far the specific structure of the German banking system may preclude economically sensible mergers between banks remains a relevant question.

Even the advantage of diversification does not necessarily increase the stability of the merged institution, especially as the gains from diversification are often offset by restructuring measures. There is some evidence to suggest that merged banks frequently use the scope gained in their capital base for taking on higher risks elsewhere.²⁰

Diversification gains offset

At all events, the acquisition of weaker institutions is likely to have helped to allay possible concerns on the part of depositors regarding the safety of their assets and thus prevent difficult-to-compute damage to confidence. The option of merging institutions is an essential instrument of the savings banks’ and credit cooperatives’ protection schemes, which are based on the principle of institutional protection. The associated positive effect on the stability of the financial system is, however, subject to the qualification that the overall

Additional effect

¹⁶ See A N Berger and D B Humphrey (1992), Megamergers and the use of cost efficiency as an antitrust defense, *The Antitrust Bulletin* 33, 541-600; S A Rhoades (1993), Efficiency effects of horizontal (in-market) bank mergers, *Journal of Banking and Finance* 17, 411-422; R DeYoung (1997), Bank mergers, X-efficiency, and the market for corporate control, *Managerial Finance* 23, 32-47; S. Peristiani (1997), Do mergers improve the X-efficiency and scale efficiency of US banks? Evidence from the 1980s, *Journal of Money, Credit, and Banking* 29, 326-337; A N Berger (1998), The efficiency effects of bank mergers and acquisitions: A preliminary look at the 1990s data. in Y Amihud, G Miller (eds), *Bank mergers and acquisitions*, Kluwer Academic Publishers, Dordrecht, 79-111.

¹⁷ See A N Berger and D B Humphrey (1992), Megamergers and the use of cost efficiency as an antitrust defense, *The Antitrust Bulletin* 33, 541-600. This contrasts, however, with a more recent study which comes to a different conclusion in the case of large mergers. See J D Akhavein, A N Berger, D B Humphrey (1997), The effects of megamergers on efficiency and prices: Evidence from a bank profit function, *Review of Industrial Organization* 12, 95-139.

¹⁸ See G Lang, P Welzel (1996), Efficiency and technical progress in banking: Empirical results for a panel of German cooperative banks, *Journal of Banking and Finance* 20, 1003-1023.

¹⁹ See M Koetter (2005), Evaluating the German bank merger wave, Research Centre, Deutsche Bundesbank, Discussion Paper, Series 2, Banking and Financial Studies, No 12/2005.

²⁰ See R S Demsetz and P E Strahan (1997), Diversification, size, and risk at bank holding companies, *Journal of Money, Credit, and Banking* 29, 300-313.

Table 2.2

REGRESSION RESULTS OF THE MULTINOMINAL LOGIT ANALYSIS*

Variables	SZ	SA	Z	A	S
Hidden reserves ¹	- 0.614 ***	- 0.321 ***	- 0.134 ***	0.012	- 0.401 ***
Securities ¹	- 0.035 ***	- 0.015 ***	- 0.006 ***	- 0.003 **	- 0.009
Net individual value adjustments in the lending business ²	0.599 ***	0.386 ***	0.116 ***	- 0.033	0.533 ***
Non-performing loans ²	0.046 ***	0.014	0.012 ***	- 0.003	0.039 ***
Growth of balance sheet total	- 0.056 ***	- 0.006	- 0.041 ***	- 0.008 ***	- 0.018 ***
Profit efficiency ³	- 0.019 ***	- 0.015 ***	- 0.016 ***	0.000	- 0.009 *
Cost efficiency ³	- 0.038 **	- 0.068 ***	0.001	- 0.010 *	- 0.042 ***
Income	- 0.288 ***	- 0.169 *	0.057	0.158 ***	- 0.369 ***
Cash and interbank loans ¹	0.058 ***	0.007	0.022 **	- 0.025 **	0.016
GDP per capita	0.005	- 0.389 ***	- 0.247 ***	- 0.371 ***	- 0.173
Insolvency ratio	0.008	- 0.003	- 0.008 ***	- 0.013 ***	0.005
Risk-weighted assets	- 0.624 ***	0.652 ***	- 0.477 ***	0.885 ***	- 0.177 ***
Wald χ^2 (df =19)	404	308.9	743.5	645	313.6

* Number of observations = 20,246; pseudo R^2 = 0.133; Wald χ^2 = 2,218.1; pseudo loglikelihood = - 8,858; ***/**/* = significant at the 1/5/10% level. Values indicate relative risk weights. For example, a coefficient of 0.6 for the net risk provision in the second column means that the probability of an institution being grouped under SZ increases by 60% relative to the reference group O if the net risk provision increases by 1 percentage point. — **1** In relation to the balance sheet total. — **2** In relation to loans to non-banks. — **3** Ratio determined by stochastic frontier analysis (SFA).

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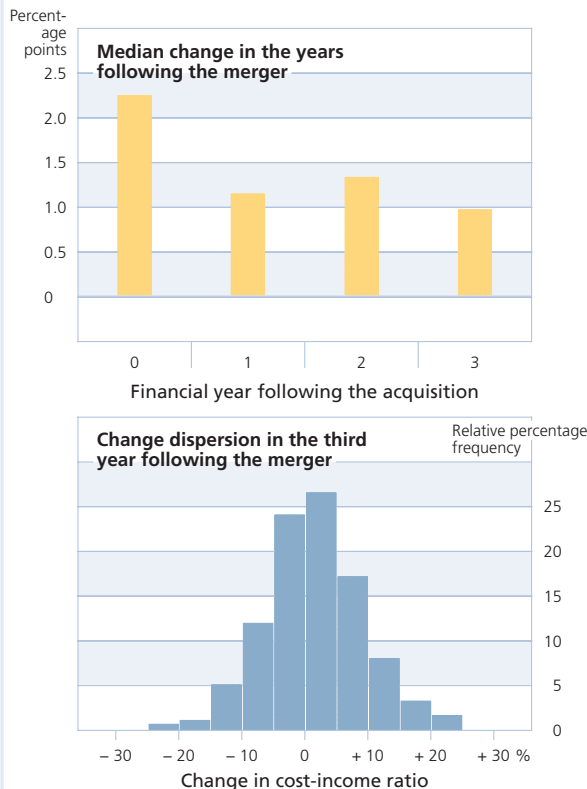
risk-bearing capacity of the acquiring institutions and their affiliated networks must not be overstretched by the acquisition of ailing institutions. Attention should also be paid to the potential moral hazard problems.

Effects of consolidation on banks' lending and on macrostability

A comprehensive analysis of the stability implications of mergers and acquisitions also has to take account of their impact on the banks' lending and on the bank-customer relationship in general.

Chart 2.1.6

CHANGE IN MERGED BANKS' COST-INCOME RATIO*



* Change in comparison with the merged banks' consolidated cost-income ratio (general administrative spending in relation to operating income) in the financial year before the merger or acquisition.

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withdrawal from business with SMEs. This would also have implications for financial stability as relationship banking can help to dampen cyclical fluctuations in lending.²² For this reason, a broad retreat from relationship banking might pose problems for macrostability.²³

Also in view of the underlying position of a strongly fragmented banking system in Germany, no more than minor effects at most are to be expected in this area, however. Studies for the German banking sector have not produced any indication so far that merged banks are cutting back on their lending to SMEs.²⁴ Another study, in fact, states that, in the case of mergers, banks often actually expand their lending to SMEs *ex post*.²⁵ The reasons for this are the dynamic effects in the period following a merger, mainly on account of the effect of improved cost structures on a bank's lending and credit conditions as well as possible external effects in connection with competitors' reactions..

... although there is no empirical evidence of this.

Outlook

The wave of consolidation in the German banking sector has led to a marked reduction

Wave of mergers, and cooperation

Lending to SMEs could decline ...

Available studies come to the conclusion that big banks grant considerably fewer loans to small and medium-sized enterprises (SMEs) than do small and medium-sized banks.²¹ Seen in this light, extensive consolidation of the banking sector might be a cause for concern because it would lead, overall, to larger institutions. In particular, relationship banking – which has traditionally played a key role in Germany – might be damaged by the banks'

²¹ See inter alia A N Berger, A Saunders, J M Scalise and G F Udell (1998), The effects of bank mergers and acquisitions on small business lending, *Journal of Financial Economics* 50, 187-229.

²² See F Allen and D Gale (1997), Financial Markets, Intermediaries, and Intertemporal Smoothing, in *Journal of Political Economy*, Vol 105, p 523 ff.

²³ See Deutsche Bundesbank, Bank competition and the stability of the financial system, *Financial Stability Review* 2005, pp 101 to 116.

²⁴ F Ramb and A Worms (2006), Bank mergers and lending behaviour – evidence from microdata on German banks, mimeo.

²⁵ See A N Berger, A Saunders, J M Scalise and G F Udell (1998), The effects of bank mergers and acquisitions on small business lending, *Journal of Financial Economics* 50, 187-229.

in the number of credit institutions over the past few years. M&A activity has been concentrated on fairly small and medium-sized institutions in the savings bank and credit co-operative sectors, which means that the overall picture of a fragmented banking sector has not changed. Nevertheless, the consolidation efforts of credit institutions are not confined to mergers and acquisitions. Rather, other consolidation options present themselves in the form of cooperation between institutions. Interestingly, there have also been some collaborative initiatives which span the pillars of the German banking system, for example, in securities settlement.

Fulfilled ... In many cases, the motive for M&A activity has been to create larger units in order to mitigate rises in, say, IT costs and to better cope with regulatory requirements. Acquisitions of institutions with a comparatively low level of profitability or capitalisation are likely to have enhanced stability in the banking sector, at least in the short term. Gauging the long-term impact of this form of consolidation, however, would also necessitate considering its effects on the risk-bearing capacity of the acquiring institutions and their affiliated networks as well as possible moral hazard effects. Up to now, fears that the waxing tide of concentration could jeopardise the

supply of credit to SMEs have proved to be unfounded.

On the other hand, more far-reaching expectations associated with consolidation measures have often not been fulfilled. Although studies essentially show that there is a considerable potential for improvements in efficiency, the mergers so far – at least, on average – have failed to produce the hoped-for gains in cost-efficiency. This does not directly indicate that the specific structure of the German banking system is preventing a better utilisation of consolidation benefits. Even so, the debate on the possibilities of consolidation across the pillars of the German banking system may be expected to continue.

... and unfulfilled expectations

The public sector institutions are facing particular challenges stemming from the elimination of the guarantors' responsibility for ensuring the solvency of public-law institutions and the modification of the guarantors' uncalled liability, while all banks will have to cope with the additional demands which Basel II and the relevant European directives will place on their internal control and risk management systems. In this connection, attention will also have to be paid to how far these challenges and demands promote further consolidation measures.

Impact of future regulations

Financial Soundness Indicators: a contribution to improving the worldwide availability of data for financial stability analysis

| In summer 2006, around 60 member countries of the International Monetary Fund (IMF), including Germany, took part in a pilot study in which, for the first time, a uniform set of indicators for assessing the stability of the financial system was developed. The results of this test run, which capture the position at the end of 2005, will be presented by the IMF in December 2006. The Bundesbank will likewise publish the Financial Soundness Indicators (FSI) for Germany on its website at the beginning of December 2006. Some of the indicators which have been calculated for the first time will already be presented in advance in this article. At this early stage of the project, however, extensive comment on the FSIs is not possible since the data currently available do not allow any conclusions to be drawn about the movement of the indicators over time and do not permit the FSIs to be reliably assessed in a cross-country comparison.

The project is part of a recent intensification of international efforts to strengthen financial system stability. It is not least the numerous and costly financial crises of the 1990s that have brought to the fore the significance of stable financial systems as a key requirement for economic prosperity. Effective crisis prevention requires, among other things, expert assessment of the stability of financial systems

with the goal of identifying any existing weaknesses in a timely manner. Through its FSI initiative the IMF, in close cooperation with national institutions, is responding to the increased need for internationally available data on the soundness of financial systems. |

Background and objectives of the FSI project

IMF initiative in response to financial market crises of the late 1990s

In early 2000, the IMF, in response to the financial market crises of the late 1990s, intensified its activities in the area of financial system analysis and initiated the Financial Soundness Indicators project in this connection. This initiative is an attempt to provide the public with macroprudential indicators for assessing national financial systems in numerous countries that are defined with a maximum of consistency.¹

FSIs: contributing to improving the transparency of financial systems ...

The primary aim of the FSIs is to contribute to increasing the transparency of financial systems, especially in those emerging markets and developing countries for which such data have hitherto been virtually unavailable. The main objective is to obtain a more precise picture of the strengths and weaknesses of national financial systems. This could also make it easier not only for market participants but also for national official agencies to distinguish between healthy and ailing financial systems. This is associated with the expectation of improved market discipline, which will enhance the vigour of the international financial system.

... and to crisis prevention

In addition, crisis prevention is to be improved through a regular assessment of the situation and risks based on these indicators. The subsequent regular publication of the FSIs by member countries will create expanded opportunities to continuously monitor financial system stability and identify any undesirable developments at an early stage. Against this background, the IMF, too, will make use of these indicators in its Article IV consultations² and Financial Sector Assessment Programs

(FSAPs)³ to assess the stability of its members' financial systems.

Project status

Following the compilation of an overview of the worldwide availability and use of suitable indicators, in June 2001 the IMF Executive Board defined a set of FSIs which was later revised once again.⁴ The methodological structure underpinning the indicators was subsequently developed in cooperation with experts from participating countries.

Germany supported this project from the outset and participated in a pilot study (Coordinated Compilation Exercise) initiated around two years ago. In this test run, the responsible national institutions – in Germany, the Deutsche Bundesbank⁵ – examined and assessed the range of available basic data with which to create FSIs. Finally, the indicators – subject to availability – were compiled and sent to the IMF in the summer of 2006.

Pilot study to develop the FSIs

At the same time, the national institutions have provided "metadata" – comprehensive information on the statistical methodology and on the legal and institutional framework

Comprehensively documented methodology to assist users

¹ For more on the need for additional financial stability indicators, see also Hermann Rempesberger, Statistics for financial stability purposes, paper delivered at the second ECB statistics conference on statistics and their use for monetary and economic policy-making, April 2004, ECB (ed) (www.ecb.int/pub/pdf/other/statisticsusemonetaryeconomicpolicy-makingen.pdf).

² In its Article IV consultations, the IMF inspects the economic and financial soundness of each of its members and issues policy recommendations.

³ In an FSAP, the IMF inspects the resilience of national financial systems.

⁴ More information on the indicators is presented in the section "Indicators and their classification" on pp 105–107 and in the Annex on pp 113–122.

⁵ Work was conducted in cooperation with the Federal Financial Supervisory Authority (BaFin) and the Federal Ministry of Finance.

underlying the data surveys. They are designed primarily to highlight the differences between countries in respect of national prudential and accounting standards which impair the cross-country comparability of the indicators. This makes them an indispensable interpretation aid for the data users. The metadata also contain comprehensive structural indicators relating to the observed economic sectors⁶ which are designed to complement the FSIs.

which are aggregated for the entire banking sector to this end. However, in Germany, as in other countries, banking statistics data are also used owing to the limited availability of some FSIs.⁹

Core indicators should be derived from aggregated microprudential data

Another 27 FSIs – listed in the Annex – were added to the set (the “encouraged set”). Not only additional indicators for the banking sector but also macroprudential indicators for other financial corporations, non-financial corporations and households were defined. This is grounded in the knowledge that a deterioration in credit ratings in the non-financial sectors impacts adversely on credit quality and can thus also negatively affect financial stability. The encouraged set of indicators is not considered to be binding since the availability of suitable basic data is limited in many countries. The Bundesbank has managed to compile all of these indicators, with just one exception.¹⁰ In terms of the availability of FSIs, Germany is thus one of the international frontrunners. The basic data originate from the prudential and banking statistics reporting system, the national accounts (including the financial accounts), capital market statistics, general economic statistics, the insolvency statistics compiled by the Federal Statistical Office, and commercial data providers. No additional reporting burden had to be imposed on the economy.

Supplementary indicators for other economic sectors as well

Presentation of indicators by IMF planned for December

The IMF is planning to present the indicators and metadata for all participating countries to the public in December 2006. The Bundesbank will follow suit by posting the German contribution on its website in early December 2006.

Indicators and their classification

Twelve macroprudential banking sector indicators at centre of project

The project covers a total of 39 FSIs. Owing to the particular significance of the banking sector for the stability of financial systems, 12 macroprudential indicators (the “core set”) which cover the situation of deposit-takers are at the centre of the project.⁷ The IMF believes that this set of information should be collected by all member countries wherever possible. Germany can assure this. Table 2.3 shows that the IMF’s system is oriented to the internationally widespread CAMELS⁸ concept, which covers a variety of aspects that are relevant to risk. It is worth emphasising that the Bundesbank, in the course of this project, will be publishing a number of prudential indicators for the first time ever, including indicators of non-performing loans and regulatory tier 1 capital.

Ideally, the set of core indicators should be derived from microprudential supervisory data

⁶ Deposit-takers, other financial corporations, the non-financial corporations sector and households.

⁷ In the IMF’s terminology, the banking sector includes all institutions that take deposits and on-lend them (see IMF, Compilation Guide on Financial Soundness Indicators, 2006, p 13).

⁸ CAMELS stands for Capital Adequacy, Asset Quality, Management Soundness, Earnings and profitability, Liquidity and Sensitivity to market risk.

⁹ The Annex explains which basic data were used to calculate the indicators in Germany.

¹⁰ The sole exception is the “net foreign exchange exposure to equity”.

Table 2.3

THE IMF'S CORE SET OF INDICATORS

IMF terminology	Concepts implemented in Germany
Capital adequacy	Capital adequacy
Regulatory capital to risk-weighted assets	Ratio of regulatory capital to all weighted risk positions ¹
Regulatory Tier 1 capital to risk-weighted assets	Ratio of regulatory (tier 1) capital to all weighted risk positions ¹
Non-performing loans net of provisions to capital	Ratio of non-performing loans (net of risk provisions) to balance sheet capital
Asset quality	Quality of risk assets
Non-performing loans to total gross loans	Non-performing loans to total gross loans
Sectoral distribution of loans to total loans	Sectoral distribution of loans
Earnings and profitability	Profitability
Return on assets	Total return on assets
Return on equity	Return on equity
Interest margin to gross income	Ratio of net interest received to gross income
Non-interest expenses to gross income	Ratio of expenses (excluding interest) to gross income
Liquidity	Liquidity
Liquid assets to total assets (liquid asset ratio)	Liquid assets as a percentage of total assets (degree of asset liquidity)
Liquid assets to short-term liabilities	Ratio of liquid assets to short-term liabilities
Sensitivity to market risk	Market risk
Net open position in foreign exchange to capital	Ratio of open foreign exchange position to regulatory capital

¹ The Annex explains which basic data were used to calculate the indicators in Germany.

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Extensive description of methods for calculating indicators ...

The methodology for compiling the indicators is detailed in a comprehensive guide¹¹ designed to assist the data producers and users and to ensure that the project is implemented with maximum consistency. Where possible, the methodology is based on the recommendations made by the Basel Committee on Banking Supervision and also on international standards in the fields of accounting,¹² the national accounts,¹³ and banking statistics.¹⁴

However, the guide can only function as a reference: during the pilot study, it proved impossible to completely adhere to the (very comprehensive) methodology of the IMF, at

... yet not binding because some national standards are different

¹¹ Compilation Guide on Financial Soundness Indicators, International Monetary Fund, 2006 (www.imf.org/external/np/sta/fsi/eng/2004/guide/index.htm).

¹² International Financial Reporting Standards (IFRS).

¹³ System of National Accounts (SNA93), United Nations, European Commission, IMF, OECD, World Bank, 1993 (<http://unstats.un.org/unsd/sna1993/toctop.asp>).

¹⁴ Monetary and Financial Statistics Manual, IMF, 2000 (www.imf.org/external/pubs/ft/mfs/manual/index.htm).

least over the medium term. This is because the prudential and statistical reporting frameworks and accounting practices relevant for compiling FSIs often comply with national regulations that are at odds with the Compilation Guide, despite the existence of international efforts to converge standards – especially in Europe.

Interpretation and analysis

Improved availability of indicators for assessing financial stability ...

The FSI project will probably contribute towards improving the worldwide availability of data for analysing financial stability. The quantitative FSIs represent an additional key element of a comprehensive analysis of stability. When using the indicators, however, it is necessary to beware of constraints which make it appropriate to exercise caution when analysing and interpreting the data.

... yet not consistently comparable across countries ...

As explained earlier, the cross-country comparability of many indicators is restricted, in particular, by the fact that national prudential and statistical reporting frameworks and accounting standards have not yet been globally harmonised. The participating countries' indicators are therefore based on data which are, in some cases, subject to considerable methodological disparity regarding their content and collection. The extent of this disparity can itself vary distinctly between countries (or groups of countries) and indicators. In those cases where the methodology is not uniform, cross-country comparisons are of relatively limited usefulness for providing conclusions and policy recommendations. It was also necessary, for that reason, to forego defining quantitative target variables for assessing indi-

cator values that are valid worldwide. The IMF consciously accepted these limitations in the application of the FSIs.

A notable disparity from Germany's point of view concerns the definition of non-performing loans (NPLs), which is not consistent with the IMF's recommendations. The corresponding indicators should consequently not be compared with the relevant figures for other countries for analytical purposes, either. Some other indicators will also need to be explained, in order to ensure that they are interpreted accurately (see Box 2.2 on page 108).

... especially the FSIs on non-performing loans

In addition, other departures from the IMF definitions need to be taken into consideration when interpreting the German FSIs. For example, the indicators are largely geared to German accounting practice as prescribed by the Commercial Code (*Handelsgesetzbuch*),¹⁵ which is evident, for instance, in the valuation of marketable assets or the balance sheet treatment of derivatives. Finally, the consolidation definition for bank-related indicators does not completely match the IMF's standard.¹⁶

It may also be more difficult to compare countries that are at different stages of economic development. The participating developing countries and emerging-market economies

Cross-country comparisons also hampered by differences in economies' stage of development

¹⁵ The balance sheet data used to develop the FSIs in Germany are based on the single-entity financial statement, to which the IFRS cannot be optionally applied.

¹⁶ Whereas the guide recommends the consolidated reporting of domestic institutions, including their domestic and foreign banking subsidiaries, German banks' foreign subsidiaries remain excluded from the FSIs. In addition, in the indicators, which are defined by the banking statistics, domestic institutions' foreign branches are not recorded, but the German-based branches of foreign institutions are additionally recorded. However, the IMF also accepts this consolidation definition in view of its relevance for monetary and macroeconomic analysis.

Box 2.2

EXPLANATION OF GERMAN INDICATORS USING THE EXAMPLES OF NON-PERFORMING LOANS, REGULATORY CAPITAL RATIOS AND LIQUID ASSETS

An appropriate interpretation of non-performing loans (NPLs) is of particular importance with regard to the German set of indicators. According to the IMF's classification, a loan is defined as non-performing over 90 days past due. Although the criterion "days past due" is used in the context of accounting or banking supervision in various countries, Germany and other countries do not currently have comparable commercial-law or prudential criteria for the definition of NPLs.

For the purpose of the Financial Soundness Indicators (FSIs) in Germany, as in other affected countries, the definition of NPLs must therefore be approximated to the nearest suitable concept of loans requiring individual value adjustment. NPLs are used in the core set of indicators to assess asset quality (non-performing loans to total gross loans) as well as to assess capital adequacy after deducting risk provisions (non-performing loans net of provisions to capital). The compilation of the indicator on asset quality is based on the total volume of gross customer loans for which individual value adjustments have been made, ie representing both the sound and value-adjusted portions. For Germany this ratio (4.05%) measures the share of loans requiring individual value adjustment in the overall volume of gross customer loans. The second

NPL indicator sets NPLs net of risk provisions in relation to balance sheet capital and should ideally, according to the IMF's classification, show the potential risk to capital arising from the residual risk of NPLs after deducting risk provisions. This assumes that the unadjusted portion of a loan for which individual value adjustments have been made contains a significantly higher default risk than the credit volume for which individual value adjustments have not been made. However, owing to the commercial-law valuation rules applicable in Germany, the indicator actually mirrors the ratio of the remaining, sound portions of the loan portfolio for which individual value adjustments have been made to the balance sheet capital which, moreover, are also largely covered by collateral valued on a timely basis. Therefore, the resulting German ratio (34.97%) is not a risk measure for potential, uncovered risks as in the IMF approach; instead it merely expresses how the quality of the customer credit volume has developed in the past. There is no evidence of individual value adjustments tending to be set too low in Germany.

Thus, neither of the German NPL indicators provides any insight regarding further need for value adjustment in the credit portfolios of German banks. This significant but unavoid-

able deviation from the IMF Compilation Guide is documented in the German metadata. It not only illustrates the limited cross-country comparability afforded by the FSIs but also emphasises the importance of metadata in interpreting individual indicators.

Some other indicators which are based on prudential data also need to be explained. This applies, for example, to the capital adequacy indicators (regulatory capital to risk-weighted assets; regulatory Tier 1 capital to risk-weighted assets). The first indicator (12.15%) is intended to provide information on institutions' regulatory capital in relation to the overall prudentially defined risks. In terms of its methodological definition, it is comparable to the overall ratio according to Principle I (capital backing) and shows total capital in relation to the risk-weighted assets, including market risk positions. The Bundesbank already publishes such a ratio in its *Annual Report*. The second indicator replaces total regulatory capital with solely core (tier 1) capital in the numerator, while risk-weighted assets and market risk positions are factored into the denominator. This definition of the core capital ratio is internationally common. In Germany, however, the core capital ratio is often used in the narrower sense (excluding market risk positions). Thus, the FSI core capital ratio (7.96%), which

is supposed to indicate the extent to which an institution's prudentially relevant risks are covered by tier 1 regulatory capital, is systematically lower than the ratio employed by the banking supervisors in Germany.

Both liquid asset indicators (liquid assets to total assets (liquid asset ratio); liquid assets to short-term liabilities) have not been published in this form by the Bundesbank before. The first ratio (53.26%) sets all liquid assets according to Principle II (liquidity requirement) in relation to the overall volume of an institution's assets and is therefore only a very rough measure of liquidity. By contrast, the second indicator, which also follows Principle II, consists of the ratio of liquid assets over a horizon of three months or less to payment obligations within the same period and in material terms largely corresponds to the prudential approach to liquidity. The ratio (121.97%) shows that the indicator-relevant means of payment exceed the payment obligations by 21.97%. Furthermore, the German Principle II ratio, which relates to the shorter horizon of one month, is not a percentage but rather an indicator that must be greater than one.

will probably produce results for some indicators that are distinctly different from those of the industrial countries. It may also be assumed that some participating countries will, at the outset, be able to provide only a very few indicators.

Basis for cross-country comparisons in the case of relatively homogeneous FSIs and countries

In spite of the caveats stated above, for selected areas the FSIs are perfectly capable of making a valuable contribution to international comparisons in the area of financial stability. Cases in point include comparisons between countries with similar economic structures and at similar stages of economic development, provided the indicators taken from the group of FSIs are sufficiently harmonised. The metadata of the various countries, for instance, provide information on the latter.

Indicator-based concepts only part of a comprehensive analysis of stability ...

Quantitative indicators represent only a part of a comprehensive framework for macroprudential analysis.¹⁷ Although they can provide helpful insights, their power to reflect the qualitative side of complex economic processes is at best limited. This is why they are no substitute for a comprehensive theoretically founded analysis. A purely schematic interpretation of the FSIs in the absence of extensive background analyses would, above all, fail to reflect the complexity of modern financial systems and could lead to erroneous conclusions.

... which refers to numerous other quantitative and qualitative indicators ...

The majority of the FSIs are indicators that reflect the situation and stability of the financial institutions under review. This means that a large part of the sectors and segments of an economy which are relevant to financial stability are already covered. To obtain a comprehensive picture of a country's overall economic

and financial situation, however, an analysis of the strengths and weaknesses of national financial systems must additionally encompass numerous other quantitative and qualitative indicators.

Thus the FSIs can be used, for instance, to obtain information about the resilience of a financial system to shocks. However, to gauge the probability of such shocks occurring, extra data that contain forward-looking information have to be factored into the equation.

... to come to conclusions about, say, the probability of shocks ...

Moreover, the FSIs are only able, to a limited degree, to gauge the potential impact of shocks on a given country's course of macroeconomic development. They can only give *ex post* pointers as to how far the situation of a financial sector has deteriorated owing to a shock. To determine real economic effects, it is necessary, in addition, to perform a detailed analysis of financial interlinkages. A comprehensive macroprudential analysis should also contain stress tests designed to simulate shocks.

... and their likely impact

Finally, it should be observed that the aggregated overall risk to a banking system, which is at the heart of the FSI initiative, does not reflect all the relevant risks of economic subsectors. It would therefore make sense to perform, as and where necessary, additional, deeper analyses at a lower level of aggregation, such as for "peer groups". However, to date there are no plans to break down the indicators any further in this direction, also be-

Analyses at a lower level of aggregation would be a helpful complement to FSIs

¹⁷ In contrast to a microprudential analysis, which is targeted mainly at the stability of individual financial institutions, macroprudential analysis is defined as a comprehensive assessment of the stability of entire financial systems.

cause this could run counter to statistical and prudential confidentiality requirements.

Assessment and outlook

FSIs enrich macroprudential analysis ...

The aim of the FSI project is to improve the availability of data in the field of financial system stability. The first-time publication of financial stability indicators in many of the IMF's member countries is helping to further enhance the transparency of national financial systems and has added an additional instrument to macroprudential analysis. It would therefore be desirable for as many IMF members as possible to make every effort to produce meaningful FSI data sets.

... even if the possibilities for cross-country comparisons will remain limited ...

The possibilities for cross-country comparisons in the case of certain indicators will remain limited as long as accounting standards and reporting formats for prudential and statistical purposes have not been harmonised globally. It must additionally be taken into consideration that, at present, the IMF's extremely detailed and comprehensive methodological rules for compiling the FSIs often cannot be complied with even by industrial countries.

... until uniform international accounting and reporting standards have been consistently implemented throughout the world

Over the medium to longer term, international convergence efforts could well lead to the FSIs being geared more closely to the methodology detailed in the IMF's guide, thereby enhancing the international comparability of the indicators. In the field of accounting, international accounting standards – above all IFRS – are being increasingly adopted. The use of IFRS is already mandatory for the consolidated financial statements of capital market-oriented banks and companies in Europe as well as

many non-European countries. This trend is likely to continue over the longer term. In the area of prudential reporting, the Committee of European Banking Supervisors (CEBS) has initiated, at the EU level, standardisation efforts for banks that (are obliged to) prepare their consolidated financial statements in accordance with IFRS. It is not yet possible, however, to gauge the implications of this initiative for the FSI project. In the field of banking and other financial statistics, by contrast, the European harmonisation process has made much greater strides. Worldwide, too, these statistics are probably, on the whole, more comparable than their counterparts in the field of banking supervision.

In summer 2007, the Executive Board of the IMF will decide on how to continue the project based on the experience gained in the pilot study. The decision will hinge on the possibility of regularly publishing the indicators, which appears desirable. During the evaluation process with the participating countries, the set of indicators and the methodology will be reviewed once again.

In this connection, thought will probably be given to whether the first FSIs can soon be included in the IMF's Special Data Dissemination Standard (SDDS).¹⁸ Expectations should not be placed too high, however, since there are, in some cases, major discrepancies between countries regarding availability – most of the indicators cannot be provided by all of

IMF to decide on continuing the project in summer 2007 ...

... although including FSIs in SDDS seems premature

¹⁸ This standard, created by the IMF in April 1996, is designed to improve the transparency and the timeliness of the publication of macroeconomic data. The countries that have subscribed to the SDDS, including Germany, have committed themselves to publishing several pre-defined indicators based on uniform criteria governing the content, survey scope, frequency and timeliness. See also www.bundesbank.de/statistik/statistik_sdds.en.php.

the IMF's member countries – as well as the publication frequency, timeliness and methodology. It would therefore make sense to begin by enlarging the group of participants in the

FSI project to include those SDDS member countries that did not participate in the pilot study and to increase the number of available indicators in all countries.

Annex: Overview of the implementation of the various indicators in Germany¹⁹

Core set of indicators: deposit-takers

Deposit-takers play a pivotal role in financial systems. Their financial situation and resilience to shocks is therefore of paramount importance for financial stability. The core set of indicators covers the key ratios with regard to the deposit-takers' situation.

Capital adequacy

I1: Ratio of regulatory capital to all weighted risk positions²⁰ (Regulatory capital to risk-weighted assets) This indicator measures the ratio of regulatory capital to all weighted risk positions pursuant to Principle I (capital requirement). It is calculated on the basis of single-institution data from credit institutions subject to reporting requirements under Principle I pursuant to section 10 of the German Banking Act (*Kreditwesengesetz*). For this purpose, liable capital is set in relation to the sum of all weighted risk positions pursuant to Principle I. Deviations from the IMF methodology result from the national definition of capital and risk weights as well as from the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

I2: Ratio of regulatory core (tier 1) capital to all weighted risk positions²⁰ (Regulatory Tier 1 capital to risk-weighted assets) This indicator measures the ratio of regulatory core (tier 1) capital to all weighted risk positions pursuant to Principle I. It is calculated using single-institution data from credit institutions subject to reporting requirements under Principle I pursuant to section 10 of the German Banking Act, whereby the regulatory tier 1 capital is set in relation to the sum of all weighted risk positions. Deviations from the IMF methodology arise with regard to the national definition of tier 1 capital and risk weights as well as the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

I3: Ratio of non-performing loans (net of risk provisions) to balance sheet capital (Non-performing loans net of provisions to capital) This indicator is calculated by setting loans requiring individual value adjustments on a net basis (less risk provisions) in relation to the institutions' balance sheet capital. It corresponds to the value of customer loans (accounts receivable and bill-based loans pursuant to section 15 of the Regulation on the Accounting of Banks and Financial Services Institutions (*Verordnung über die Rechnungslegung der Kreditinstitute und Finanzdienstleistungsinstitute*) as well as liability loans pursuant to section 26 of the Regulation on

¹⁹ The IMF definition of the indicators is given in brackets.

²⁰ The weighted risk positions are the risk-weighted assets and the market price risks to be taken into account pursuant to Principle I.

the Accounting of Banks and Financial Services Institutions) requiring individual value adjustments after deducting the value adjustments in relation to balance sheet capital. It should be noted that, in Germany, there is no agreed definition of non-performing loans (NPL). Therefore, the definition here for IMF purposes is as value-adjusted loans pursuant to the Auditor's Report Regulation (*Prüfungsberichtsverordnung*). Further deviations from the IMF methodology arise owing to national accounting rules and the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

Quality of risk assets

I4: Non-performing loans as a percentage of total gross loans (Non-performing loans to total gross loans) This indicator sets customer loans requiring individual value adjustments in relation to the institutions' total gross customer loans. It is determined by setting non-performing loans – which, according to the national definition, are calculated on the basis of customer loans requiring individual value adjustments (accounts receivable and bill-based loans pursuant to section 15 of the Regulation on the Accounting of Banks and Financial Services Institutions as well as liability loans pursuant to section 26 of the Regulation on the Accounting of Banks and Financial Services Institutions) – in relation to the total customer credit volume. Claims on credit institutions are not included. Further deviations from the IMF methodology arise owing to national accounting rules and the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

I5: Sectoral distribution of loans (Sectoral distribution of loans to total loans) This indicator provides information on the distribution of loans across domestic and foreign sectors. The data are taken from the monthly balance sheet statistics of monetary financial institutions (MFIs) in Germany. Deviations from the IMF methodology arise owing to national accounting rules and the basis of consolidation, as the business conducted by German institutions' foreign branches and subsidiaries is excluded whereas the business conducted by foreign institutions' branches in Germany is included.

Profitability

I6: Total return on assets (Return on assets) The total return on assets is used to assess profitability in relation to total capital within an accounting period for purposes of comparison. The indicator is calculated as the ratio of profit for the financial year before tax to the average balance sheet total of domestic MFIs. The profit for the financial year is based on a secondary statistical evaluation of the banks' profit and loss accounts (annual accounts data); the average balance sheet total is calculated on the basis of the banks' monthly balance sheet statistics. Deviations from the IMF meth-

odology arise owing to the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

I7: Return on equity (Return on equity) The return on equity captures the rate of remuneration of equity capital within an accounting period. The indicator is calculated as the ratio of profit for the financial year before tax to the average equity capital of domestic MFIs. The profit for the year is based on a secondary statistical evaluation of the banks' profit and loss accounts (annual accounts data); average equity capital is calculated on the basis of the banks' monthly balance sheet statistics. Deviations from the IMF methodology arise owing to national accounting rules and the basis of consolidation, which includes only domestic MFIs.

I8: Ratio of net interest received to gross income (Interest margin to gross income) This indicator is a measure of the share of net interest received in gross income. It is based on a secondary statistical evaluation of banks' profit and loss accounts (annual accounts data). Deviations from the IMF methodology arise owing to the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

I9: Ratio of expenses (excluding interest) to gross income (Non-interest expenses to gross income) This indicator is a measure of the share of non-interest expenses in gross income. It is calculated on the basis of a secondary statistical evaluation of the profit and loss accounts (annual accounts data) of domestic MFIs. Deviations from the IMF methodology arise owing to the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

Liquidity

I10: Liquid assets as a percentage of total assets (degree of asset liquidity) (Liquid assets to total assets (liquid asset ratio)) This indicator is calculated as the share of prudentially defined liquid assets in the institutions' total assets on the basis of reports from credit institutions subject to reporting requirements under Principle II (liquidity requirement) pursuant to section 11 of the German Banking Act. To this end, the sum total of all liquid assets pursuant to Principle II with a residual maturity of three months or less is set in relation to the total assets of credit institutions according to the monthly balance sheet statistics. Deviations from the IMF methodology arise owing to a lack of sector level data adjustments of both components and the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

I11: Ratio of liquid assets to short-term liabilities (Liquid assets to short-term liabilities) This indicator is calculated by comparing the liquid assets with the institutions' short-term liabilities as prudentially defined: the reports of credit institutions subject to reporting requirements under

Principle II pursuant to section 11 of the German Banking Act are used as a basis for this. To this end, all liquid assets are set in relation to liabilities with a residual maturity of three months or less. Deviations from the IMF methodology arise owing to a lack of sector level data adjustments and the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

Market risk

I12: Ratio of open foreign exchange positions to regulatory capital (Net open position in foreign exchange to capital) This indicator is calculated by measuring the ratio of prudentially defined open foreign exchange positions to the institutions' regulatory capital. The individual institutions' reports under Principle I are used as a basis for this. The credit institutions' currency-related net overall position is set in relation to their regulatory capital. Deviations from the IMF methodology arise owing to limited institutional coverage with regard to the reporting obligation under Principle I, the definition of regulatory capital, the identifiability of the net positions of risk models as well as the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

Encouraged set of indicators

The following encouraged set of indicators permits an insight into the deposit-takers' financial situation beyond the core set.

Deposit-takers

I13: Capital ratio (Capital to assets ratio) This indicator provides information on the extent to which the institutions' assets are covered by capital. The data are taken from the monthly balance sheet statistics of MFIs in Germany. Deviations from the IMF methodology arise owing to national accounting rules and the basis of consolidation, as the business conducted by German institutions' foreign branches and subsidiaries is excluded whereas the business conducted by foreign institutions' branches in Germany is included.

I14: Ratio of large exposures to regulatory capital (Large exposures to capital) This indicator shows the ratio of the large exposures incurred by the institutions to the institutions' regulatory capital. It is calculated on the basis of individual institutions' reports on large exposures pursuant to sections 13 and 13a of the German Banking Act as well as on regulatory capital pursuant to section 10 of the German Banking Act. To this end, the volume of all large exposures is compared with

the credit institutions' regulatory capital. Deviations from the IMF methodology arise owing to the national definition of the concept for large exposures, the definition of regulatory capital and the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

I 15: Geographical distribution of loans (Geographical distribution of loans to total loans)

This indicator is intended to enable a rough assessment of the credit risk which German MFIs incur through their lending activities abroad. The data are taken from the monthly balance sheet statistics of MFIs in Germany. Deviations from the IMF methodology arise owing to the basis of consolidation, as the business conducted by German institutions' foreign branches and subsidiaries is excluded whereas the business conducted by foreign institutions' branches in Germany is included.

I 16: Ratio of asset positions in financial derivatives (gross) to capital (Gross asset position in financial derivatives to capital)

This indicator provides a rough assessment of the replacement risk of derivative contracts with a positive market value. The basic data are collected as part of the half-yearly OTC derivatives statistics of the Bank for International Settlements (BIS). Deviations from the IMF methodology arise with regard to the group of institutions, as only the key institutions in this segment are surveyed (on a voluntary basis); they cover most of the market.

I 17: Ratio of liability positions in financial derivatives (gross) to capital (Gross liability position in financial derivatives to capital)

This indicator provides a rough assessment of the potential loss arising from derivative contracts with a negative market value. The basic data are collected as part of the half-yearly OTC derivatives statistics of the BIS. Deviations from the IMF methodology arise with regard to the group of institutions, as only the key institutions in this segment are surveyed (on a voluntary basis); they cover most of the market.

I 18: Profit or loss from financial operations as a percentage of gross income (Trading and foreign exchange gains and losses to gross income)

This indicator is a measure of the share of net income or expenditure on own account dealings in gross income. It is based on a secondary statistical evaluation of the banks' profit and loss accounts (annual accounts data). Deviations from the IMF methodology arise owing to the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

I 19: Staff costs as a percentage of overall expenses (excluding interest paid) (Personnel expenses to non-interest expenses)

This indicator provides information about staff costs in relation to non-interest expenses. It is calculated on the basis of a secondary statistical evaluation of the profit and loss accounts (annual accounts data) of domestic MFIs. Deviations from the IMF methodology arise owing to the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

I20: Spread between lending rates and deposit rates (Spread between reference lending and deposit rates) The spread between lending and deposit rates serves as a rough proxy for assessing the profitability and competitiveness of domestic MFIs. The indicator is calculated on the basis of the harmonised MFI interest rate statistics from a sample of MFIs. It is derived according to the IMF methodology from the difference between the weighted averages of deposit and lending rates. Deviations from the IMF methodology arise owing to the basis of consolidation, as the business conducted by German institutions' foreign branches and subsidiaries is excluded whereas the business conducted by foreign institutions' branches in Germany is included.

I21: Spread between the highest and the lowest interbank rates (Spread between highest and lowest interbank rates) This indicator sheds light on the risk premium in the interbank money market. The indicator is based on the asking rates for interbank money with a one-week maturity. The spread is the difference between the highest and the lowest interest rates posted by different banks. Only banks resident in Germany are taken into consideration.

I22: Ratio of customer deposits to total loans (excluding interbank loans) (Customer deposits to total (non-interbank) loans) This indicator is a measure of liquidity. It is based on data taken from the monthly balance sheet statistics of MFIs in Germany. Deviations from the IMF methodology arise owing to national accounting rules and the basis of consolidation, as the business conducted by German institutions' foreign branches and subsidiaries is excluded whereas the business conducted by foreign institutions' branches in Germany is included.

I23: Foreign currency loans as a percentage of total loans (Foreign-currency-denominated loans to total loans) This indicator measures the share of foreign currency loans in total loans. It is based on data taken from the monthly balance sheet statistics of MFIs in Germany. Deviations from the IMF methodology arise owing to the basis of consolidation, as the business conducted by German institutions' foreign branches and subsidiaries is excluded whereas the business conducted by foreign institutions' branches in Germany is included.

I24: Foreign currency liabilities as a percentage of total liabilities (Foreign-currency-denominated liabilities to total liabilities) This indicator measures the share of foreign currency liabilities in total liabilities. It is based on data taken from the monthly balance sheet statistics of MFIs in Germany. Deviations from the IMF methodology arise owing to national accounting rules and the basis of consolidation, as the business conducted by German institutions' foreign branches and subsidiaries is excluded whereas the business conducted by foreign institutions' branches in Germany is included.

I25: Ratio of open equity positions (net) to regulatory capital (Net open position in equities to capital) This indicator shows the ratio of the open equity positions (net) to the institutions' regulatory capital. It is calculated on the basis of individual institutions' reports under Principle I.

The credit institutions' equity-price-related net overall position is set in relation to their regulatory capital. Deviations from the IMF methodology arise owing to limited institutional coverage with regard to the reporting obligation under Principle I, the national definition of regulatory capital, the identifiability of the net positions of risk models as well as the basis of consolidation, which covers the institution as a whole (including foreign branches) but excludes foreign subsidiaries.

Other financial corporations

Other financial corporations are linked to deposit-takers in many different ways and can likewise be of systemic relevance to financial system stability. However, the data available for other financial corporations are somewhat less comprehensive than those for the banking sector. The following ratios which – in relating to investment funds, insurance corporations and financial services institutions pursuant to section 1 (1a) numbers 1-4 of the German Banking Act as well as pension funds – cover most of this sector, capture their position concisely.

I26: Assets as a percentage of the financial system's total assets (Assets to total financial system assets) This indicator provides information about the relative importance of the other financial corporations sector within the financial system. It is based on data from the financial accounts, which draw on various primary sources such as banking statistics, capital market statistics, securities deposit statistics and balance of payments statistics. Deviations from the IMF methodology arise owing to national accounting rules and – to a lesser extent – the consolidation of the sectoral financial assets.

I27: Ratio of assets to gross domestic product (GDP) (Assets to GDP) This indicator provides information about the importance of the other financial corporations sector with regard to the economic output of the whole economy. The numerator for this indicator is calculated on the basis of the financial accounts, which draw on various primary sources such as banking statistics, capital market statistics, securities deposit statistics and balance of payments statistics. The denominator is computed by the Federal Statistical Office and is derived from the national accounts. Deviations from the IMF methodology arise owing to national accounting rules and – to a lesser extent – the consolidation of the sectoral financial assets.

Non-financial corporations sector

Non-financial corporations are the financial sector's key (credit) customers. If the situation in the non-financial corporations sector deteriorates, this leads to a decline in the non-financial corporations' creditworthiness and debt repayment capability which, in turn, may have a direct effect on the financial institutions' situation. The data available for non-financial corporations are, all in all,

somewhat less comprehensive than those for the financial sectors, which is why various data sources must be consulted. The following indicators provide information about the sector's resilience to shocks.

I28: Ratio of debt to equity capital (Total debt to equity) This indicator provides information about the extent of debt financing in relation to equity capital (valued at market rates). It is calculated on the basis of the financial accounts, which mainly draw on the counterparty data of various primary statistical sources, such as banking statistics. Deviations from the IMF methodology arise owing to national accounting rules and the consolidation of sectoral equity capital and debt.

I29: Return on equity (profit before interest and tax) (Return on equity) This indicator measures the efficiency and profitability of the non-financial corporations sector. It is generated using both the national and the financial accounts. Deviations from the IMF methodology arise owing to national accounting rules, the definition and consolidation of corporate profits, and sectoral equity capital (valued at market rates).

I30: Ratio of profit (before interest and tax) to interest payments and principal repayments (Earnings to interest and principal expenses (Debt service coverage)) This indicator measures the ability to make regular debt service payments from the cash flow. It is generated on the basis of the national accounts. Deviations from the IMF methodology arise owing to national accounting rules, the definition and consolidation of the aggregates, and the principal repayments not covered by the indicator.

I31: Ratio of the non-financial corporations sector's open foreign exchange positions to equity capital (Net foreign exchange exposure to equity) This indicator is not calculated owing to a lack of data.

I32: Number of applications for creditor protection (Number of applications for protection from creditors) This indicator provides information about bankruptcy developments. It is based on the Federal Statistical Office's insolvency statistics. The indicator is significantly influenced by national insolvency legislation.

Households

Households affect the situation in the financial sector both directly and indirectly: directly through their decision to invest their savings or to take out loans, and indirectly through their consumption behaviour which, in turn, has an impact on the financial sector through the non-financial corporations sector.

I33: Ratio of debt to GDP (Household debt to GDP) This indicator provides information about the level of indebtedness in relation to the economic output of the whole economy. The numerator for this indicator is calculated on the basis of the financial accounts, which draw on the counterparty data of various primary statistics, such as banking statistics. The denominator is computed by the Federal Statistical Office and is derived from the national accounts. Minor deviations from the IMF methodology arise through the posting of interest accrued.

I34: Ratio of debt service payments to income (Household debt service and principal payments to income) This indicator measures households' ability to service their debts. It is generated on the basis of the financial and the national accounts. Deviations from the IMF methodology arise owing to the principal repayments not covered by the indicator.

Market liquidity

Capital transactions can be settled smoothly only if there is a sufficiently high degree of market liquidity, ie only as long as it is constantly possible to find a buyer or seller for all financial products without greatly impinging on the market price.

I35: Average bid/ask spread in the securities market (Average bid-ask spread in the securities market) This indicator sheds light on the liquidity situation in the securities market in question. It is calculated separately for a Federal bond (Bund) and a representative corporate bond with comparable maturities. The spread is the difference between the highest bid rate and the lowest asking rate provided by market participants at a given point in time.

I36: Average daily turnover rate in the securities market (Average daily turnover ratio in the securities market) This indicator gives the daily turnover rate in outstanding securities in the market. It is based on data from the Deutsche Bundesbank's capital market statistics as well as from Deutsche Börse AG, and is calculated as the ratio of turnover to the volume of listed Federal securities outstanding, both in euro.

Real estate markets

The cyclical developments in the real estate markets are highly correlated with the financial sector's lending behaviour. A real estate boom is often preceded or accompanied by a sharp rise in lending to the private sector. By contrast, a downturn in the real estate market is frequently flanked by a marked decline in lending. Moreover, financial crises in the past have often been preceded by a strong downturn in the real estate market.

I37: Real estate prices (Real estate prices) This indicator measures developments in residential property prices. It is based on data provided by BulwienGesa AG for 125 towns and cities. Separate indices are calculated for newly constructed and pre-owned residential properties (terraced houses and owner-occupied apartments), each providing comfortable living conditions in average to good locations. Deviations from the IMF methodology arise owing to the fact that the indicator does not include data on price developments in commercial real estate.

I38: Housing loans as a percentage of total loans (Residential real estate loans to total loans) This indicator measures the share of housing loans granted by German MFIs in the overall volume of loans. It is based on data taken from the quarterly borrowers statistics of MFIs in Germany. Deviations from the IMF methodology arise owing to the basis of consolidation, as the business conducted by German institutions' foreign branches and subsidiaries is excluded whereas the business conducted by foreign institutions' branches in Germany is included.

I39: Commercial real estate loans as a percentage of total loans (Commercial real estate loans to total loans) This indicator measures the share of commercial real estate loans granted by German MFIs in the overall volume of loans. It is based on data taken from the quarterly borrowers statistics of MFIs in Germany. Deviations from the IMF methodology arise owing to the basis of consolidation, as the business conducted by German institutions' foreign branches and subsidiaries is excluded whereas the business conducted by foreign institutions' branches in Germany is included.

Overview | Glossary

ABS (asset backed securities) Securities which are backed by a pool of homogeneous unsecured assets. The asset pool is assigned to a special purpose vehicle which serves the investors' claims from the pool's payment streams.

Arbitrage Exploitation of price differences for identical goods or financial products on different markets in order to make a profit. Pure arbitrage transactions are risk-free as the purchase (on the cheaper market) and the sale (on the more expensive market) are effected simultaneously. This is not the case for arbitrage transactions in the broader sense of the term, which take advantage of deviations from historical price trends for similar or closely correlated financial instruments.

Asset productivity Ratio of operating income to risk weighted assets. Provides an indication of a bank's risk/return profile.

Bank Lending Survey Eurosystem's survey of lending policies carried out among selected banks. The survey has been conducted on a quarterly basis since January 2003. It contains qualitative questions on developments in credit standards, terms and conditions of loans and credit demand from enterprises and households.

Basel II New framework agreement of the Basel Committee on Banking Supervision on risk-adequate capital requirements, a supervisory review process, and greater disclosure and market discipline.

BIS (Bank for International Settlements) Central banks' bank with its headquarters in Basel. Fosters cooperation between the central banks. Home of the Basel Committee for Banking Supervision, which works towards the harmonisation of banking supervisory standards.

BSC (ESCB's Banking Supervision Committee) Committee comprised of representatives from the central banks and banking supervisory authorities of all 25 EU member states. The BSC's work focuses on the macroprudential analysis of the stability and structure of the European banking and financial systems. This involves assessing the effects of developments in the EU financial system as well as the impact of regulatory and prudential requirements on the stability of the financial system. In addition, the BSC facilitates cooperation and the exchange of information between members.

Carry trade Borrowing of funds or taking of positions at a low interest rate and reinvestment of these funds at a higher interest rate. The two parts of the transaction are often effected in different currencies.

CDO (collateralised debt obligation) Structured finance instrument. In contrast to traditional ABS, the CDO pool which serves as collateral is comprised of a comparatively small number of het-

erogeneous assets such as securities (collateralised bond obligations, CBO), loans (collateralised loan obligations, CLO), credit derivatives (collateralised synthetic obligations, CSO) or hybrid forms.

CLS (Continuous Linked Settlement) A payment-versus-payment (PVP) foreign exchange settlement system developed by a group of international private banks and operated by the CLS Bank, which is domiciled in New York. CLS has been operating since September 2002.

Combined ratio Ratio of an insurance company's premiums to its expenditure on claims, administration and contract costs.

Correlation Statistical term for the linear relationship between two series of data. A positive (negative) correlation means that as the value of the first variable rises, that of the second variable increases (decreases).

Cost efficiency Effect of applying input factors while at the same time minimising costs in order to produce a given output. In this context it is assumed that the input prices are exogenous, ie set by the market.

Cost-income ratio Ratio of a bank's administrative expenditure to its operating income.

Counterparty risk Risk of default by the counterparty.

Credit default swap (CDS) Upon conclusion of a credit default swap agreement, the protection seller undertakes to pay the protection buyer a compensation payment if a specified credit event occurs (eg default or late payment). In return, the protection seller receives a periodic premium. The amount of the premium depends primarily on the creditworthiness of the reference entity, the definition of the credit event and the term of the contract.

Credit derivative Financial instrument which separates the credit risk from an underlying financial transaction, enabling the credit risk to be transferred to investors. The most frequently-used credit derivatives are credit default swaps.

Default risk Risk of loss arising when a borrower is no longer able to fulfil its obligations vis-à-vis the creditor, for example as a result of insolvency.

Derivative Financial product whose price is directly or indirectly related to the development of the market price of other goods or financial instruments.

Financial intermediary Institution that accepts monetary capital from investors and lends it to borrowers or that facilitates dealings between investors and borrowers. Typically refers to banks and insurance companies.

Fixed income arbitrage Investment strategy often pursued by hedge funds. It aims at using opposing positions to exploit price inefficiencies on interest-bearing securities and derivatives without assuming any general market risk.

FVO (fair value option) In accounting: restricted option to designate financial instruments as at fair value through profit and loss.

Gross premiums written Policy holders' premiums due and written in a financial year before deduction of the reinsurer's share.

Hazard rate model Econometric model that establishes the probability that the existence of a credit institution will be endangered within a certain period of time (eg within the coming year) if no support is provided. The determinants in the Bundesbank's model are capitalisation, profitability, credit and market risk as well as regional and macroeconomic factors.

Hedge funds Investment fund subject to little regulation. Hedge fund managers are not subject to any restrictions in their choice of capital instruments and can therefore effect short sales and enter into credit-financed and derivative positions. Funds of hedge funds do not invest in capital investment vehicles directly, but rather partly or entirely in other hedge funds. As a rule, hedge funds demand performance-related fees for exceeding a specified minimum return.

IAS/IFRS International Accounting Standards/International Financial Reporting Standards developed by the International Accounting Standards Board (IASB) with the aim of promoting the quality, transparency and international comparability of annual accounts.

Implied volatility A measure of expected volatility in the prices of, for example, bonds and stocks (or of corresponding futures contracts), which can be extracted from option prices.

Initial margin Deposit required by the responsible financial institution as collateral before or when risk positions are taken for the first time. See also margin.

Interest rate swap Contract whereby two parties agree to exchange different interest payment flows during a specific term on fixed dates in the future. Fixed interest payments are usually exchanged for variable interest payments.

Investment grade Rating grade of BBB- or higher (pursuant to the notation of the rating agencies Standard & Poor's and Fitch) or Baa3 or higher (pursuant to Moody's); the credit quality of borrowers or securities with an investment grade rating is deemed to be comparatively high. See also non-investment grade.

Large exposure As defined in sections 13, 13a and 13b of the German Banking Act. Loans to a single borrower unit which amount to or exceed 10% of the bank's liable capital.

LBO (leveraged buy-out) The acquisition of established enterprises in whole or in part by private equity companies, using a large proportion of borrowed funds. Interest and redemption payments are generally financed from the future earnings of the acquired enterprise or by selling parts of the business.

Leverage Originally from corporate finance: the effect of increasing the return on equity through debt financing. It can be used when the return on total capital employed is higher than the interest on loan capital. The same effect can be achieved using derivatives as, in this case, only a small capital input is needed to participate in the performance of the underlying market price.

Loan to value (LTV) Ratio of the loan amount to finance the purchase of a property to the assessed value of a property.

Loans of e 1.5 million or more Pursuant to section 14 of the German Banking Act, loans to a single borrower unit totalling €1.5 million or more.

Margin 1) Difference between the interest rates offered by a bank on loans or deposits and a reference rate.
2) Deposits required by a financial institution as collateral for typically leveraged trading positions, eg on the futures market.

Maturity transformation Banks accept short-term deposits and grant long-term loans. Maturity transformation enables banks to collect the term premium but exposes them to the risk of a change in the term spread.

Median Statistical measure which divides into two equal halves a series of observed values listed in order of size; 50% of the values are above the median and 50% are below.

Net system Settlement system in which counter-payments are offset against one another and the final settlement of the resulting positions is effected in one or more cycles.

Netting agreement Contract which, under certain conditions – eg in the case of insolvency –, permits the mutual offsetting of claims between two counterparties. A legally binding netting agreement reduces the default risk from a gross to a net amount.

Non-investment grade Rating grade below BBB- (pursuant to the notation of the rating agencies Standard & Poor's and Fitch) or Baa3 (pursuant to Moody's); borrowers or securities with a non-investment grade are classified as speculative, the securities are also referred to as high yield bonds.

NPL (non-performing loans) Loans whose full redemption is uncertain. In Germany, this term is understood to mean loans with specific loss provisions.

Operating income Sum of a bank's interest, commission and trading results.

Operating result Operating income less a bank's administrative expenditure.

Operational efficiency Ratio of the operating result to the operating income. Corresponds to the difference between one and the cost-to-income ratio and provides a measure of cost efficiency.

Operational return on equity Product of revenue efficiency and operational efficiency. Portrays the operating power of a bank excluding risk provisioning.

Option Right to purchase (call option) or sell (put option) the underlying asset (eg securities or foreign exchange assets) from/to a counterparty on a specified date in the future (European option) or during a specified period in the future (American option) at a previously agreed fixed price. Options may be traded prior to maturity.

OTC (over the counter) Trading of financial instruments outside of established stock exchanges.

OTC derivatives market Market on which derivatives are traded directly between two parties, ie without the involvement of a stock exchange. Many derivative contracts are concluded almost exclusively in this way, eg swaps and exotic options.

Overall interest Sum of the bonuses (ie the life insurance companies' surpluses which come about as a result of gains relating to mortality, interest rates and costs, and are passed on to the policy holders) and the guaranteed interest rate.

Prime broker Financial institutions which provide a range of services for hedge funds. These services generally include trade settlement, the safe custody and administration of securities, securities lending, provision of (collateralised) loans, reporting on trading positions and their performance.

Principle I (Own Funds Principle) Gives concrete shape to the requirement pursuant to section 10 of the German Banking Act that supervised credit and financial services institutions back both their counterparty and market price risks with adequate own funds. The institutions must comply with Principle I by close of business every day.

Principle II (Liquidity Principle) Prescribes prudent liquidity management for supervised credit and financial services institutions pursuant to section 11 of the German Banking Act. An institution's liquidity is deemed adequate if – as from the respective reporting date – the means of payment available during the next calendar month equal at least the expected liquidity outflows during the same period. This is assessed by a liquidity ratio that has to be reported monthly. This ratio is the quotient of the available means of payment to the callable payment obligations and must equal at least 1.0.

Private equity Capital invested by private companies generally in non-listed companies. The aim is often to restructure the enterprise and then sell it, often via an IPO.

Prudential filter Adjustment of balance sheet capital in accordance with IAS/IFRS for prudentially undesirable valuation effects in order to maintain the existing concept of regulatory capital.

Quantile Statistical measure which divides a series of observed values listed in order of size in such a way that p% of the values are smaller than or equal to the p% quantile and (1 – p%) of the values are larger than or equal to the p% quantile.

Rating Scaled classification of the creditworthiness of borrowers (eg companies, banks or countries) or the securities issued by them.

Retail banking Branch of banking which supplies the broad range of private customers with standardised products on the basis of simplified processes.

Return on equity (RoE) Ratio of the pre-tax profits in a certain period to the equity capital.

Revenue efficiency Product of asset productivity, risk profile and the leverage of debt financing.

Risk premium Compensates the investor for taking on a risk: equity risk premium on the equity market, term premium on the bond market, credit risk premium on the corporate bond market. The credit risk premium (also bond spread) recompenses the higher credit risk and, in some cases, lower liquidity of the securities vis-à-vis government bonds of the highest credit quality.

Risk profile Ratio of risk weighted assets to total assets.

Risk provisioning Net expenditure on write-downs, loan loss provisions and reserves executed or set aside as part of the assessment of a bank's loans, claims and securities.

Risk weighted assets (RWA) A bank's on and off-balance sheet items which are weighted in line with the creditworthiness categories defined in Principle I (Own Funds Principle) in order to assess the default risk.

RTGS system (real-time gross settlement system) Payment system in which each individual payment is dispatched in real time and irrevocably executed as soon as sufficient cover is available.

RTGS^{plus} The Bundesbank's RTGS system with liquidity-saving elements for the settlement of urgent individual payments. Settles national payments and cross-border euro payments via TARGET, the ESCB's individual payment system. Currently has 174 direct participants.

Settlement Finality Directive Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems. The Directive is aimed at reducing systemic risks by guaranteeing the finality of payment and transfer orders that are entered into these systems. "Finality" means that once orders have been entered into a system they are effective and protected from retroactive attachment in insolvency proceedings.

Short position By selling a security which he does not (yet) own (short sale), the seller is said to engage in a short position. He speculates on falling prices with the aim of repurchasing the security at a more favourable price in the future and reaping the difference between the sales and the repurchase price.

Solvency Provision with own funds.

Solvency II European Commission project, which – following a similar concept to Basel II – formulates new solvency rules for the insurance sector and, in addition to the quantitative capital adequacy element, also refers to the quality of the company-specific risk management.

Specific loss provisions Adjustment of the book value of an item on the asset side of the balance sheet to reflect the actual value situation.

Speculative grade See non-investment grade.

Stochastic frontier analysis Estimation method in econometrics used to determine production, cost and profit effectiveness. Deviations from maximum output or profits or from minimum costs are explained by both random deviations and inefficiency.

Stress test Simulation of the effects of extreme deviations from normal (market) developments. The Bundesbank carries out regular macro stress tests in which it forecasts developments in credit risk and net interest income for various scenarios with the aid of an econometric model. In micro stress tests a selection of banks are asked to calculate the changes – in the event of specified scenarios – in the market value of their positions as a percentage of their liable capital.

Structured finance instruments Basket of finance instruments (such as derivatives, securities or other claims) bundled in such a way that a new investment product is created. For example, CDOs, the main features of which are the formation of a pool of assets, the division of claims to payment inflows from the asset pool into different tranches with various risk/return profiles and the separation of the asset pool credit risk from the arranger's risk – usually via a special purpose vehicle.

SWIFT (Society for Worldwide Interbank Financial Telecommunication) Industry-established cooperative institution domiciled in Belgium, which operates a communication network used by financial institutions mainly for the exchange of information – in particular, payment messages and securities trading data – on a worldwide basis.

Syndicated loan Granted jointly by several banks with one or more of the banks assuming responsibility as originator and/or lead manager of the loan.

TARGET (Trans-European Automated Real-time Gross Settlement Express Transfer) Payment system comprising the RTGS systems of 16 EU member states (including those of all the countries which have introduced the euro) and the ECB's system. The participating RTGS systems are connected via the interlinking mechanism, enabling the immediate processing of cross-border transfers.

Tranches Elements of certain structured finance instruments (eg CDOs). As a rule, a distinction is made between the subordinated first-loss tranche (also known as the equity tranche), which is the first tranche to bear losses incurred as a result of default on claims from the security pool, the medium-priority mezzanine tranche and the senior tranche, which is the last tranche to bear losses.

Underwriter A party that assumes risks in exchange for a fee. On capital markets this might, for example, be a securities trader who makes a commitment to buy a securities issue wholly or partly at a certain price. In so doing, he assumes the risk that it may not be possible to place the securities in their entirety on the market.

Underwriting result In the case of non-life insurers as well as reinsurers, the underwriting result essentially comprises the premiums, the insurance payments and expenses incurred in operating the insurance business, but not the net investment income.

VaR (value at risk) Measure of risk which indicates the maximum expected loss that a portfolio may, with a specified probability (confidence level), experience in a specified period (holding period). VaR also serves as a risk management tool, in that VaR limits are set that may not be exceeded.

Volatility Measure of fluctuations, eg in the price of a financial instrument within a certain period (corresponds to the standard deviation).

Yield curve Relationship between the interest rates and the maturities of an investment for issuers with the same credit rating. A normal (inverse) yield curve is when the interest rate rises (falls) as the maturity of the investment progresses.

Overview | Bundesbank publications concerning financial stability

This overview lists selected recent Bundesbank publications on the subject of financial stability. Unless stated otherwise, the publications are available in printed form and on the internet in both German and English versions. The publications are available free of charge to interested parties and may be obtained from the Bundesbank's Communication Department. Additionally, for a fee, a tape or CD-ROM containing roughly 40,000 published time series of the Bundesbank, which is updated every month, may be obtained from the Bundesbank's Statistical Information Systems and Mathematical Methods Division. Orders should be sent in writing to the addresses stated in the imprint. Selected time series may also be downloaded from the internet.

FINANCIAL STABILITY REPORTS

Financial Stability Review November 2005

Report on the stability of the German financial system, in *Monthly Report*, October 2004

Report on the stability of the German financial system, in *Monthly Report*, December 2003

ARTICLES FROM MONTHLY REPORTS

For information on the articles published until October 2005 see the index in the *Financial Stability Review*, November 2005.

September 2006 The performance of German credit institutions in 2005

July 2006 Recent developments in German banks' lending to domestic enterprises and households | Derivatives and their feedback effects on the spot markets

June 2006 Investment and financing in 2005 | Concentration risk in credit portfolios

April 2006 Determinants of the term structure of interest rates – approaches to combining arbitrage-free models and monetary macroeconomics | The creation of a single list of eligible collateral throughout the euro area

March 2006 New legal and regulatory framework for the German securitisation and Pfandbrief market

January 2006 Securities market regulation: international approaches

DISCUSSION PAPERS, SERIES 2: BANKING AND FINANCIAL STUDIES

For information on the discussion papers published until October 2005 see the index in the *Financial Stability Review*, November 2005.

- 10/2006 The cost efficiency of German banks: a comparison of SFA and DEA
- 9/2006 Sector concentration in loan portfolios and economic capital
- 8/2006 The stability of efficiency rankings when risk-preferences and objectives are different
- 7/2006 Empirical risk analysis of pension insurance – the case of Germany
- 6/2006 Banks' regulatory buffers, liquidity networks and monetary policy transmission
- 5/2006 Does diversification improve the performance of German banks? Evidence from individual bank loan portfolios
- 4/2006 Heterogeneity in lending and sectoral growth: evidence from German bank-level data
- 3/2006 Measuring business sector concentration by an infection model
- 2/2006 Finance and growth in a bank-based economy: is it quantity or quality that matters?
- 1/2006 Forecasting stock market volatility with macroeconomic variables in real time
- 15/2005 Inefficient or just different? Effects of heterogeneity on bank efficiency scores
- 14/2005 Time series properties of a rating system based on financial ratios
- 13/2005 Incorporating prediction and estimation risk in point-in-time credit portfolio models
- 12/2005 Evaluating the German bank merger wave