

## Report on the stability of the German financial system

### Overview

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The stability of the German financial system has strengthened further since the end of last year. This was assisted not least by the rapid brightening of the macroeconomic climate in the wake of the global economic recovery that began in the USA and East Asia. In the euro area in general and in Germany in particular muted domestic demand is still impeding a more vigorous recovery. Even in Germany, however, the moderate growth may be expected to continue, which means that financial intermediaries in Germany can benefit from the more favourable underlying conditions. This applies both to strengthening their overall profitability and to reducing default risk in their lending business, which is susceptible to cyclical swings. The financial situation of enterprises that are active in the capital market has improved appreciably so far this year both in the United States and in the euro area and has helped to stabilise credit quality.

*Improved stability of the German financial system*

Despite the positive overall picture, the global financial system remains subject to certain risks. A particular source of uncertainty for the world economy is posed by the evolution of crude oil prices. Should they remain high for a prolonged period, subdued growth and rising inflation rates may be expected worldwide for a certain time. This would also depress the financial markets, especially regarding the development of stock markets and of risk premiums for enterprises as well as of emerging economies that are importers of crude oil.

*Real economic activity jeopardised especially by oil price trend*

*Substantial rise worldwide in household indebtedness*

In addition, the phasing-out of fiscal and monetary stimuli in some countries could highlight existing weaknesses and hamper the cyclical momentum of global expansion on a larger-than-expected scale. One notable weakness is the increased level of household indebtedness in a number of countries which, in conjunction with overheated real estate markets in some countries, makes households more vulnerable to rising market interest rates. The associated risks (wealth losses for investors, consumption-dampening effects and rising credit risks for the financial sector) might also impact indirectly on the German financial system.

*Global external imbalances persist*

A continuing latent risk is posed at the global level by the fundamental imbalances, which have not lessened. In fact, the US current account deficit has actually increased, even though concerns about its financeability have temporarily abated in face of the US economy's growth lead and the improved interest rate relationships in favour of the US market. Given the global imbalances coupled with continuing regional growth disparities, however, the world economy remains vulnerable to any pronounced exchange rate volatility.

*US Fed's rate reversal has triggered no major financial market tension so far, though risks remain*

Given the abundant provision of liquidity worldwide, the US Federal Reserve Bank's announced reversal of its previous interest rate course, which it duly executed at the end of June, initiated a cautious process of correction in the financial markets. The markets' expectations of a moderate US monetary policy stance aiming at a neutral level is meanwhile subject to uncertainty. For one thing, the long-term yields on US government bonds

have to date shown little convergence towards long-term growth and inflation expectations. To that extent there is a persistent potential for upward pressure on US long-term interest rates, especially if inflation expectations increase. For another, an upward movement of yields and risk premiums in individual market segments might be magnified by a sudden unwinding of carry trade positions<sup>1</sup> which are still very prevalent. This could generate tension in the international financial markets which would probably spill over to Europe.

Given investors' continuing "search for yield", the development of the hedge fund industry, which has been benefiting from a widening of its investor base, likewise merits greater attention regarding the implications for financial stability. The large inflows of resources which hedge funds have attracted of late and their wide-ranging activities in diverse market segments have increased the influence on the financial markets of these largely unregulated players. Moreover, by having multiple ties with prime brokers the market-disciplining role of the latter could be impaired by limited transparency and strong competitive pressure for clients.

The currently favourable outlook for the stability of the financial system, notwithstanding these risks, is due in part to the fact that the German banking system's profitability and ability to sustain risks have improved. Many

*Growing importance of hedge funds*

*German banking system's improved profitability and ability to sustain risk*

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<sup>1</sup> Carry trades denote the take-up of short-term loans at low interest rates for investment in higher-remunerated longer-term securities (such as government, corporate or emerging market bonds).

banks have successfully further pursued the adjustment processes which they earlier set in train and which have led to lower costs, an alleviation of credit risks and to a strategic refocusing. These efforts now need to be continued unrelentingly.

*Better results in the first half of 2004*

The improving profitability of the large internationally operating German banks was reflected in their published results for the first half of 2004. At the moment improvements are more apparent on the cost side in the form of lower general administrative spending and risk provisions. But first positive signs are now also appearing on the income side, especially bearing in mind that the banks have massively reduced their interest-bearing risk assets and that the impulses for lending business ensuing from the incipient economic upturn are only slowly being mirrored in the profit and loss result.

The current market indicators confirm this upward trend of the large German banks. The credit ratings of the German big banks remained unchanged in the first two quarters of 2004; the outlook has improved in some cases. The credit default swap premiums of the German big banks are currently at a low level. They nonetheless need to make up more ground in comparison with the profitability of internationally operating banks, both to enhance their international competitiveness and – in the interests of financial stability – to bolster their resilience to the eventuality of a cyclical downturn.

The bulk of the Landesbanks lifted their results in the first half of 2004. Most institu-

tions are undergoing a major adjustment process pending the loss of their state guarantees. The marked reduction of their risk assets, and hence the decline of their risk provisions, is an indication of this. In mid-2004 several rating agencies published so-called stand-alone ratings for the Landesbanks stripped of the state guarantees for ensuring the institutions' solvency (*Anstaltslast*) and for indemnifying depositors (*Gewährträgerhaftung*). Those ratings lie in a range that should allow the Landesbanks sufficient scope to successfully continue the necessary transformation process.

*Landesbanks in an adjustment process*

Overall, the risk situation of the large banks shows a smaller potential for systemic disruption than a year ago. Some changes have occurred, however, in the relative importance of individual risk factors.

*Overall improvement in risk situation*

The market price risks inherent in banks' trading book have increased noticeably over the past year and a half. The combination of an expanding world economy and a comparatively low interest rate level is likely to have raised banks' propensity to incur greater risks in their securities trading and derivatives business. However, the systemic risk arising from trading is probably limited given the banks' widely differing timetables in building up and running down market price risks and the fairly small correlation between their trading results.

*Increased market price risks*

The risks associated with lending business have eased considerably. This is due to the in some cases substantial reduction by banks of their risk assets in 2002 and 2003, marked

*Easing of risk in lending business*

advances in risk management and an improved credit quality on average. Default risks have diminished, in particular, at large enterprises both in Germany and abroad and on the part of debtors from emerging-market economies. This contrasts with the still high level of business insolvencies among small and medium-sized enterprises (SMEs) and a rising consumer insolvency trend in Germany. The risks associated with commercial real estate business have likewise increased, especially in some regional markets that have experienced a falling price level.

*Operational risk becoming more important*

In the past few years the banking industry has become increasingly sensitive to operational risk as well. This includes potential losses ensuing from errors in internal bank processes or IT systems and from external events such as natural catastrophes. In particular, legal risks – stemming from court judgements or legislative changes in the field of consumer and investor protection – have likewise assumed greater importance for banks of late.

*Savings banks and credit cooperatives*

The savings and cooperative bank sectors traditionally display a high degree of stability which is attributable above all to their strong market position in business with households and SMEs. A key criterion for the profitability of these institutions is the stabilisation of their net interest income. In 2003 this figure, which is the main source of income for these two categories of banks, rose for the second year in succession, after the second half of the 1990s had been characterised by a sharp fall in interest income. A solid basis for further progress is being laid by the ongoing consoli-

ation process within each of the two groups and the concentration of functions within their affiliated networks.

A difficult earnings situation persists, in particular, in the pure mortgage bank sector. Net interest received has fallen further in that sector because margins have narrowed perceptibly and the market share of the private mortgage banks in lending for non-government housing construction has declined. In some regions of Germany the lower income of the mortgage banks has been accompanied by higher risks – reflected in large write-downs – due to the weakness of the real estate markets.

*Difficult earnings situation at mortgage banks*

In the German insurance industry both profitability and solvency have stabilised. Thus the return on equity at both life and non-life insurance companies improved appreciably in 2003 thanks to the parallel strengthening of the results from insurance and investment business, even if past peak figures were not matched in all cases. In addition, life insurers massively reduced the latent burdens in their equity portfolios through sales and write-downs and were able to fund the total interest on policyholders' accounts from their improved capital investment result.

*Stabilisation in the insurance sector*

## Macroeconomic outlook and risk factors

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### Global environment

Global economic growth has continued more strongly than expected so far this year. According to the IMF's forecast from Septem-

*Strong global economic upturn*

ber, world output could expand in 2004 by 0.3 percentage point more than expected and reach 5.0%, with a rate of 4.3% estimated for 2005. At the same time the macro-economic setting of the international financial system has strengthened considerably compared with last year and the upturn is now more broadly based. While the terrorist attacks in Madrid and the escalation of violence in the Middle East engendered noticeable nervousness in the financial markets for a time, this does not appear to have triggered a lasting general confidence shock, so that to date the increased geopolitical risks have not seriously disrupted the global upswing. However, financial markets in particular have indicated increasing concerns of late that the cyclical momentum of global growth could weaken.

*Greater upward price pressure*

The favourable overall global economic outlook has been clouded during the past few months by greater upward price pressure. The average growth rate of consumer prices in the industrial countries in the period April to August amounted to 2.2%, as against 1.4% in the first quarter. This was caused chiefly by the surge in international crude oil prices. Apart from speculative factors and an uncertainty premium related to geopolitical risks, the oil price hikes have been fuelled by both supply and demand forces. The high energy intensity of the global upswing at the present time notably reflects the cyclically induced higher demand from the two growth centres USA and China, which both have a relatively high energy dependency. In addition, there are uncertainties regarding the actually available production, transportation

and refining capacities. The increased market volatility was additionally driven by the damage caused by the hurricanes on the US Gulf coast.

Although continuing high oil prices could slow down world economic growth, it appears unlikely at the moment that this will halt the global upswing. Among the reasons for this are that the real price of oil has remained below its past peaks and the degree of dependence on oil as a factor of production is not as high as in the 1970s and 1980s. The robustness of the current upturn is attested by the fact that the world economy – despite the sharp rise in oil prices – will probably grow in 2004 far more strongly than was forecast in autumn 2003 and spring 2004. According to IMF simulations, a lasting increase in the price of oil of 5 US dollars per barrel dents global growth by 0.3 percentage point.

*Oil price risk*

According to the IMF's forecast, consumer prices in the advanced countries will rise by 2.1% in both 2004 and 2005, which is 0.4 percentage point more than was forecast in April. A positive aspect is that hardly any second-round effects of the higher oil prices are apparent at the moment in the form of higher wage increases. The long-term inflation expectations (breakeven inflation) in the financial markets in the United States and in the euro area – as measured by inflation-indexed bonds – in early October were 2.4% and 2.3%, respectively.

There are still marked regional differences in growth. Strong impulses are continuing to

*Regional  
growth  
disparities*

come from the USA and China. The Chinese authorities have responded to the signs of overheating by restricting credit supply, a solution dictated by the narrow radius of monetary policy action due to the Chinese currency's effective peg to the US dollar. The slackening of growth in spring has lessened the likelihood of a "hard landing" for the Chinese economy, which would have considerable economic consequences for its neighbouring countries.<sup>2</sup> In Japan the cyclical upswing has continued even though the pace of growth has slowed. The recovery in the euro area has likewise gained ground, although it remains quite heavily dependent on exports.

A global constellation with persistent regional growth disparities is susceptible to shocks owing to the persistent external imbalances and is subject to the latent risk of greater exchange rate volatility. The potential for a cyclical reversal in the Latin American countries has decreased somewhat as particularly the larger economies – supported by higher revenue from the export of raw materials – have returned to a growth path. Russia and most of the other GUS states are profiting from higher oil revenues. To that extent the commodity-related shifts in the terms of trade represent a stabilising element at the regional level.

### United States

Following a sharp rise in the first quarter, overall output growth in the United States slowed to ¾% (quarter on quarter) in the second quarter. This weakening of momentum was due chiefly to the muted increase in

private consumption. This is connected with the oil price-induced burdens on households, the waning fiscal impulses and the smaller stimuli from mortgage refinancing. This makes the further evolution all the more dependent on the extent to which private consumption is bolstered in future by a more robust growth in employment. The fears of a jobless growth scenario still prevalent at the start of 2004 have now abated somewhat. However, the increase in employment in September (96,000 jobs) was below the expectations. The latest economic data show a mixed picture, which points to a less dynamic pattern of cyclical development vis-à-vis 2003. It should be borne in mind, though, that the pace of expansion of the US economy up to the beginning of 2004 was well above the growth rate of potential output.

The financial situation of households in the USA improved somewhat last year to the extent that their debt service burden (interest payments and capital repayments) fell slightly to 13.2% of their disposable income on account of the persistently low interest rates. In the first half of 2004 the figure was 13.1%. Including other regular interest-type payments such as leasing charges, this ratio averaged 18.5% last year compared with 18.7% in 2002; in the first half of 2004 the comparable figure was 18.2%. Households' liabilities at the end of the second quarter of 2004 totalled around 118% of their disposable income; this was 7 percentage points more

*Financial  
situation of  
households*

*Slight slowing  
of growth in  
the second  
quarter*

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<sup>2</sup> The IMF estimates that a decrease of 10 percentage points in China's import growth would reduce the rate of GDP expansion in Asia (excluding China) by 0.4 percentage point compared with the baseline scenario.

than in 2002. This rise was mainly attributable to an increase in mortgage debt fuelled by low interest rates and rising real estate values. The overall financial situation of US households merits a critical assessment, also because the saving ratio of less than 1% of late remains very low. Given the tendency towards higher interest rates, their interest expenditure ratio is likely to increase, however.<sup>3</sup>

*Financial  
situation of  
enterprises*

The income and financing patterns of US firms improved further in 2003 and have continued to do so this year. Pre-tax profits of non-financial corporations rose to 10½% of the value added generated by the sector in 2003 and edged up to almost 12% in the first half of 2004. This enabled many enterprises to finance their investment expenditure largely from internally generated funds. As a result, corporate liabilities expanded only marginally faster in 2003 than in 2002.<sup>4</sup> The interest expenditure ratio of non-financial corporations fell in 2003 to 14.6% of their cash flow and dropped further in the first quarter of 2004 to 13.7%. In the second quarter the interest ratio rose again slightly, however, to 13.9%. But all in all the balance sheets of US enterprises have grown stronger.

*Critical budget  
and current  
account deficits*

One aspect of the US economy which remains critical, however, is the combination of the so-called twin deficits, ie a high budget deficit coupled with a chronic current account deficit. The current account deficit rose in the second quarter of 2004 by over 1 percentage point compared with its low in autumn 2003 to 5.7% of GDP. In view of the USA's growth lead at the moment and given a scenario of persistently high oil prices, no lasting reduc-

tion of the current account deficit is to be anticipated in the short term.

## Japan

In the first half of 2004 real GDP in Japan expanded by 2.6% on a seasonally adjusted basis, although the pace of expansion slowed in the second quarter compared with the first three months. Growth was once again given a substantial boost by exports, which rose by 3½% on the first quarter at constant prices and after seasonal adjustment. In the context of its latest forecast the IMF also examined Japan's dependence on the Chinese economy. It concluded that a decline in China's import growth by 10 percentage points would dent Japan's GDP growth by 0.5 percentage point. The implications for Japan of the risks associated with a possible "hard landing" in China are consequently considerable, especially as this assessment excludes third-market effects. These risks should not be neglected, especially as domestic demand – following the strong expansion in the two preceding periods – stagnated in the second quarter, thus making the Japanese economy more reliant on external impulses. Moreover, despite the currently buoyant cyclical situation overall

*Buoyant  
economy but  
some risks*

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<sup>3</sup> The concerns about households' financial situation are magnified by the trend apparent in many countries to transfer risks from the financial sector to the household sector. This includes the growing importance of market-related risks at life insurance companies and pension funds, the sale of credit risks to pension funds and insurance companies as well as the higher share of floating-rate mortgages.

<sup>4</sup> The financing gap in the pension funds of many US firms has also narrowed somewhat thanks to the stock market recovery and higher capital market yields as well as regulatory measures. There is still a long-term risk, however, that some firms will not be able to honour their growing pension liabilities.

it should be remembered that considerable consolidation needs persist for the financial sector and for small and medium-sized producing enterprises, in particular, and that the deflationary trough has not yet been overcome.

### Euro area

*Sustained growth in second quarter*

The fragile recovery in the euro area which began in the second half of 2003 picked up speed from the turn of the year. In the second quarter of this year seasonally adjusted real GDP grew by ½%, just as it had in the first three months. The contribution to growth from domestic demand and real foreign trade each amounted to ¼ percentage point.

*Revised ECB staff projection*

For the current year the ECB staff expects euro-area GDP growth of between 1.6% and 2.3% and for 2005 anticipates that growth will lie within a range from 1.8% to 2.8%. This represents an upward revision of 0.2 and 0.1 percentage point, respectively, vis-à-vis the Eurosystem's June projection in reflection of the better-than-expected outcome of the first half of the year. As the domestic impulses in the euro area are still fairly muted, the cyclical upturn remains susceptible to global economic disruptions. The price outlook has worsened somewhat vis-à-vis the June projection owing to oil price movements. In addition, considerable upside risks remain. The summer projection estimates the rate of inflation in 2004, measured by the Harmonised Index of Consumer Prices (HICP), at between 2.1% and 2.3% and for 2005 defines a range of 1.3% to 2.3%.

The financial situation of enterprises in the euro area continues to constitute no impediment to a self-sustained upturn. The debt ratio of non-financial corporations in the first six months of this year amounted to 62% of nominal GDP. The annualised rate of increase in the total debt finance of non-financial corporations in the second quarter of 2004 came to around 2%, after 2¼% in the first quarter. This moderate growth of indebtedness, despite historically low external financing costs, presumably mirrors greater internal funding as is typical of the early phase of an upturn, especially given the still rather subdued expectations regarding the development of economic activity. It is also possible that some firms have not yet concluded their balance sheet adjustments. The level of corporate indebtedness in relation to profit has been declining since mid-2003. All in all, the debt situation of non-financial corporations seems to have improved.

*Eased debt situation of non-financial corporations*

Households' indebtedness in relation to GDP increased to 54% in the second quarter of 2004. In the second quarter of 2003 it had stood at 52%. The rise was fuelled by the financing of the persistently high demand for housing loans in countries with booming real estate markets. Owing to the low interest rate level, the ratio of households' interest expenditure to GDP remained largely at the level of the mid-1990s, despite the trend increase in indebtedness. This indicates that the financing situation of euro-area households is stable overall.

*Overall financial situation of households stable*



## Germany

*Cyclical recovery heavily dependent on external impulses*

In the second quarter of 2004 the cyclical recovery of the German economy gained some momentum. GDP grew by 0.5% on the first quarter. After adding the result for the first quarter, this gives an annualised growth rate of 1¾%. The country's average rate of capacity utilisation has probably increased for the first time in quite a long while. At the moment the recovery is still narrowly based, however. Strong positive impulses came above all from the external sector. Domestic demand has remained lacklustre. This heavy external dependence is the Achilles heel of the cyclical upswing in Germany.

*Increased oil price risks*

The higher cost of energy ensuing from the sharp rise in oil prices is having a dampening effect; it is leading to real income losses for oil consumers to the benefit of oil producers and is constraining growth in Germany. The Bundesbank has carried out simulation studies to analyse the implications of a permanently high oil price for the HICP index and GDP. If oil prices were to remain at a level of 50 US dollars per barrel in the long term, consumer prices in 2006 would be ¾% higher than according to the current baseline projection and real GDP ¾% lower than under the baseline forecast.

*Improved financial situation of enterprises*

Yet on the whole key conditions for a continuation of the upturn remain in place, although the underlying cyclical momentum could decline a little in the second half of the year. The cost situation of domestic firms has eased and is helping to stabilise earnings. On the financing side the ground is set for more

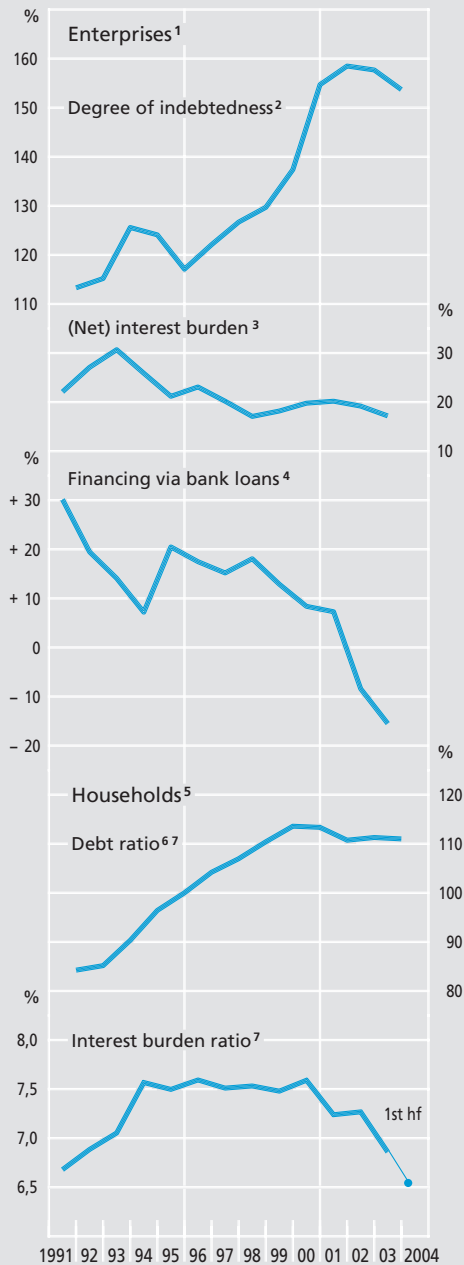
growth. The adjustment process in the non-financial corporate sector has made good headway. In 2003 enterprises actually repaid bank loans on balance. This was mainly due to a reduction of liabilities by a number of large firms. The financial balance was marginally positive, just as it had been in 2002. Enterprises' interest burden has decreased. The debt ratio has fallen to 153½% of gross value added (see chart on page 14).

So far this year no cyclically relevant impulses have come from the asset markets. Stock market prices have recently been below their level at the start of the year and in the housing sector prices likewise appear to have fallen slightly. No general revaluation has occurred to date, however. In 2003 the prices of new owner-occupied apartments and houses likewise receded a little for the first time in a long while. The prices of second-hand owner-occupied apartments have already been showing a slight downward tendency for quite some time. A look at the regional breakdown shows that prices have sagged more in eastern Germany than in the western part of the country. In addition, prices have tended to drop more in big cities than in smaller areas (see chart on page 15).

*No major cyclical impulses from the asset markets*

Households' consumption restraint, which has been evident for some time now, persisted in the third quarter of 2004. Besides the poor labour market situation, this could also have something to do with the fact that the public debate about the problems facing the statutory pension and health insurance systems have made the population more aware of the need for additional private cover. Pri-

### Financial indicators of the private sector



1 Non-financial corporations, including quasi-corporations pursuant to ESA 95. — 2 As a percentage of gross value added; end-of-year figures. — 3 Net interest expenditure as a percentage of the operating surplus. — 4 Financing via domestic bank loans as a percentage of the total cash flow. — 5 As defined in ESA 95. — 6 End-of-year figures. — 7 As a percentage of disposable income.

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vate asset accumulation for the purpose of old-age provision is to be seen as a positive development in view of the demographic challenges. In the longer run this will improve the financial position of households and in that respect reinforces the stability of the financial system, even if it is acting as a drag on the cyclical upturn at present.

Households' debt ratio remained broadly stable in 2003, measuring 111% of their disposable income at the end of the year.<sup>5</sup> At the end of 1999 it had stood at 113%. Their interest expenditure ratio fell again. At 6.5% of disposable income on average, it does not constitute an excessively large cost item for households. Although average expenditure on owner-occupied houses is very high by international standards, this must be seen against the background of a lower house ownership quota.

*Financial situation of households largely stable*

### International financial system

In the period under review, developments in the international financial system were strongly shaped by ongoing abundant liquidity as well as the interest rate turnaround in the USA. The initiated correction process has so far proceeded without major market tension. Nevertheless, risks and uncertainties remain for individual segments of the international financial markets. Moreover, certain specific aspects and risk factors in the inter-

*Liquidity remains abundant in the international financial system*

5 As the reference variable for the debt ratio is disposable income, it is not comparable with the euro-area debt-to-GDP ratio mentioned earlier. Its reference variable is nominal gross domestic product.

national financial system are of relevance from a financial stability perspective, in particular the tight real estate markets in some countries, the increasing significance of hedge funds and developments in the emerging market economies and the new EU states.

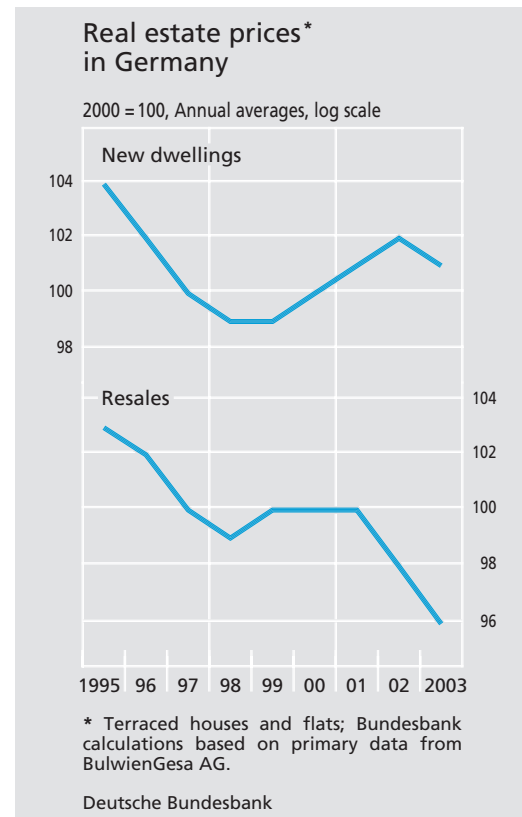
### Financial markets

*Interest rate turnaround by the Fed in May/June...*

The timing, scale and impact of the interest rate turnaround in the United States have been central topics of discussion in the international financial markets since the beginning of 2004. In particular, market participants have been closely following the trend of non-farm payroll employment on the US labour market on the assumption that this indicator considerably influences the Federal Reserve's interest rate decisions. Following two surprisingly favourable labour market reports and higher inflation rates, the yield on 10-year US government bonds temporarily rose by approximately 100 basis points between the beginning of April and the middle of May to over 4.8%. In the summer, new doubts concerning the strength of the US economy together with moderate inflation rates contributed to a decline in the yield to less than 4.0%. Comparable euro-area government bond yields followed these interest rate movements on a smaller scale.

*... so far without major market turmoil,...*

The interest rate turnaround, which was announced in advance by the US Federal Reserve and implemented in measured steps,<sup>6</sup> has proceeded so far without causing any major tension in the international financial system. Given the abrupt rise in yields in summer 2003 and the considerable volume of



carry trade positions, this could not be expected as a matter of course. Moreover, in March the Japanese monetary authorities ceased official interventions in the foreign exchange market for the time being, which meant that from this direction weaker demand for US government bonds was to be expected.<sup>7</sup>

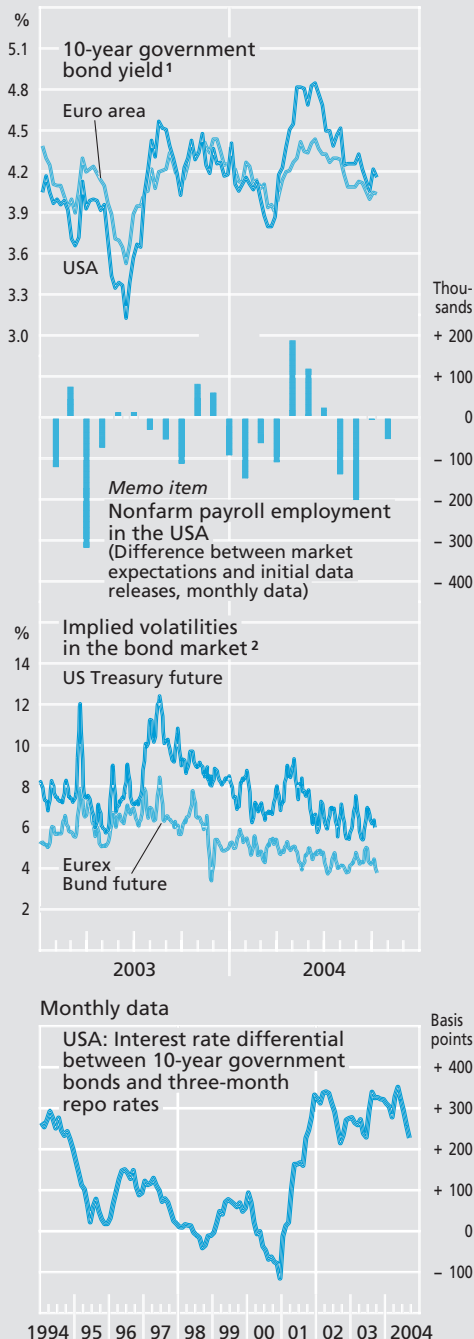
In the USA, in particular, capital market rates remain notably low measured in terms of long-term inflation and growth expectations.<sup>8</sup> Consequently, the risk of a sudden fall in bond

<sup>6</sup> The Federal Reserve announced a moderate tightening of its monetary policy in May and implemented the first steps on 30 June, 10 August and 21 September (25 basis points each time).

<sup>7</sup> Potential upward pressure on global capital market yields is also being generated by the high general government deficits.

<sup>8</sup> The Consensus Forecast projects nominal GDP growth of 5.7% for the USA in the long term.

### Bond markets in the euro area and in the USA



Sources: Bloomberg, Thomson Financial Datastream, Bundesbank calculations. — 1 End-of-week figures. — 2 Variance of future price changes anticipated by investors. Moving five-day averages. Calculated from the price of at-the-money options.

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market prices has increased again despite the interim rise in yields. As a result of the low interest rates of recent years, a large number of outstanding US government bonds are carrying a low interest coupon, which – at constant time to maturity – considerably increases the interest rate sensitivity of bond portfolios in comparison with 1994, for example.

Given that the US dollar yield curve remains comparatively steep when viewed over the longer term, there is also an incentive to finance longer-term portfolio investments with short-term funds. Following the weak economic data in July and August, it seems likely that an increased number of such carry trades have again been concluded.<sup>9</sup> Abrupt changes in market expectations, especially concerning future growth and inflation trends, could trigger a sudden unwinding of the trading positions. As this investment strategy is widespread, the possibility of capital market tensions cannot be ruled out even though many institutional investors factor such market shifts into their stress tests.

*... however, risks remain*

Apart from the temporary uncertainty in April and May of this year, the implied volatility of options on long-term US bond futures tended to decline between August 2003 and September 2004. In conjunction with the steep yield curve, this essentially reflects the market's expectation of an orderly rise in yields. In the light of continued very low short-term real interest rates, however, the moderate adjustment path of US monetary policy to a less

*Market participants are expecting moderate rise in yields*

<sup>9</sup> One indication of this are the changes in the portfolio positions of government bond dealers (primary dealers) in the USA.

expansionary level involves risks, particularly if inflationary pressures were to increase unexpectedly along the way.

*Spillover risks  
for euro area*

Unlike in the USA, yields in the euro area remain closer to the long-term nominal growth expectations.<sup>10</sup> Consequently, there are no signs of overvaluations. However, there is a risk that possible adjustment shocks in the US markets will spill over into Europe.

*US dollar's  
depreciation  
stopped for the  
time being*

On the foreign exchange markets the weakening of the US dollar against the euro and the yen, which recommenced in September 2003, persisted into February of this year. After dipping to lows of over 1.28, between March and September the euro-US dollar exchange rate moved sideways within a range of 1.18 and 1.25. Although the monthly data on the US current account deficit were generally more negative than market participants expected this year, on the whole, there was only a restrained reaction from the exchange rate. The dollar was briefly buoyed, in particular, by the improved outlook for interest rates and growth compared with other currency areas. Moreover, owing to the more positive development of cyclically dependent tax revenue, the high US general government deficit will probably turn out to be somewhat lower than was forecast at the beginning of the year. In the light of this, the predominant expectation among the market players at the turn of the year that the dollar would depreciate further was not realised. This led, in part, to the liquidation of speculative positions and was accompanied by increased volatility. Nevertheless, the exchange rate re-



versal in favour of the US dollar occurred without any major market friction.

The widening US current account deficit still poses a latent risk of sizeable depreciations of the US dollar, particularly as for some time now it has been principally funded not by direct investment but by foreign purchases of

*Continued  
depreciation  
risk from the  
current account  
deficit*

<sup>10</sup> The Consensus Forecast estimates long-term nominal GDP growth for the euro area at currently 4%.

bonds, which are potentially more volatile. In addition, major exporting countries such as Japan and China propped up the US currency at the beginning of the year through massive purchases. In the long term, however, these countries are likely to limit such interventions for domestic economic reasons. Ultimately, they merely postpone the necessary structural adjustments.

*Short-term upward risks from the unwinding of cross-currency carry trades*

While in the longer term risks stem from a further dollar depreciation, in the short term pressures in the financial system could also occur as a result of an unexpected appreciation of the US currency. Insofar as US dollar loans at low interest rates have been taken out to finance foreign currency investments with higher yields (cross-currency carry trades), a dollar appreciation could lead to a reversal of speculative positions if US interest rates rise. The abrupt increase in the value of the broad trade-weighted dollar index in May probably owed something to such effects. Increased exchange rate volatility could also have a contagious impact on the prices of other financial assets and foster the misallocation of global capital flows.

*Sideways stock market movements since March, with fluctuations*

The broad rise in prices on international stock exchanges, which began after the Iraq war, faltered in March this year. Although enterprises' quarterly reports mostly showed clear increases in profits, various negative factors emerged which led to a consolidation of share prices and short-term fluctuations in their implied volatility. First, the Madrid terrorist attacks, the flare-up of fighting in Iraq and the raising of the terror alert codes in the USA repeatedly reminded market participants of the

ongoing geopolitical uncertainties. Second, increasingly mixed data on economic activity in the USA and rising crude oil prices dampened the growth outlook and increased uncertainty about enterprises' earning prospects.

As a result of the more muted economic outlook, risk premiums on investments in European shares rose again slightly until September and, in historical terms, are still at a high level.<sup>11</sup> According to I/B/E/S surveys, in August and September risk premiums – measured as the difference between expected earning yields<sup>12</sup> and real interest rates – were at approximately 5½ percentage points for both the broad Dow Jones Euro Stoxx index and the German DAX. Thus, risk premiums are approximately a mere ½ percentage point below the record level of spring 2003.<sup>13</sup> The price-earnings ratios on the US and European stock exchanges also fell to levels last seen in spring 2003.<sup>14</sup> Consequently, there is currently no evidence of an excessive risk appetite among market participants or corresponding

*No signs of overvaluations on the stock markets*

<sup>11</sup> Wider measures of risk propensity, such as the State Street Investors Confidence index, point in the same direction.

<sup>12</sup> Calculated as the ratio of expected 12 months' forward earnings according to I/B/E/S (Institutional Brokers Estimate System) to the current price level.

<sup>13</sup> Risk premiums calculated in this way for enterprises listed in the Euro Stoxx index and in the DAX were recently more than 1 percentage point above what they had been at the beginning of the year. By contrast, implied risk premiums calculated from the three-step dividend discount model (using longer-term earnings expectations) remained virtually unchanged in the case of the DAX; in the case of the Euro Stoxx index, they were merely ½ percentage point higher than at the beginning of the year.

<sup>14</sup> Up to mid-September, the price-earnings ratio based on expected 12 months' forward earnings estimated by I/B/E/S analysts fell to 12.7 for the DAX, 13.2 for the Dow Jones Euro Stoxx index and 15.7 for the S&P 500 index in the USA.

mispricing, which would harbour risks of price declines.

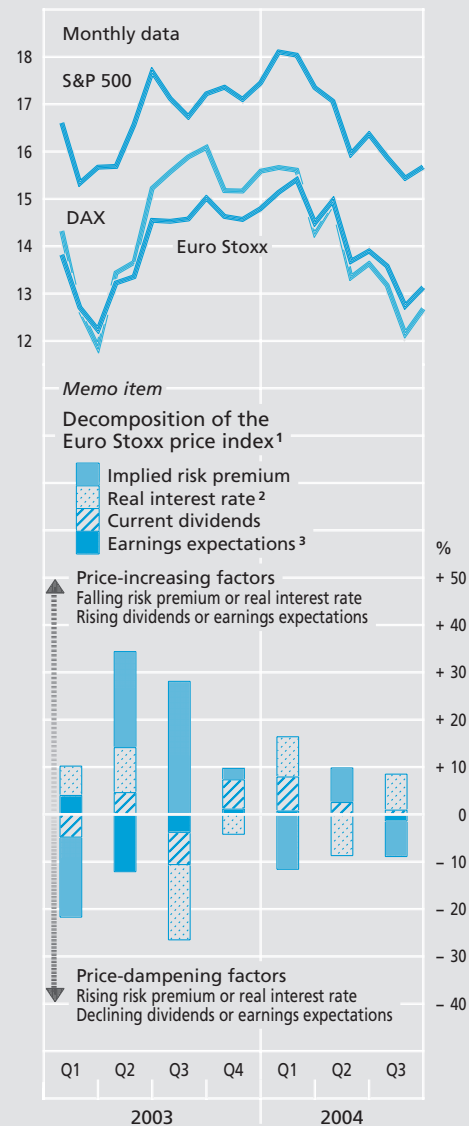
*Very good financing terms for enterprises active in the capital market*

Given the continuing abundant liquidity in the financial markets, financing terms for enterprises active in the capital market have remained extremely favourable so far this year. Overall, interest rate premiums of international corporate bonds over government bonds narrowed even further at the beginning of the year, with speculative-grade corporate bonds denominated in US dollars and euro reaching lows in April not seen for years. The sharp rise in capital market yields led to a temporary widening of the risk premiums of lower-rated bonds at the beginning of May. However, the uncertainty soon evaporated from the market. As yields declined, risk premiums fell and by October they were below the level at the beginning of the year. This is in line with Bundesbank calculations (see Annex on page 69), which indicate a high risk appetite among investors in the bond market in a long-term comparison.

*Smaller issuance of new international corporate bonds*

In addition to the ongoing "search for yield", a range of other factors has probably contributed to the exceptionally low risk premiums. For example, the global issuance of new corporate bonds (excluding banks) in the international capital market declined by roughly 20% in the first three quarters of 2004 when compared with the same period of 2003. This was largely due to continuing efforts by large issuers to reduce their indebtedness. This applies, for example, to companies in the telecommunications sector, which account for a large share of outstanding bonds. The smaller number of mergers and acquisitions together

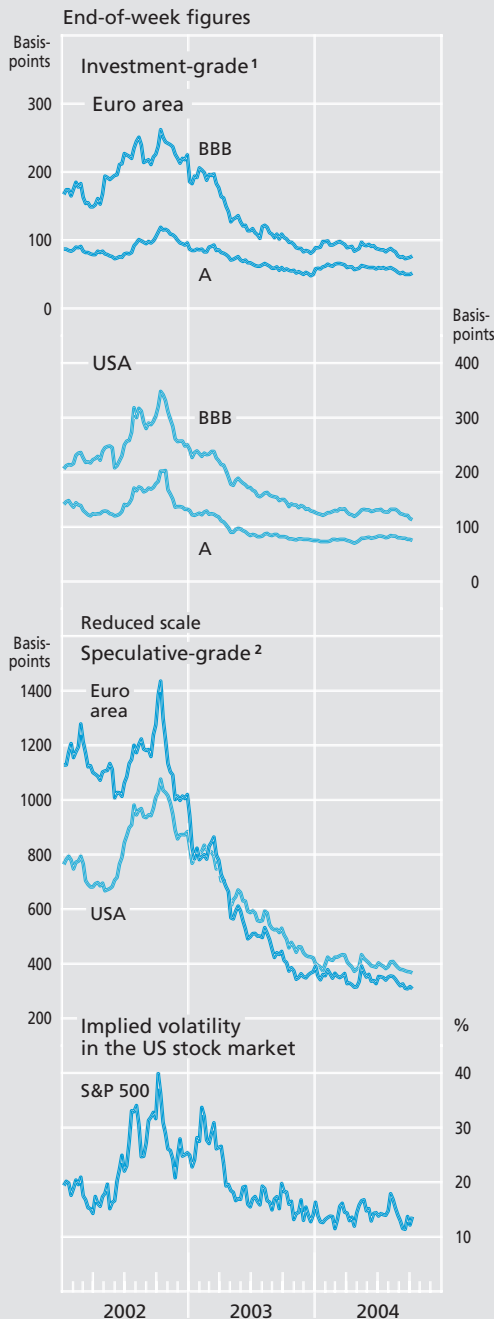
### Price-earnings ratio of major stock indices\*



\* On the basis of expected 12 months' forward earnings according to I/B/E/S. Source: Thomson Financial Datastream. — <sup>1</sup> Factors contributing to price change in the three-stage dividend discount model pursuant to RJ Fuller and CC Hsia (1984), "A Simplified Common Stock Valuation Model", *Financial Analysts Journal*, September-October, pp 49-56. Anticipated long-term expectations of profit growth: 2.5%. Balance of positive and negative factors: changes in the price level compared to the previous period. — <sup>2</sup> Calculated from the average yields of 10-year nominal euro-area government bonds less the average inflation expectation over the next ten years. Source: Consensus Forecast. — <sup>3</sup> Medium-term profit growth expectation (in three to five years) according to I/B/E/S analysts' estimates. Source: Thomson Financial Datastream.

Deutsche Bundesbank

### Credit spreads of corporate bonds over government bonds



Sources: Merrill Lynch, Bloomberg. —  
1 Seven to ten-year corporate bonds from  
the relevant rating grade vis-à-vis govern-  
ment bonds with a comparable maturity. —  
2 Corporate bonds with a residual maturity  
of at least one year vis-à-vis govern-  
ment bonds with a comparable maturity.

Deutsche Bundesbank

with advance funding in 2003 were addition-  
al factors in the marked decline in issuing ac-  
tivity in the course of 2004.

From the demand side, the narrowing of  
credit spreads was supported by the strong  
growth in structured financing instruments  
(eg in the form of collateralised debt obliga-  
tions) for which corporate bonds are used as  
the underlying asset. In addition, it is likely  
that the downward tendency in stock market  
volatility was partly responsible for the lower  
risk premiums. This owes something to the  
fact that the pricing of corporate bonds has  
recently been more strongly aligned to the  
stock market valuations of firms.<sup>15</sup>

*High demand  
and modified  
pricing*

Another significant factor in this context is  
the increasingly stabilised credit quality of en-  
terprises active in the capital market. After  
the slide in rating levels which had persisted  
for several years came to a virtual halt in the  
first quarter of 2004, rating upgrades pre-  
dominated over corresponding downgrades  
in the second quarter both in western Europe  
and in the USA. Data – as yet only avail-  
able for the USA – indicate that this trend per-  
sisted into the third quarter. Alongside the fa-  
vourable rating trend, payment defaults on  
corporate bonds reached multi-year global  
lows in the course of the year. While the  
credit environment in the USA stabilised  
across all sectors, in western Europe the rat-  
ing improvements have so far been mainly  
limited to the financial sector. The trend to-

*Significant  
improvement in  
credit quality of  
enterprises  
active in the  
capital market*

<sup>15</sup> Many conventional valuation models for corporate  
bonds decompose them into a risk-free bond and a writ-  
ten put option whose price depends, in part, on the ex-  
pected volatility of the firm's value (ie its share price), see  
Deutsche Bundesbank, *Monthly Report*, April 2004, p 25.



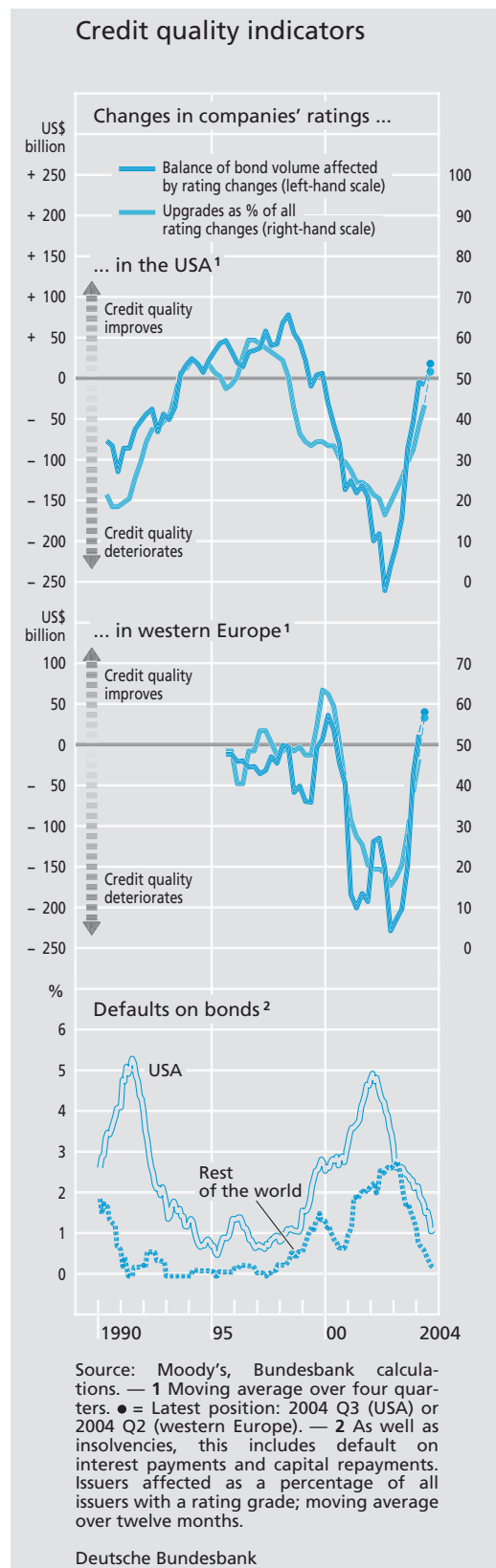
wards higher credit worthiness among enterprises active in the capital market reflects not only the brightening of the macroeconomic outlook but also an appreciable rise in profits. In recent months, however, many enterprises have used their cash flows not for further debt reduction but for other measures, such as extra dividend distributions and share buy-backs, which have especially benefited shareholders. This is a further indication that there is virtually no more scope for further reductions in risk premiums of corporate bonds.

*Setback potential of corporate bonds limited on balance*

The improved fundamentals should, on balance, limit the setback potential for risk premiums in the case of corporate bonds. However, the exceptionally low level at present may prove vulnerable to corrections. In the first place, a rising interest rate level would probably be accompanied by an increase in interest rate premiums, especially as, in the medium term, a rise in yields is associated with increased accrued interest liabilities for enterprises as a result of new financing and refinancing. Secondly, a weaker growth momentum could place particular pressure on the credit spreads of issuers with poorer credit worthiness that have been increasingly exploiting the favourable conditions for debt financing in the bond market over the last few months.

*No further tightening of euro-area banks' credit standards*

The situation in the bank lending market has also stabilised in the past few months. The results of the Eurosystem's Bank Lending Survey for the euro area in the second quarter of 2004 showed no further tightening of credit standards overall. At the same time,



the trend towards greater risk differentiation in lending terms continued.

*Marked swings in longer-term euro-area money market rates*

The short-term interest rates in the euro-area interbank market have changed only slightly, reflecting the fact that the key interest rates in the euro area have remained unchanged since June 2003. By contrast, there were noticeable fluctuations in the longer-term money market rates caused by uncertainty over future interest rate developments. In the first quarter of 2004, the 12-month EURIBOR – which had started to fall at the beginning of December 2003 from a level of 2.50% – continued its decline and at the end of March briefly fell just below the 2% minimum bid rate on the main refinancing operations as market participants no longer ruled out a further interest rate cut by the ECB. However, this downward movement was corrected by mid-June. The 12-month EURIBOR then declined again to just under 2.30% before stabilising at 2.40% in September.

*Relaxed liquidity conditions in the interbank market*

Despite these fluctuations, activity in the interbank market was calm. The average implied volatility over the period from January to September 2004, measured by the prices of at-the-money options on 3-month EURIBOR futures contracts, declined by 6 percentage points compared with the same period in 2003. In general, liquidity conditions were relaxed and, in most maturity bands, this was reflected in a perceptible decrease in the bid-ask spreads for uncollateralised transactions by up to 5 basis points to between 2 and 6 basis points. Similarly, there was discernibly less uncertainty about counterparties' credit-worthiness compared with last year. The dif-

ferential between yields on unsecured and secured transactions, known as the "depo-repo spread", ranged from 2 to 7 basis points depending on maturity. This equalled a drop of up to 2 basis points on the 2003 levels. The smooth transition in March 2004 to the Euro-system's new monetary policy framework has further reinforced money market stability.<sup>16</sup>

### **Selected risks in the global financial system and in major countries**

In terms of the international environment, the development of real estate prices still poses a significant risk to stability. The German financial system faces associated risks via real economic effects as well as through business relationships with other international financial institutions and direct credit exposures. Since the slump in stock market prices which began in 2000, real estate in many industrial countries has profited from the search for alternative investment opportunities. Inflows of funds have been magnified by the historically favourable financing terms. Unlike in previous years, inflation hedging probably played a very minor role in recent property acquisitions.

*Real estate markets a risk factor*

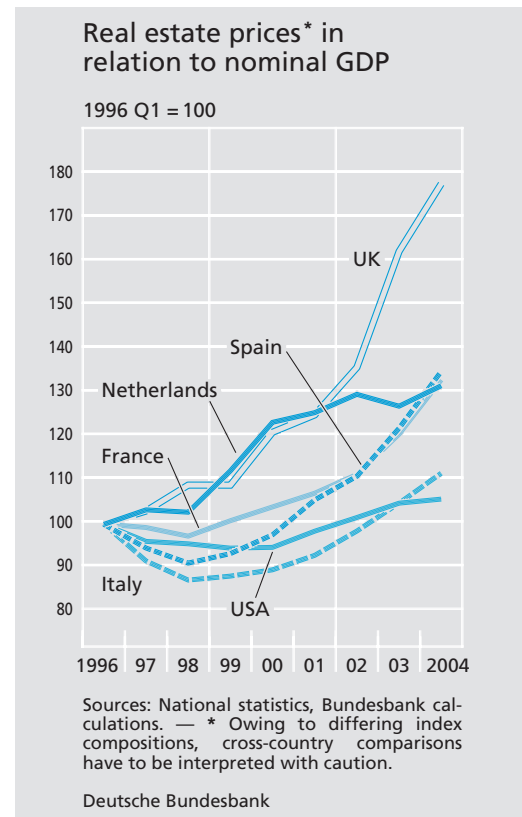
Among the larger economies in the euro area, Spain, France and Italy have recorded persistent, substantial price increases in the housing sector that are exceeding households' income growth and increasingly raising the question of overheating. By contrast, in

*Risk situation differs across European housing markets*

<sup>16</sup> A detailed description of the new monetary policy framework can be found in Deutsche Bundesbank, Initial experience with the new monetary policy framework and the Bundesbank's contribution to liquidity management by the Eurosystem, *Monthly Report*, July 2004, pp 49-66.

the Netherlands house price inflation has decelerated slightly since 2002. Particularly in Spain, an abrupt price adjustment in conjunction with rising financing costs could lead to an increase in household credit defaults, as well as having direct consequences for the macroeconomically important construction sector. There are two main reasons for this. First, the indebtedness of Spanish households in relation to their income is higher than the corresponding ratios in France and Italy. Second, in Spain (as in the UK) the prevalence of variable-rate mortgages means that there is also a risk that households will underestimate their financial burden when interest rates rise. In the context of increased uncertainty about future property price developments, creditors can protect themselves against losses by, for example, applying appropriate lending limits. However, keen competitive pressure is creating incentives for financial institutions to expand their business volume and to relax their lending terms.

Following several interest rate rises by the Bank of England,<sup>17</sup> the annual rate of increase in UK housing prices seems to be slowing noticeably, whereas previously there had been increasing signs of overvaluation in this market. The risk of abrupt price falls is likely to be limited, however, by the scarce housing supply, robust income growth and low unemployment. In the USA, the upward thrust of house prices has been accelerating since the beginning of the year. In 15 states – including California, Florida and New York – the annual rate of increase was, in some cases, well over 10%.<sup>18</sup>

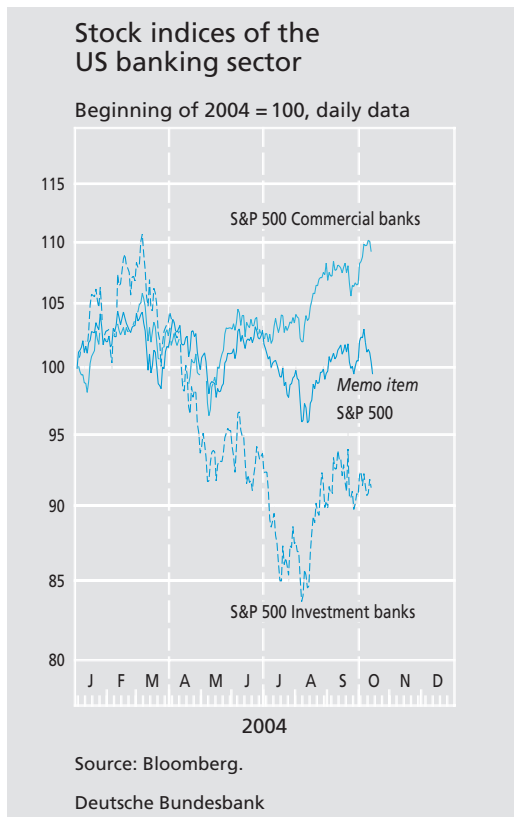


As a result of large-scale staff cuts in recent years, the markets for commercial offices in many European and US cities have come under pressure. The expected easing of the situation will essentially depend on how quickly the economic recovery leads to more office jobs. Compared to the office markets, demand for retail space has proved stable in many countries, supported by brisk and partially credit-financed private consumption. In some countries, the high household indebtedness could, however, prove to be a future burden if it has a negative impact on consumer demand.

*Commercial property markets partly under pressure*

<sup>17</sup> Between 6 November 2003 and 5 August 2004, the Bank of England raised its official interest rate in five steps from 3.50% to 4.75%.

<sup>18</sup> Price index of the Office of Federal Housing Enterprise Oversight (OFHEO).



*US banks in favourable situation*

In the first half of 2004, the US banking market, which is of particular relevance for the international banks' risk situation, continued to benefit from the buoyant economic expansion and the fact that, on the whole, interest rates increased only slightly. The low share of bad loans, which in the first quarter of 2004 fell below the level of the boom years 1999/2000 for the first time, lessened the need for risk provisions. One of the driving forces behind the favourable operating environment enjoyed by the commercial banks in the first half of the year was the strong demand for housing loans, although it grew more slowly in the summer months. In addition, applications for refinancing existing mortgages have declined considerably following the hike in interest rates at the beginning of the second

quarter, reducing the banks' commission income.

In the medium term, however, moderately rising capital market rates should be easier for banks to cope with than persistently low interest rates, which generally place increasing pressure on their margins. However, rising interest rates could lead to higher default rates on consumer loans and place pressure on some regional housing markets. Moreover, the credit risks of some banks are strongly concentrated on commercial property. The banking system as a whole, however, appears to be in a good position to absorb shocks in view of its sound profitability and capital base. This is also reflected in the changes in the ratings of US banks, with upgrades strongly outweighing downgrades since as early as the beginning of 2002.

*Rising capital market rates have overall positive effect on banks*

The results of some big US banks are still being impaired, however, by considerable risks arising from current litigation proceedings. In the first half of 2004, claims related to Enron and WorldCom alone gave rise to provisions and damages totalling more than 7 billion US dollars.

*Legal risks...*

Following a successful first half of the year, the share price movement of US investment banks point to a more difficult capital market situation. The S&P 500 sub-index for investment banks shows considerable underperformance since the beginning of the year in comparison with the main index. The increase in their disclosed market risk positions may have played a role in this as it generally entails increased risk potential in the event of unex-

*... and market risks*

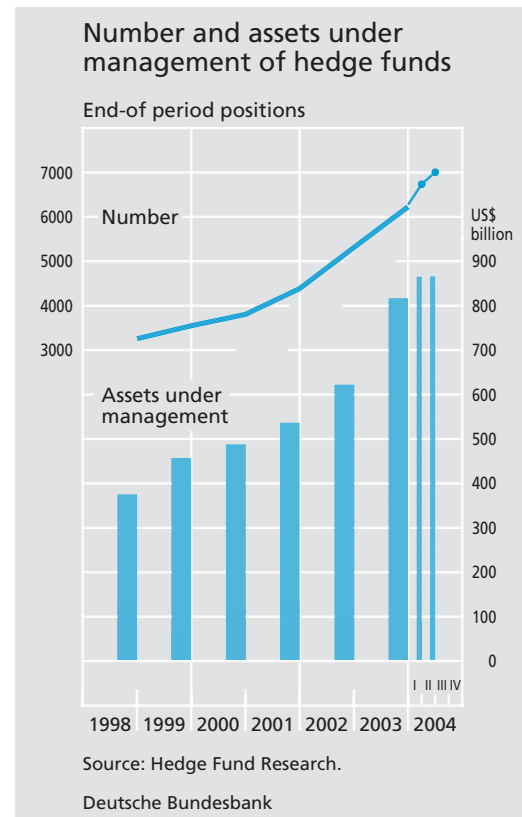
pected market developments. In other areas of investment banking, such as equity trading, underwriting and advising on mergers, business activity is currently subdued.

*Large inflows of capital to hedge funds*

One of the consequences of the prolonged low interest rate phase has been that hedge funds have profited from the "search for yield" and have received large inflows of resources which have only recently begun to abate. A growing number of banks, insurance companies and pension funds are also investing in hedge funds.<sup>19</sup> The aggregate global volume of the hedge fund industry was estimated at between 800 and 1,100 billion US dollars as per June 2004, with investments in funds of hedge funds<sup>20</sup> having increased markedly – they currently account for approximately one-fifth of investments in hedge funds. Given their disproportionately high transaction velocity, hedge funds have become important players in individual market segments. Furthermore, they represent an important source of commission income for their house banks (prime brokers).

*Increased pressure on profitability*

The last few months have proved less successful for a range of investment strategies. In particular, trend-oriented strategies were affected by the change of direction in the markets. This will probably lead to increased performance pressure on hedge funds as the relative yield advantages over traditional investment forms decline when market rates rise (see box on page 28 concerning performance measurement difficulties). At the same time, the costs of debt financing to exploit leverage effects are rising. Moreover, considering the sharp rise in investable funds in



the hedge fund sector, it seems likely that the earning opportunities could also decline as successful strategies are imitated and market inefficiencies eliminated.

It is difficult to assess the potential risk posed by hedge funds in this changed market environment, not least because of the poor market transparency. Firstly, in the event of losses, risks are associated with a high indebtedness (leverage). If one considers all of the direct debt financing links along the investment chain – investor, fund of hedge funds, single hedge fund – as well as derivative pos-

*Risk potential that is difficult to assess requires greater transparency*

<sup>19</sup> See box on page 40 concerning the links between hedge funds and banks.

<sup>20</sup> Funds of hedge funds invest their investors' money in a portfolio of hedge funds. In this way, investors can diversify their portfolio more effectively and invest in funds requiring high minimum payments.

itions (indirect leverage), the leverage effect is probably much greater than market estimates would indicate as they are generally based only on the direct debt financing share of hedge funds. Furthermore, considerable liquidity risks exist in less liquid market segments especially in the event of parallel trading strategies by hedge funds. In view of this, it is possible that risks could also spread to the hedge funds' prime brokers if increased competition among the latter for hedge fund business were to lead to a relaxation of standards for monitoring and limiting credit risks. Thus, from a financial stability aspect, it would be beneficial if official agencies had greater insight into the scale of leverage and market risks of hedge funds.

*Marked improvement of the situation in the Japanese banking system...*

The situation in the Japanese banking system has improved perceptibly. This was primarily due to the sustained economic upswing as well as the increasing pressure placed on the banks by the government and, in particular, the Financial Services Agency. Improvements can be seen in the quality of the banks' assets and capital. By contrast, income growth is, however, still not satisfactory despite recognisable upward trends. Non-performing loans have been reduced from ¥52.4 trillion or €394 billion (peak reached in March 2002) to ¥34.6 trillion (€260.2 billion) in March 2004. The big banks have almost achieved the government's target of halving non-performing loans – based on the level in March 2002 – by March 2005. By contrast, the regional banks and the cooperative credit institutions, which in effect are significant only at the regional level, are lagging far behind in the reduction

of problem loans and the implementation of necessary structural reforms.

With regard to market risks, although the Japanese banks' equity portfolios have declined further, they are still large enough for individual credit institutions to experience setbacks in the event of falling share prices. Their holdings of Japanese government bonds (JGBs) have, however, increased – as an alternative, as it were, to their low level of lending. An abrupt rise in interest rates could therefore place considerable pressure on many banks, especially as non-performing loans would also increase as a result. On the whole, however, the market risk of Japanese banks appears to have declined. While the abolition of the unlimited state deposit guarantee planned for April 2005 could have an unfavourable effect on weak banks, it should not entail risks for the banking system as a whole.

*... but market risks persist*

In the past year, progress in the economic fundamentals of the emerging market economies but also, in particular, abundant liquidity and greater risk appetite on the part of international investors have led to a sharp rise in the net inflows of private capital to these countries (from US\$44 billion in 2001 to US\$115 billion in 2003)<sup>21</sup> and to a decline in risk premiums in the government bond markets to, in some cases, historically low levels. Following speculation about an impending interest rate swing in the US markets, the risk

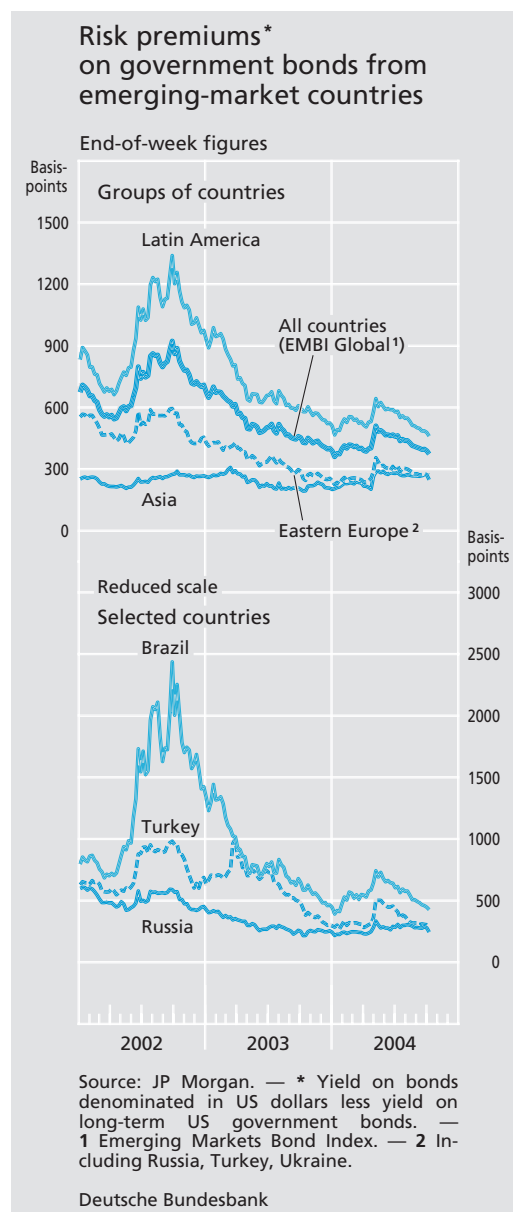
*Volatile trend in risk premiums for emerging market economies*

<sup>21</sup> Pursuant to the definition in the IMF's *World Economic Outlook*, September 2004. This also includes net inflows of capital to developing countries and Hong Kong, Israel, Korea, Singapore and Taiwan.

premium trend started to reverse in January 2004, with the average spread rising by more than 150 basis points by the beginning of May. Since then risk premiums on emerging market bonds have receded almost to their level at the beginning of the year. The main reason for this was that market participants had almost ceased to expect a leap in the global interest rate level. Countries such as Brazil and Turkey were especially strongly affected by the volatile development of risk premiums, while there was notably less fluctuation, in particular, in the risk premiums of emerging Asian economies.<sup>22</sup> There is much to indicate that the markets are now differentiating more strongly between individual countries, with the result that a further rise in global interest rates would have differing impacts on the various emerging market economies. An increase in risk premiums will not be a problem for those countries which have made considerable adjustment progress provided the prospect of rising exports and strong growth remains favourable.

*Brazil, Turkey and the Philippines remain vulnerable*

Despite the progress it has made in adjusting, Brazil, in particular, remains susceptible to crises because of the high level and unsound structure of its general government debt. One positive aspect is, however, that the volume of exchange-rate indexed government debt has now declined and the government has already covered a large part of its external refinancing needs for this year. A high level of risk also exists for Turkey. Turkey's reduced but still high level of external debt coupled with its current account deficit, which is rising again, could result in confidence losses, especially as a large part of the financing needs



can be met only in the short term. For the Philippines, financing the ongoing general government deficits is proving an increasing burden. The large public debt is mostly denominated in foreign currency. The resultant high external financing needs render the country vulnerable to sudden changes in the

<sup>22</sup> This is probably also partly due to the fact that short-term-oriented investors make greater use of more liquid market segments to change their positions.

## Difficulties in measuring performance for hedge fund indices

The sharp growth of the hedge fund sector has brought with it an increased demand for indices<sup>1</sup> which provide information on the performance of hedge funds. These can be used both to measure the investment result of individual hedge funds and also to compare hedge funds with traditional forms of investment (eg equity and bond investments).

It has, however, become apparent that there are often considerable discrepancies in the performance data used by different indices to measure the overall results of the sector, particularly when market conditions are difficult. This is mainly due to the fact that hedge funds do not constitute a homogeneous investment class, but rather comprise diverse investment strategies. The number, choice and weighting of the funds can vary considerably between individual index providers. Divergences can also be seen in the sub-indices for individual strategy types (eg global macro, relative value arbitrage, long/short equity). This is partly due to the different definitions of strategy types applied by individual index providers.

Moreover, compilers of hedge fund indices face greater methodological difficulties than those of indices for traditional investment forms. The performance data of hedge fund indices seem to

be subject to greater systematical distortions. This is partly due to the fact that hedge fund reporting is voluntary and non-standardised, which impairs the reliability of the data, renders comparisons more difficult and qualifies comments on published risk coefficients.

Academic literature differentiates, in particular, between the following potential forms of bias in the assessment of yield developments portrayed in hedge funds indices.<sup>2</sup>

- **Selection bias (self-reporting bias):** This occurs as a result of the limited representativeness of the underlying dataset. The voluntary basis of hedge fund reporting is a significant factor behind this. For example, the incentive to disclose data is presumably greater for successful hedge fund managers on the lookout for new investors than for hedge fund managers who have already achieved their targeted investment volume or whose performance has been unfavourable.
- **Survivorship bias:** This results from the fact that the unfavourable performance of funds which are removed from the index is disregarded or neglected.<sup>3</sup> Market estimates indicate that every year up to 20 % of all hedge funds exit the market. Thus, yield calculations

<sup>1</sup> Providers of hedge fund indices include Credit Suisse First Boston/Tremont, TASS Research, Hedge Fund Research, Van Hedge Fund Advisors International, Hennessee Group and Zurich Capital Markets (formerly Managed Accounts Reports – MAR). — <sup>2</sup> For an overview of empirical studies on the problem of performance measurement, see, for example, Andreas Signer (2003), *Generieren Hedge Funds einen*

*Mehrwert?*, Berlin, Stuttgart, Vienna. — <sup>3</sup> The reasons for removal from the index are probably not only the dissolution of individual hedge funds, but also the cessation of (voluntary) reporting. However, it might be possible that the majority of these funds are withdrawn as a result of poor performance. — <sup>4</sup> The strategy type also plays a role. Furthermore, funds of hedge funds, for example,



which are based solely on the performance data of “surviving funds” suggest an overly favourable performance.

- **Instant history bias (backfilling bias):** Hedge fund managers are more likely to apply for listing in an index following a phase of above-average performance rather than at times in which performance has been poor. The retrospective recording of the entire history of successful hedge funds means that the actual investment results tend to be overstated.

As a result of such forms of systematic bias, there may be a tendency for the published yields to be too high. Quantifying these distortionary effects is difficult and depends on the reporting period and the choice of sample, as well as other factors;<sup>4</sup> furthermore, some index providers make efforts of their own to reduce the bias. A number of studies<sup>5</sup> put the figure for the possible overestimation of actual hedge fund yields at between 1.3 and 4.0 % per year as a result of survivorship bias<sup>6</sup> and at 0.5 to 4.0 % per year as a result of instant history bias, while there are no estimates available for selection bias.

Another problem is posed by “**managed prices**”. Hedge funds are often invested in unlisted or illiquid assets for which there are no established

market prices, which means that there is scope for discretion in the valuation. Hence, the US securities watchdog, the SEC, recently launched a regulatory offensive aimed at, among other things, the problem of return smoothing, whereby fund managers tend to artificially smooth yield fluctuations in an attempt to positively influence the volatility of their returns. This can also be achieved if an older valuation is not updated over a longer period of time owing to the lack of a more recent value. As a result, both data on volatility as well as on the correlation with traditional investment forms tend to be too low.

The potential distortions urge a cautious interpretation of the reported performance trends of hedge fund indices. Moreover, the recent poorer performance of almost all strategies indicates that not even diversified funds of hedge funds can decouple themselves permanently from certain market conditions. Thus, it is even more important in the case of hedge funds than in the case of other investment forms that investors do not derive their yield expectations exclusively from historical index comparisons, but that they also develop a sound knowledge of the various products and strategies.

are less affected by survivorship bias than single hedge funds. — 5 See A Signer, loc. cit.; N Posthuma and PJ van der Sluis (2003), *A Reality Check on Hedge Fund Returns*, Amsterdam; W Fung and D A Hsieh (2002), *Performance characteristics of hedge funds and CTA funds: Natural versus spurious biases*, *Journal of Quantitative and Financial Analyses*, 35, pp 291-307; G Amin and H Kat (2002), *Welcome to the*

*dark side – Hedge Fund Attrition and Survivorship Bias over the Period 1994–2001*, working paper, Cass Business School; B Liang (2002), *Hedge Funds: the living and the dead*, *Journal of Financial and Quantitative Analysis*, 35(3), pp 309–360. — 6 In comparison, the survivorship bias in the case of mutual funds is estimated at 0.5–1.5 %.

perceptions of international investors. However, the current account surplus provides a counterweight. Argentina's unresolved debt problems place a heavy responsibility on the IMF which should consider extending its own financial aid only on the basis of a comprehensive adjustment programme. This stringency is necessary in order to encourage fair conduct on the part of the Argentinean authorities towards their private creditors and to reduce the country's liabilities vis-à-vis the IMF as quickly as possible. Leniency on the part of the IMF could also weaken other debtor countries' commitment to adjustment.

*Promotion of domestic financial markets is an important aspect of crisis-prevention*

In order to further strengthen the ability of the emerging market economies to withstand crises, in the longer term conditions need to be created whereby they are increasingly able to borrow foreign capital in their own currency and reduce foreign currency borrowing. Thus, efforts must be made to develop stable and efficient domestic financial sectors which are able to serve as a channel for the inflow of foreign savings. Borrowing in foreign currencies also becomes less attractive if the exchange rate regime is made more flexible as the borrowers' risk awareness then increases. The G20, in particular, has identified the promotion of domestic financial markets as a major objective (see box on page 32).

*Bank-based financial systems in the new EU member states*

The financial systems in the new EU member states are primarily bank-based, while the equity and bond markets are still comparatively small. In recent years, the majority of domestic banks have been taken over by western institutions, mostly from the old EU

countries. As a result, the financial markets in the new EU member states already have close links to the international financial system, although the resulting risks for the German financial system are small. Following EU accession and the complete integration into the European financial market which this entails, competition among banks, pressure on profit margins and the trend towards consolidation are likely to increase further.

In the majority of new EU member states, the rate of increase in bank loans is far exceeding macroeconomic growth. The trend towards more intense financial intermediation is related to the positive economic outlook in the region following accession, but also to the current interest rate terms, which are, for the most part, at historically low levels. In general, the banking sector in these countries is considered profitable, liquid and sufficiently capitalised. Nevertheless, the dynamic growth in lending needs to be monitored closely by both the banks themselves and the public supervisory authorities in order to avoid unwelcome developments. At the same time, the banking sector still has, in some cases, a considerable old stock of non-performing loans and bad debts to manage. At the end of 2003, no less than 22% of all bank loans in Poland were classified as problematic, with a downward trend not being recorded until mid-2003. Although relatively stringent classification rules are a factor in this high ratio, which is well above comparable figures for the other countries, it could also indicate unresolved structural problems in the enterprise sector as well as flaws in the banks' internal risk management strategies.

*Strong credit growth as a result of positive economic developments and low interest rates*

*Marked growth  
in housing  
and foreign  
currency loans*

Furthermore, in two respects, specific risks in the ongoing credit business are apparent which could adversely affect the domestic financial system. First, the increased household borrowing in some central European and Baltic states to finance the purchase of homes and other purchases. At the end of 2003, the Hungarian government amended its system of housing construction subsidies in order to counter a possible overheating of the market. Second, the increasing importance of foreign currency loans in the region also needs to be monitored closely. According to the consolidated BIS statistics, cross-border claims on the new EU member states and foreign currency claims of banks in this area rose last year by US\$36 billion to US\$141 billion. It is likely that this sharp rise is, in part, a reflection of the exchange rate development between the US dollar and the euro, in which most of these claims are presumably denominated. However, as a result, the volume of foreign currency loans recorded by the BIS at the end of 2003 was US\$7 billion higher than bank loans in local currency as reported by the branches and subsidiaries of foreign banks in the region. The preference for foreign currency loans is primarily due to interest rate advantages over borrowing in national currency, but is also based on borrowers' expectations that the euro exchange rate will not shift significantly. If any major exchange rate movements on the foreign exchange market should occur, however, this could lead to loan servicing problems and thus have major implications for the banks concerned.

## Financial intermediaries in Germany

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### German credit institutions making headway

Having implemented various adjustment measures necessary to adapt to the changed business environment, German credit institutions are now making headway. Many banks have successfully managed to curb costs on a permanent basis, to significantly reduce credit risks and at the same time, by reorienting their strategies and refocusing their business, to lay the basis for generating more income, even if this stream is still somewhat subdued. Although risk provisioning is still high, marked declines in this item indicate that the risk situation in lending business has probably peaked. Banks have been resolutely weeding out or selling off risky exposures, simultaneously augmenting their profile by improving the quality of their credit checks in new lending and striving to push through risk-adjusted terms and conditions. At the same time, a drop in the probability of default both in lending to domestic firms and in many of the foreign credit markets has contributed to a decline in credit risks. However, risks arising from real estate loans have gained considerably in importance.

## Stable and efficient financial systems in the emerging-market economies as a means of crises prevention

The informal Group of 20 (commonly known as the G-20)<sup>1</sup> is mainly involved with issues concerning the international monetary and financial system and world economic integration (globalisation). During the past two years the debate has focused on the underlying institutional requirements for stable and efficient financial sectors. Numerous G-20 members have prepared publicly available studies of their own experience in creating the institutional framework (see [www.G20.org](http://www.G20.org)). The studies emphasise the importance of efforts aimed at deregulation and liberalisation as the driving force behind improvements in the institutional framework. On the basis of this a G-20 workshop in which representatives of the private sector and the academic world took part considered in depth the question of how the national financial markets in the emerging economies could be strengthened in order to boost national saving, prevent capital flight and foster the import of capital in domestic currency instead of in foreign currency.<sup>2</sup> Progress along these lines would decrease the emerging markets' vulnerability to crises significantly. The main findings of the workshop appear below.

The international debt crises that have occurred since the mid-1990s show that currency mismatches are mostly the root cause of such crises. Many emerging markets had accumulated serious currency mismatches by financing domestic projects largely through foreign currency loans without simultaneously creating a corresponding stock of reserve assets. In the event of a loss of confidence this not only led to balance of payments difficulties but also made the countries concerned susceptible to depreciations. Whenever the burden of debt servicing rose suddenly in terms of the domestic currency, soaring government expenditure, corporate insolvencies and banking crises were the inevitable result. The countries experiencing balance of payments difficulties therefore ran into an even more serious economic crisis.

Currency mismatches are sometimes ascribed to the fact that emerging markets, which depend on capital imports, are virtually unable to borrow on the international markets in their own currency.<sup>3</sup> This is coupled with the call for international agencies to raise large-scale loans in units of a basket of debtor

country currencies. It is argued that currency mismatches would largely be avoided if these funds were then passed on to the emerging markets. However, this overlooks the fact that fairly small industrial countries are likewise rarely able to borrow on the international markets in their own currency. Like the large industrial countries, however, these countries have stable and efficient domestic financial systems which are also attractive to foreign investors and enable capital to be imported in their own currency. Emerging market economies should take similar steps in order to achieve long-term crisis prevention.

Major emerging market economies have actually made great efforts in the past few years to upgrade their domestic financial markets. According to the IMF, the aggregate public and private issues of 13 selected emerging markets (China, Hong Kong, Korea, Malaysia, Singapore, Thailand; Argentina, Brazil, Chile, Mexico; the Czech Republic, Hungary and Poland) amounted to US\$3,271 billion between 1997 and 2003. Of these, 90% were issued in their own markets (and therefore largely in their own currency). As a result, foreigners, in principle, have considerable scope for making financial investments in local currencies.

Against this background, the workshop participants discussed what framework conditions may contribute crucially to strengthening domestic financial markets. The requirements which they identified are summarised below.

### Monetary and fiscal policy discipline

If inflation rates are high and volatile, a broad and deep financial market in domestic currency cannot develop because creditors will avoid long-term instruments or show a preference for foreign-currency assets. A monetary policy that is geared to price stability and supported by a disciplined fiscal policy is therefore essential if a financial market is to operate efficiently. In addition, the fiscal policymakers need to monitor the level of debt and the size of the foreign currency component of public debt in order to minimise susceptibility to crises and the risk to monetary stability.

<sup>1</sup> The G-20 consists of the major industrial countries as well as the economically most important emerging market economies, the European Union and representatives of the International Monetary Fund and the World Bank. The coordination of its joint activities is the re-

sponsibility of finance ministries and central banks. — <sup>2</sup> The Bank of Canada and the Bundesbank jointly organised a workshop entitled *Developing Strong Domestic Financial Markets* in Ottawa (Canada) in April 2004. The record of the seminar can be viewed at

### **Implementation of international standards and codes**

The standards and codes devised by international financial institutions and other agencies to achieve and maintain transparent, stable and efficient financial systems provide valuable assistance to countries seeking to strengthen the institutional framework of their financial sector. The aim of these standards is to improve the transparency of economic policy and economic data and to create efficient supervision of and infrastructure for the financial sector. The IMF and the World Bank have now developed joint procedures which are accelerating the implementation of standards and codes discernibly.

### **Sound legal framework**

A stable and efficient financial sector requires transparent, consistent and effective contract law and property rights. The provision of long-term capital can be improved especially by collateral and insolvency legislation which gives the protection of the investor priority.

### **Prudent deregulation**

Following the establishment of sound monetary and fiscal policies, the financial sector should first be exposed to increased domestic competition. These measures would then have to be augmented by the liberalisation of capital movements, with long-term financial transactions – especially foreign direct investment – being freed from controls before short-term transactions. An effective system of banking and financial market supervision should be established prior to full deregulation and liberalisation.

### **Linking the liberalisation of capital movements to greater exchange rate flexibility**

The international debt crises have shown that vulnerability to crises increases rapidly when capital movements are liberalised but a regime of fixed exchange rates is retained, with the attendant emergence of currency mismatches. The liberalisation of capital movements should therefore be combined with greater exchange rate flexibility. This not only reduces

the danger of sudden exchange rate adjustments but also increases the incentive for market participants to curb currency mismatches, not least by hedging currency positions against exchange rate movements.

### **Robust banking sector important for market development**

A stable banking sector is essential if securities markets are to develop successfully. Credit institutions play an important role in issuing both their own securities and those of third parties and are a vital mediator between investors and the securities markets. In order to make use of foreign know-how obstacles to direct investment in the financial sector should be removed.

### **Carefully targeted financial market policy**

Financial market policy can provide a decisive stimulus to the development of long-term securities markets. Funded social security systems can make a very positive contribution to market development on the demand side.<sup>4</sup> On the supply side it is government debt management that plays an important role because liquid government securities covering a wide maturity range can assume benchmark functions. Furthermore, collateralised debt obligations can bolster the development of the domestic market. In this context the Bundesbank emphasised the merits of the German Pfandbrief. Stringent statutory requirements guarantee a high degree of investor protection and make the Pfandbrief an attractive long-term capital investment vehicle. The development of a Pfandbrief market is therefore particularly interesting for countries whose market is not yet ripe for government bonds. Another factor is that, as a security that refinances lending to other debtors, the Pfandbrief also affords indirect access to the capital market to those borrowers who otherwise would not have recourse to it at all or who would do so only on much less favourable terms.

www.G20.org. — 3 See Eichengreen, Hausmann, Panizza (2003): *Currency Mismatches, Debt Intolerance and Original Sin: Why they are not the same and why it matters*, NBER Working Paper No 10036,

Cambridge, Mass. — 4 See Global Financial Stability Report, April 2004, "Institutional Investors in Emerging Markets", IMF, Washington DC.

### Balance sheet trends of large, internationally operating German banks

As at end	Balance sheet total	of which Claims on non-banks	Risk-weighted assets <sup>1</sup>	Risk-weighted assets <sup>1</sup> / balance sheet total	Core capital ratio <sup>1</sup>
	in € billion			As percentage	
2000 Q4	3,383	1,588	1,397	41	6.49
2001 Q2	3,749	1,741	1,472	39	6.63
Q4	3,817	1,742	1,436	38	6.98
2002 Q2	3,622	1,693	1,407	39	6.91
Q4	3,336	1,441	1,278	38	6.94
2003 Q2	3,490	1,540	1,204	35	7.66
Q4	3,102	1,379	1,067	34	8.37
2004 Q2	3,301	1,419	1,049	32	8.04

<sup>1</sup> In accordance with consolidated Principle 1 pursuant to sections 10 and 10a of the Banking Act (excluding market risk positions).

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#### Current trends at large, internationally operating banks<sup>23</sup>

*Only slight fall in risk assets*

At a number of large institutions, the measures to enhance earnings initiated in the past year were outweighed by large write-downs on participating interests in enterprises to adjust for hidden losses. These value adjustments, which in some cases were referred to as a "big clear-out", also created new business policy leeway. The process of reducing the volume of risk-weighted assets observed since 2002 is accordingly now practically complete. In the first half of 2004, the combined risk-weighted assets of the group of large, internationally operating banks fell by less than 2% to €1,035 billion as at end-June 2004, and three of the eight banks in the reference group actually increased their

risk assets. In the second half of 2003, the risk-weighted assets had fallen by nearly 12%. This suggests that the process of balance sheet adjustment is nearing its end and that the institutions are now turning their attention again to the earnings potential of lending business.

In the first half of this year, internationally operating German banks improved their pre-tax results perceptibly (see table on page 35).

*Improved result in the first half of 2004*

<sup>23</sup> The aggregate comprises a group of eight German banks from all three sectors, whose group balance sheet total each exceeds €250 billion (as at 30 June 2004). All of the banks in the group not only operate in Germany but also carry out major operations in the international markets. The amount of their claims on non-residents, both in absolute terms and as a percentage of their balance sheet, was taken as a measure of their international operations. The following analysis is based on the respective consolidated data of the institutions.

*Risk provisioning reduced by half*

The main contribution to improved earnings came from the marked reduction in the provisions for losses on loans and securities. Banks were able to halve their risk provisioning vis-à-vis the first half of 2003 mainly as a result of radically streamlining their loan portfolios. Following simultaneous extensive restructuring of their equity portfolio through sell-offs and value adjustments, all of the eight banks should (as at mid-2004) again have, on balance, hidden reserves at their disposal, most of which can be made liquid at short notice.

*Further reduction in general administrative spending*

General administrative spending also declined further in the first half of 2004. Evidently, the extensive retrenchment programmes which many large banks launched in the past few years are being increasingly reflected in the results. For banks to continue to improve their performance, it is imperative that cost reductions prove to be sustainable.

*Only small improvement in operating income*

In contrast to the cost side, there have only been slight signs of improvement in operating income up to now.<sup>24</sup> In absolute terms, this income dropped by just under 2% from the first half of 2003 to the first half of 2004, although admittedly the volume of risk-weighted assets<sup>25</sup> concurrently declined by over 13%. This reduction in risk incurrence explains, in particular, the year-on-year decline in net interest income of around 5% in the first half of 2004. At 4½% in the first half of 2004, growth in net commissions received developed positively. Banks suffered a decline in their net trading result of 5% in the first half of 2004 owing to diverging developments in the international capital markets compared with the same period last year.

### Main components of the profit and loss account of large, internationally operating German banks

Item	Amounts as a percentage of the balance sheet total		Change (%) in absolute amounts from first half of 2003 to first half of 2004
	First half of 2003	First half of 2004	
Net interest income	0.35	0.34	- 5.2
Net commissions received	0.25	0.27	4.5
Trading result	0.15	0.15	- 5.0
Operating income	0.76	0.76	- 1.9
General administrative spending	0.57	0.56	- 4.6
Risk provisions	0.14	0.07	- 52.9
Profit for the year before tax	0.04	0.16	> 100

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With respect to the composition of operating income, the trend observed in the past few years towards a gradual shift in the relative shares away from net interest income towards non-interest income continued. Since 1998, the share of net interest income in operating income has dropped by around 12 percentage points to just under 45%.

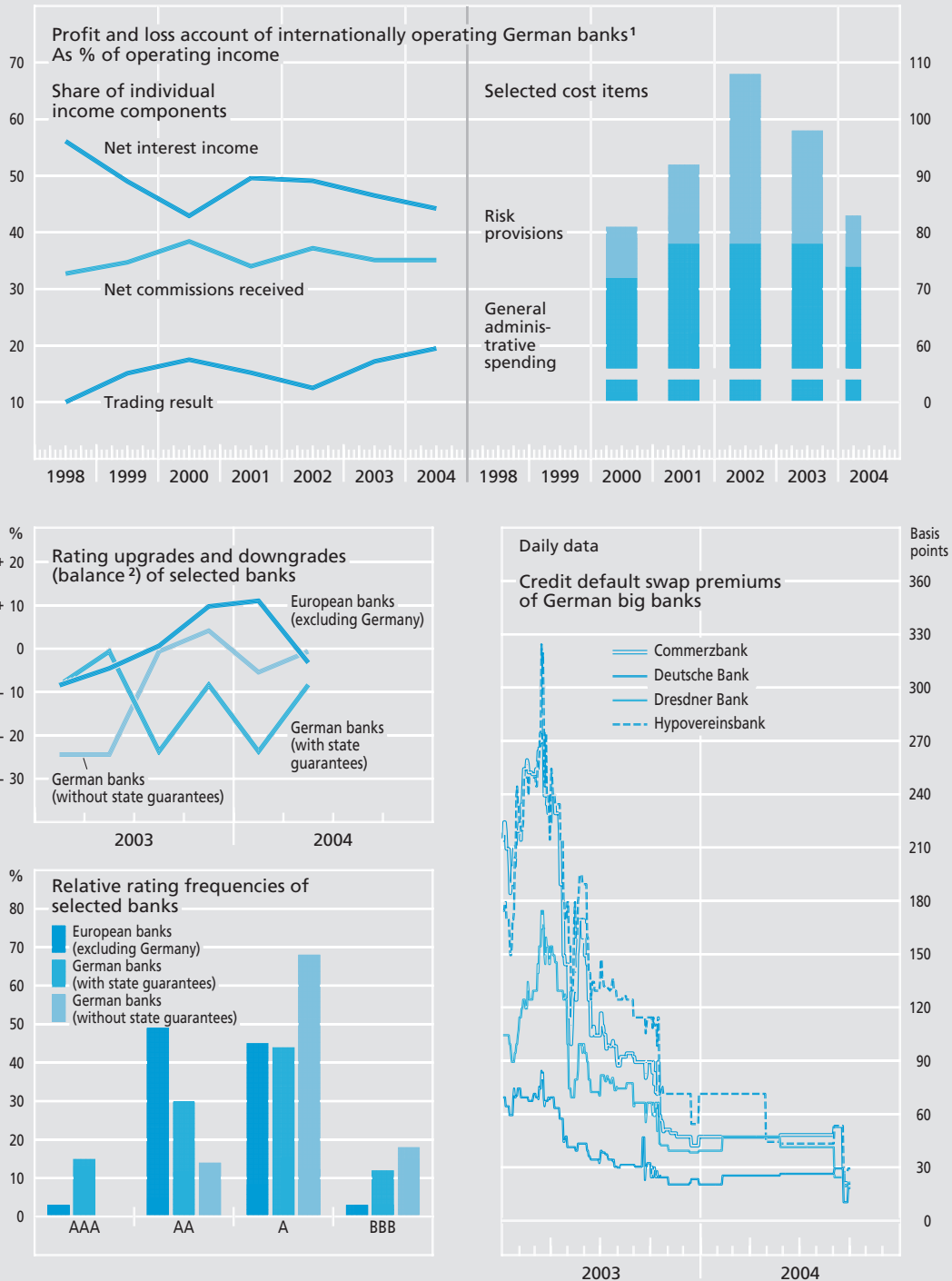
The decline in general administrative spending has helped to reduce the cost-income ratio, ie the ratio of general administrative spending to operating income. At 73.5%, this ratio was a good 2 percentage points lower than in the first half of 2003. Taking

*Further reduction in the cost-income ratio*

<sup>24</sup> Operating income comprises net interest income, net commissions received and the net trading result.

<sup>25</sup> In accordance with consolidated Principle I pursuant to sections 10 and 10a of the Banking Act (excluding market risk positions).

## Earnings situation and market indicators of selected banks



Sources: Bloomberg, S&P, Moody's, db research, Morgan Stanley, Bundesbank calculations. — 1 The aggregate comprises a group of eight German banks from all three sectors, whose group balance sheet total each exceeds €250 billion and who operate to a large extent in the international markets. — 2 Balance of upgrades and downgrades as a percentage of the number of banks recorded in each group.

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both expenditure components, ie general administrative spending and risk provisioning together, in the first six months of 2004 these equalled around 83% of operating income, which represents a marked improvement compared with 2002 and 2003 (108% and 98% respectively).

*International comparison reveals continued need to catch up*

By international standards, the large German banks still have some catching-up to do. Their return on equity – calculated as pre-tax earnings in relation to balance sheet capital – of around 13% still lags behind the returns of their international competitors (mostly well over 20%). Even though the gap vis-à-vis the international level of returns in the banking industry has been narrowed somewhat and German banks have begun to make up the leeway, further efforts will be required in order to gain a stronger competitive position in the international banking sector.

*Capital requirements met*

The national and international capital adequacy requirements have been met throughout 2004 so far with a virtually unchanged capital base. At an average of 8%, the core capital ratio of the banks included in the analysis remains at a comfortable level.

*Ratings mostly unchanged*

Over the course of 2004 to date, the ratings of German banks have remained largely unchanged. In the first quarter of 2004, two mortgage banks were downgraded and one commercial bank was upgraded. While the ratings of the German big banks did not change in the first half of 2004, their outlook has improved in some cases. The median rating of German banks is A-, while the median rating for banks in other European countries

### Stand-alone ratings of Landesbanks

Bank	Balance sheet total as at 31.12.2003 in € billion	Published credit rating	
		S&P	Fitch
Landesbank Baden-Württemberg	323.3	A+	A+
Bayerische Landesbank	313.4	A-	A+
WestLB AG	256.2	A-	A-
Norddeutsche Landesbank	193.1	-	A
HSH Nordbank AG	171.7	A	A
Landesbank Hessen-Thüringen	139.4	A	A+
Landesbank Berlin	92.6	-	BBB+
Landesbank Sachsen	76.1	BBB+	A-
Landesbank Rheinland-Pfalz	64.2	A-	A
Landesbank Bremen Kreditanstalt Oldenburg	32.4	-	A
Landesbank Saar	16.6	-	A

Source: rating agencies

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is currently AA-. This is partly a consequence of the development in early 2003 when, in relative terms, many more German banks without a state guarantee suffered downgrades than banks in other countries.

The credit default swap premiums of German big banks are currently at a low level. Hence, market participants assess the risks of the institutions as being considerably lower than a year ago. It is striking that this assessment has been stable since the fourth quarter of 2003. At the same time, the premiums for individual institutions have converged somewhat in the past few months. With the exception of Deutsche Bank, the premiums are still above the European average, however. On balance, the credit default swap pre-

*Premiums on credit default swaps at low level*

## Value at Risk and proprietary market risk models

Alongside lending business, own-account trading in securities, derivatives and other market-price-related financial market products continues to be a significant area of business for nationally and world-wide operating banks. Risks arise through counterparty default risk, on the one hand, and through interest rate changes and price volatility, on the other. Compared with the risks in the banking book, particularly borrower default risk, the market price risks associated with own-account trading are of minor importance. At a typical big bank, approximately 4% of regulatory capital is currently used to back market price risks in own-account trading.<sup>1</sup> This relatively small share is not only due to the predominance of lending business. The fact that market price risks can be modelled very well also allows a relatively parsimonious capital backing of these risks.

Under certain conditions, banks are permitted to model the market price risks inherent in own-account trading using their own risk models. At the moment, 15 banks satisfy the banking supervisory requirements and calculate the regulatory capital required to back market price risks using their own risk models. The term "Value at Risk (VaR)" is used as the risk coefficient. This variable denotes the loss (in euro) which, given a holding period of 10 days, has a 99% probability of not being exceeded.

Even though banks currently use VaR models as a standard instrument in risk management, it should be remembered that such models understate the risk in extreme situations (eg on 11 September 2001).

<sup>1</sup> The counterparty risks in the trading book are not included in the 4%. Nor does this figure include the market price risks in the banking book, provided these comprise interest rate risks and share price risks.

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miums of the big banks do not indicate any heightened risk potential.

## The stability of the Landesbanks pending the loss of their state guarantees

The majority of the Landesbanks managed to increase their earnings in the first half of 2004. This was based particularly on the further reduction of risk provisions and a slight decrease in general administrative spending. Operating income, by contrast, fell in some cases. For example, in the first half of 2004, net interest income at the Landesbanks went down by around 1½%; however, they simultaneously reduced their risk-weighted assets by over 10%. Net commissions received fell by as much as 9% compared with the same period in 2003. This indicates an ongoing weakness in operating income at the Landesbanks.

*Improved results in the first half of 2004*

Following the agreement on the interest to be paid retrospectively on housing assets loaned by state governments, the EU investigations into the alleged granting of state aid to several Landesbanks are likely to be completed soon, thereby establishing legal certainty. The cash payments to be made – in some cases quite considerable amounts – are likely to be sustainable, especially given the ability and willingness of the shareholders to provide compensatory capital.

In the middle of this year, several rating agencies published stand-alone ratings for the Landesbanks stripped of their state guarantees. These ratings lie within a range which allows the Landesbanks to master the neces-

*Stand-alone ratings*

sary transformation process which they have started. The grandfathering arrangements agreed<sup>26</sup> mean that the changed rating basis will only gradually affect refinancing costs.

*In future, closer affiliation with savings banks as security pillar*

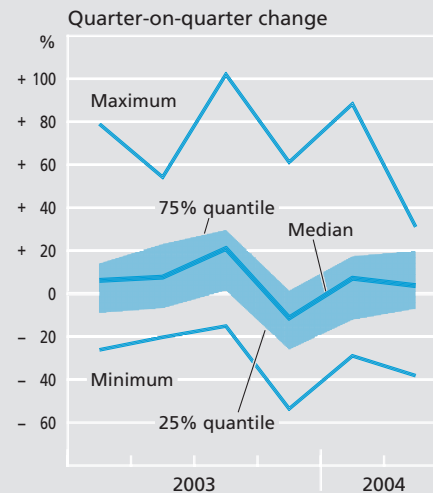
One common strategic feature of the Landesbanks' adjustment process is the forging of closer links with their primary institutions: first, by gearing their business models more towards providing services for the savings banks and, second, by reinforcing the arrangements for mutual assistance and liability. The closer integration of savings banks and Landesbanks should have a generally positive impact on financial stability as the Landesbanks will benefit more, either directly or indirectly, from the stability of retail business. The stronger focus on the efficient bundling of functions and a promising initiative to retain a presence in international investment and wholesale business with significant market shares are likely to require a concentration of forces.

### Risk situation in the German banking industry

*Market price risks increasing*

The international debate on financial stability has focused for some time now on the discernible increase in market price risks. Indeed, the market price risks in German banks' trading book have increased considerably in the past one-and-a-half years.<sup>27</sup> The combination of an expanding global economy and relatively low interest rates is likely to have strengthened banks' willingness to incur greater risks in securities and derivatives trading. For instance, the total value at risk (VaR) of all of the banks analysed here increased by more

### Market risk: Value at risk (VaR) of selected German banks\*



\* VaR represents the loss of a bank's portfolio or overall trading book which in a certain period (here ten days), has a certain probability (here 99%) of not being exceeded. Data are available for banks which, for regulatory purposes, have been licensed to use their own risk management model.

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than 40% in the period from the end of 2002 to mid-2004 (see box on page 38).<sup>28</sup> Two effects make the increased risk in the trading book appear striking. First, banks' business volume as at mid-2004 was largely the same

<sup>26</sup> The Brussels agreement provides for the following transitional arrangements: liabilities incurred before 18 July 2001 will continue to be covered up to maturity by the state guarantees for ensuring institutions' solvency and for indemnifying depositors. Liabilities entered into from 19 July 2001 until 18 July 2005 are covered by the state guarantees as long as their maturity does not extend beyond 31 December 2015.

<sup>27</sup> 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. Where applicable, banks with breaks in the time series have been excluded from the analysis.

<sup>28</sup> However, the sum of the individual value at risk figures would only match the aggregate value at risk if the results of own trading of the individual banks were completely positively correlated. Analyses show, however, that this correlation tends to be low. It follows that the aggregate value at risk is far smaller than the value attained by a simple addition of the individual figures.

## Links between hedge funds and banks

With increasing investments being made in hedge funds, the importance of the latter is also growing for the German banking industry. This is giving rise to interlinkages between hedge funds and banks, especially through their activities as prime brokers, lenders, investors and stakeholders.

Big German banks are increasingly joining leading US investment houses as prime brokers in the hedge fund market. A prime broker acts as an interface between the hedge fund and its investors. The banks' tasks in this field are not limited to technical matters such as calculating risk ratios, settling transactions and managing safe custody accounts; rather, banks also give credit, lend securities and act as counterparties in derivative transactions vis-à-vis hedge funds, thus themselves incurring significant risks. Competition for prime broker mandates is likely to increase further, since these activities are turning into a growth industry for commission income.

Banks can also be direct counterparties of hedge funds without acting as a prime broker. They give bank loans that are used to gain a high degree of leverage and are counterparties in derivative transactions such as swaps or OTC options.

Moreover, from a risk point of view, banks' own investments in hedge funds are important. Owing to their relative lack of correlation with traditional forms of investment and their special trading strategies aimed at using competitive advantages in selected market segments, hedge funds can generally be used for portfolio optimisation and to create new risk-return combinations. The default of a hedge fund, however, can lead to considerable losses if the bank's risk management is inadequate, its positions are overextended or the hedge fund's return is running in parallel with that of other own-account positions of the bank. The particular risk management problem for a bank in this respect is that the complexity of hedge fund strategies and their frequent lack of transparency often allow only a limited insight into the actual risk situation.

In addition, banks also invest in hedge fund providers in order to share in their market success. It has been observed thus far that large German banks do not establish these companies directly but mainly via subsidiaries. The total volume of stakes held – compared with

the total amount of participating interests held by banks – remains low. However, large German banks are seeking to step up their activities in selling and issuing hedge funds via both subsidiaries and strategic partnerships.

In Germany, the aforementioned links between banks and hedge funds are ultimately confined to a few large credit institutions. This makes it all the more important for them to have risk management structures that take due account of all contagion channels and are in line with the respective institution's other risk positions.

The Investment Modernisation Act (*Investmentmodernisierungsgesetz*) has permitted the sale of hedge funds in Germany since the beginning of this year. Even though the requirements for hedge funds are relatively liberal by international standards, sales have started quite sluggishly. In the case of private investors, this may be due, among other things, to the obscurity of the funds of hedge funds (ie those funds which may be sold to them without special restrictions). Although initial uncertainty about investment principles on the part of insurance companies and pension funds has now been resolved, it is unlikely that their hitherto low degree of interest in hedge funds will increase significantly in the near future.<sup>1</sup> For example, insurance companies may invest up to 5% of their restricted assets in hedge funds – but only if they can bear a sufficient amount of risk – although no more than 1% of their restricted assets may be placed into a single hedge fund.

Four funds of hedge funds and four single hedge funds have been established in Germany so far – mainly by subsidiaries of domestic banks. An application for another single hedge fund is currently in the processing stage. Although German single hedge funds are also permitted to cooperate with a prime broker, only one hedge fund has made use of this option thus far. Foreign hedge fund providers have become increasingly interested in the German market: three funds of hedge funds have been licensed to operate, while three other foreign providers have already submitted applications for a licence. These include several funds that were already introduced abroad at an earlier point in time by subsidiaries of German banks. In August 2004, total assets held by German hedge funds amounted to €819.4 million. The inflow of funds tailed off distinctly in the middle of the year, however.<sup>2</sup>

<sup>1</sup> According to a study of the investment behaviour of institutional investors in Germany, hedge funds accounted for only around 0.7% of the total portfolio of all investors surveyed in 2003. See Invesco, BVI: German Institutional Asset Management Survey 2004, Results of the 5th Study on the Investment Behaviour of Institutional Investors in

Germany, July 2004. — <sup>2</sup> Whereas €409.1 million was invested in hedge funds in May 2004, the inflow of funds recently fell distinctly (€39.2 million in June, €17.2 million in July and €30.7 million in August). Source: BVI Funds Statistics.

as at year-end 2002. Hence, the risks in the trading book have grown not only in absolute terms, but also vis-à-vis the banking book. Whereas in December 2002 the share of regulatory capital required to back market price risks in the trading book was 2.7%, by year-end 2003 this ratio had risen to 3.5% and by mid-2004 to 4.3%. Second, capital market volatility waned, at least in the first half of 2004. The counterdirectional increase in value at risk indicates that many banks deliberately expanded their trading book so as to exploit income opportunities.

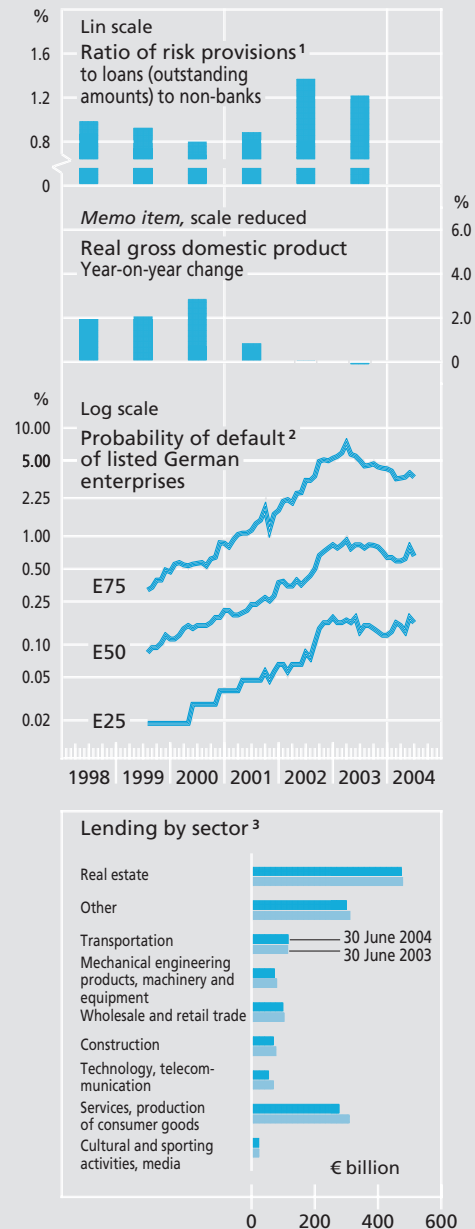
*Low correlation of trading results curbs systemic risk*

However, the individual differences in the structure of market price risks show that a simple addition of the VaR figures clearly overstates the risk. The chart on page 39 shows the distribution of the relative changes in the VaR amounts. The spread of banks' individual figures illustrated here is considerable. This heterogeneous phasing of the build-up and run-down of market risk and the rather low correlation between banks' trading results curbs the systemic risk stemming from the market.

*Slight decline in credit risks in domestic wholesale business*

Credit risk is the most important single risk of German banks. The amount of risk provisioning is influenced to a large degree by the macroeconomic environment. There have been signs of a slight easing in the risk situation in the area of domestic wholesale lending. It is true that Moody's KMV still considers the default risks of listed German enterprises to be high. However, the expected default

### Credit risks of German banks



<sup>1</sup> Write-downs and value adjustments on claims and transfers to loan loss provisions; includes all credit institutions. — <sup>2</sup> Expected default frequency according to Moody's KMV. E75 means that 25% of all enterprises have an increased probability of default and 75% a lower probability of default (EDF). The same applies to E50 and E25. — <sup>3</sup> Only lending to enterprises, excluding the financial intermediation sector (as reported to the central credit register for loans of €1.5 million or more).

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### Insolvencies and affected claims

Item	Number	Year-on-year change (%)	Claims likely to be affected in € billion
Total insolvencies <sup>1</sup>			
2004 1st half	56,836	+ 14.8	19.9
2003	100,723	+ 19.3	41.9
<i>of which</i>			
Consumer insolvencies			
2004 1st half	21,856	+ 39.5	1.7
2003	33,609	+ 56.8	3.1
Corporate insolvencies			
2004 1st half	19,939	- 0.1	13.8
2003	39,320	+ 4.6	30.5

Source: Destatis. — <sup>1</sup> Apart from consumer and corporate insolvencies, total insolvencies include natural persons as members of partnerships and the like, formerly self-employed persons and deceased persons' insolvent estates.

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frequency (EDF)<sup>29</sup> has declined somewhat compared with last year, despite a partial reversal of the declining trend in the average EDF in the second quarter. The slight decline in the year-on-year EDF relates more or less equally to all sectors; one exception, however, is the real estate sector for which no clear EDF trend could be discerned and whose individual firm data show a wide dispersion. The chart on page 41 shows the breakdown of credit volume by sector. This has remained virtually unchanged over the course of the year, meaning that the decline in the average EDF has resulted in a slightly lower exposure at risk<sup>30</sup> in all sectors.

Credit risks in lending to small and medium-sized enterprises (SMEs) remain rather high. After quite a lot of large enterprises became

insolvent, particularly in 2001 and 2002, the current insolvency pattern is more in accord with Germany's economic structure. Just over 70% of all the enterprises which became insolvent in 2003 (compared with just under 64% in 2002) employed no more than five people.<sup>31</sup> This size structure of the insolvencies in the corporate sector is also likely to have contributed to a slight decline in the volume of related claims.

The increase in the overall number of insolvencies in Germany to the record level of 57,000 in the first half of 2004 is due to a further rise in the number of consumer insolvencies. Even so, the creditworthiness of households in Germany remains high. Furthermore, typical retail portfolios display a large degree of granularity. Hence, in the near future no systemic risk to German banks is discernible from consumer insolvencies.

In Germany, real estate loans form the most important type of credit. Around 60% of all loans to domestic enterprises and households (totalling €2,230 billion in mid-2004) are granted for residential or commercial construction. Approximately 84% of these loans are secured by mortgages on real estate. Of these, 23% (€260 billion) concern commercial building projects.

<sup>29</sup> EDF (Expected Default Frequency) is a measure of an enterprise's probability of default developed by Moody's KMV.

<sup>30</sup> The exposure at risk is defined here as the product of the credit volume (as reported to the central credit register for loans of €1.5 million or more) and the associated probability of default of a given sector. Moody's KMV Expected Default Frequencies (EDF) were used as the measure of the probability of default.

<sup>31</sup> Source: Creditreform.

*Consumer credit risks*

*Risks in real estate business ...*

*Credit risks in lending to SMEs*

... in commercial construction

In the commercial construction sector, lenders face various risks in the event that the market experiences a downturn. In this case, the creditworthiness of commercial borrowers falls as does the eligibility ratio of the real estate used as collateral. In the period from 2001 to June 2004, peak rents in five selected urban centres fell by between 12% and 29%. At the same time, the vacancy rate (excluding sub-let agreements) in two of the five cities rose to over 10% and increased considerably in the other cities as well. Moreover, new office buildings with large commercial space are being built in several cities.<sup>32</sup> For several years now, the market has been undergoing a phase of price adjustment to the cyclically induced low demand. According to market participants, this phase is not yet over.

... in housing construction

Around 30% of all housing loans (€329 billion) are granted to commercial (real estate) borrowers who construct housing. Over the past several years, this market, too, has experienced a phase of downward price adjustment, as a result of which borrowers' creditworthiness has tended to fall. However, the relatively moderate pace of adjustment gave banks time to react to developments. At a regional level, the market outlook for residential real estate is heterogeneous. In particular, banks with a strong focus in regions where prices continue to fall remain exposed to risks.

... and for private contractors

Lending to private contractors for residential building carries a much lower risk. Admittedly, at €749 billion, the volume of lending to these persons exceeds lending to commercial

### Regional breakdown of country risk

€ billion

Period	Asia	Latin America	Europe
Credit volume by region			
June 2003	66.76	46.92	97.19
June 2004	68.59	45.83	121.54
Exposure at risk <sup>1</sup> by region			
June 2003	1.30	5.32	2.92
June 2004	1.01	4.19	1.41

<sup>1</sup> The exposure at risk is defined here as the product of the credit volume (as reported to the central credit registry for loans of €1.5 million or more) and the associated default probability of each country. The latter is calculated from the corresponding Standard & Poor's ratings after they have been transformed into a cardinal scale based on 2-year corporate default data.

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clients. Moreover, the increase in consumer insolvencies has been accompanied by a rise in foreclosure sales of houses and flats<sup>33</sup> (over 60,000 in 2003 and more than 30,000 properties in the first half of 2004)<sup>34</sup> which may indicate an increased lending risk. However, the correlation between the price trends of the corresponding real estate, borrowers' ability to service the debt and the realisation rate of foreclosure sales in the residential housing segment is not as close as in the commercial segment.

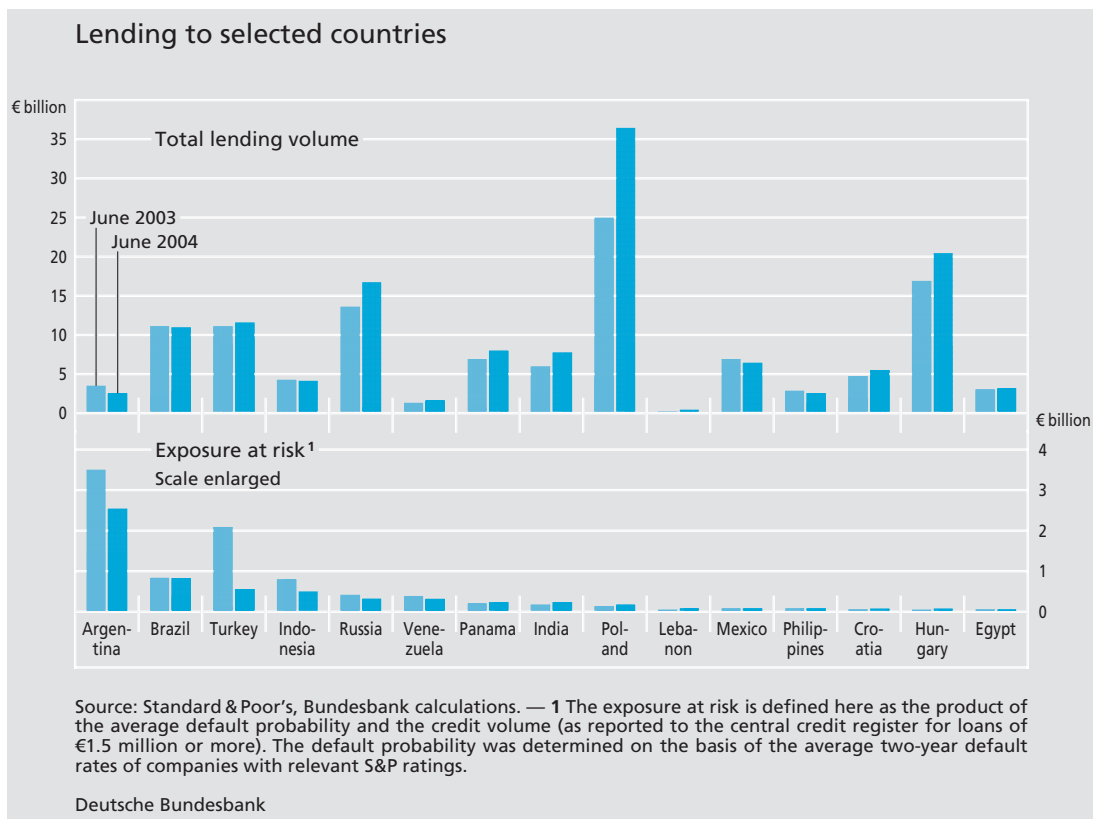
With respect to the credit risk arising from international lending, lending to emerging

*Reduced risk exposure to emerging economies*

<sup>32</sup> Source: Jones Lang LaSalle.

<sup>33</sup> Owner-occupied apartments, one and two-family houses, semi-detached houses.

<sup>34</sup> Source: Argentra AG.



economies merits special attention. The volume of exposures at risk to the emerging market countries of Asia, Latin America and Europe has decreased perceptibly since mid-2003. This development can be explained primarily by improvements in the underlying macroeconomic setting, which are reflected in corresponding rating upgrades.

*A shift in lending to eastern Europe*

At the same time, it is apparent that banks have shifted their lending towards eastern Europe. Lending to Latin America and Asia, by contrast, has remained virtually unchanged.

*Allocation of risks by region*

With respect to the amount of exposure at risk, however, Latin America still tops the list. Argentina accounts for the largest single amount (€2.5 billion), but this is a special

case resulting from the country's earlier default. This is followed by Brazil (with an exposure at risk of €831 million), Venezuela (€307 million) and Panama (€244 million, see above chart). Although lending to Asia was stable on the whole, shifts are apparent within this region. Banks have curtailed their lending above all to countries with poor ratings such as Indonesia and the Philippines.

Lending to eastern Europe was particularly concentrated on the two new EU member states, Poland and Hungary, and on Russia. At €36.4 billion, Poland represented the largest credit volume in summer 2004, while lending to Hungary increased to €20.4 billion. Lending to Russia also increased this summer to €16.7 billion. Despite the upgrade of Turkey's foreign currency sovereign credit rating,



German banks have shown restraint in granting additional loans to Turkey.

*Bank Lending  
Survey*

The current risk situation is determined by credit volumes and the prevailing credit quality. However, information on banks' treatment of credit risk in new lending business is also interesting. In this context, the Bank Lending Survey<sup>35</sup> provides valuable signals and insights. Data for Germany indicate a further increase in risk differentiation. Particularly in retail banking, the survey data indicate a persistent risk-differentiated margin spread: whereas the margins for average-risk loans actually narrowed in some cases, some of the respondent banks widened their margins on higher-risk loans further. In corporate lending business, by contrast, banks increased their margins both for average-risk and for higher-risk loans. However, on balance, German banks do not appear to have further tightened their credit standards so far this year compared with the adjustments they made last year.

*Rising  
operational  
risks ...*

In the past few years, the banking industry has become more acutely aware of operational risks. This risk category comprises possible losses resulting from internal factors – errors in banks' internal processes, human errors and errors in IT systems – and threats from external events such as natural catastrophes. It is also international standard practice to expressly include legal risks in this category.<sup>36</sup>

<sup>35</sup> See Deutsche Bundesbank, *Monthly Report*, August 2004, pp 26ff.

<sup>36</sup> See Basel Committee on Banking Supervision, *International Convergence of Capital Measurement and Capital Standards*, June 2004.

### Impact of Basel II on the stability of the financial system

The new minimum capital requirements for credit institutions published in June 2004 (Basel II) have already begun to have an impact on German banks' risk management practices. Around one-third of German credit institutions are planning to implement an internal ratings-based approach, which represents an important enhancement of the current Principle I rules. In future, operational risk will also have to be backed explicitly by equity capital and the risk weights to be applied to defaultable assets will no longer depend solely on the asset class but also, in addition, on the internal rating.

With the improvement of the risk sensitivity of the capital requirements incentives for more risk-appropriate lending conditions will be created. This is expected to entail efficiency gains in the banking system in future, which will further improve the stability of the financial system.

A more risk-oriented allocation of liable capital is closely linked to another key objective of Basel II: to converge supervisory risk-weighting practices with risk measurement in the banks. In this way, unwelcome developments such as capital arbitraging opportunities can be prevented.

The issue of "calibrating" capital requirements is an important element in creating more convergence between the two concepts of capital. Only by adequately adapting the risk-weight functions can it be ensured not only that the risk sensitivity of the capital requirements is increased and incentives for selecting a more risk-sensitive approach are provided but also that the total capital in the financial system is preserved. To that end, calibration will be rereviewed in 2006 shortly before the entry into force of Basel II.

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*... arising from  
legal issues  
and ...*

Legal risks have recently attracted attention in the wake of court rulings and legislative initiatives, eg in the area of consumer and investor protection.<sup>37</sup> Claims for damages in connection with the insolvency of large companies, for example in the case of Parmalat, also entail financial risks for those institutions involved. All in all, such risks are sustainable for the individual institutions and, moreover, are basically not a new phenomenon. They have, however, recently gained in importance and, from a stability viewpoint, must be seen in an overall context together with the risk potential arising from credit, market and other operational risks.

*... from a heavy  
dependence on  
IT functions*

Apart from legal risks, the other causes of operational risk have also gained in importance. These include human error or fraud, often in connection with faulty processes or IT system defects. Banks' and financial intermediaries' large and growing dependence on IT functions – particularly in combination with the ongoing trend towards outsourcing, greater dependence on often just a few service providers and weaknesses in e-banking applications – constitutes an increasing risk potential<sup>38</sup>. However, the new Basel Accord, which for the first time implements separate capital requirements for operational risk, has contributed not least towards heightening the awareness of operational risk in the banking industry.

### **Savings banks and cooperative banks**

The earnings and risk situation as well as the outlook for these two banking groups, which are each organised as a network of affiliated institutions, have improved.

In 2003, both the savings banks and the co-operatives banks were able to increase their year-on-year net interest income by 0.04% of the average balance sheet total. This means that the main source of income for these two groups of banks increased for the second year in succession, after their interest incomes had sagged sharply in the second half of the 1990s. The savings banks' and credit co-operatives' net interest income currently totals 2.42% and 2.53% of their average balance sheet total, respectively. The rise in net interest income was mainly due to the favourable possibilities for maturity transformation presented by a steeper yield curve. The difference between long and short-term interest rates has widened again in the past two years after the yield curve had flattened somewhat in the preceding period.

*Further rising  
net interest  
income...*

Investors' high liquidity preference created leeway for both groups of banks to take advantage of the possibilities for maturity transformation. Developments so far this year have not yet offered any clear indication, however, as to whether the recovery in net interest income will continue. On the one hand, investors' preference for liquidity has weakened somewhat, meaning that the refi-

*High liquidity  
preference and  
steep yield  
curve favour  
maturity trans-  
formation*

---

<sup>37</sup> For instance, several investor lawsuits were recently successful in the Federal Supreme Court. These investors had made losses on credit-financed investments in closed-end real estate funds. Depending on the way in which the transaction was initiated, they claimed there had been a breach of the Consumer Credit Act or the Act governing door-to-door selling.

<sup>38</sup> However, many of the risk factors mentioned are only the obverse side of fundamentally positive developments, such as economies of scale through the use of IT and outsourcing, achieving the optimal operating size and stepping up necessary structural changes as well as the effective use of complicated risk management practices. However, these positive effects can only be effective if the attendant operational risks are managed properly.

nancing of the institutions could become more expensive. Furthermore, the demand for credit is still weak; in particular, the demand for real estate loans, which fuelled the business of both banking groups in 2003, has receded. On the other hand, the yield curve is still steeply upward sloping. So far this year, the yield spread between Federal securities with a residual maturity of seven years and those with a residual maturity of three months has been on average around 30 basis points above the average spread seen in 2003.

*Rising commission income*

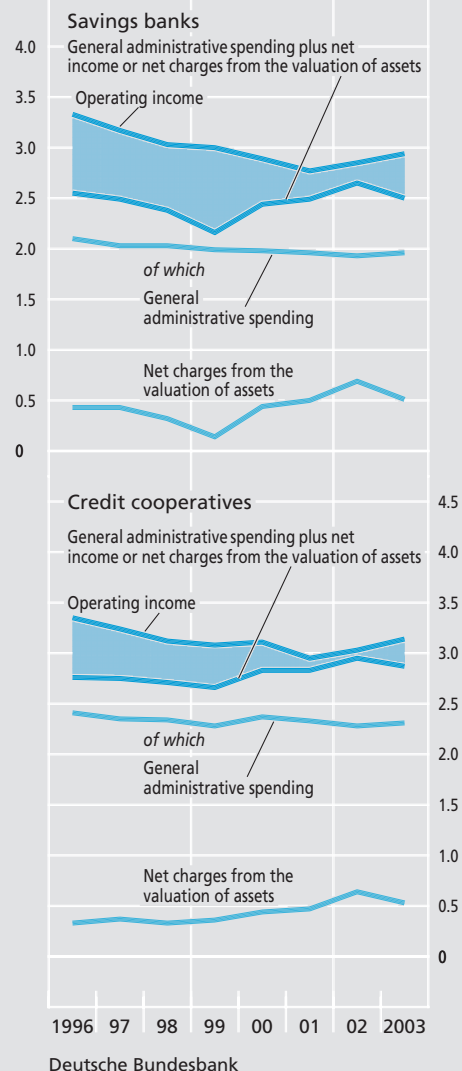
Besides higher net interest income, earnings have been supported by a rise in commission income, even though the short-term potential of this source of income, which equals 22% of net interest income at savings banks and 24% at credit cooperatives, is probably limited. By international standards, however, the cross-selling potential in these two sectors has not yet been fully exploited.

*Fall in general administrative spending*

As regards operating costs, institutions in both sectors probably still have extensive scope for cost reduction despite continued consolidation. The network structure of these two sectors allows institutions to strike a balance between a clear division of labour and managerial independence. To achieve this, however, the network advantages have to be exploited systematically and further economies of scale have to be attained through amalgamation. Together, the reduction in general administrative spending and an increase in commission income can create a buffer which serves to compensate for fluctuations in the net result from the valuation of assets.

### Items in the profit and loss account

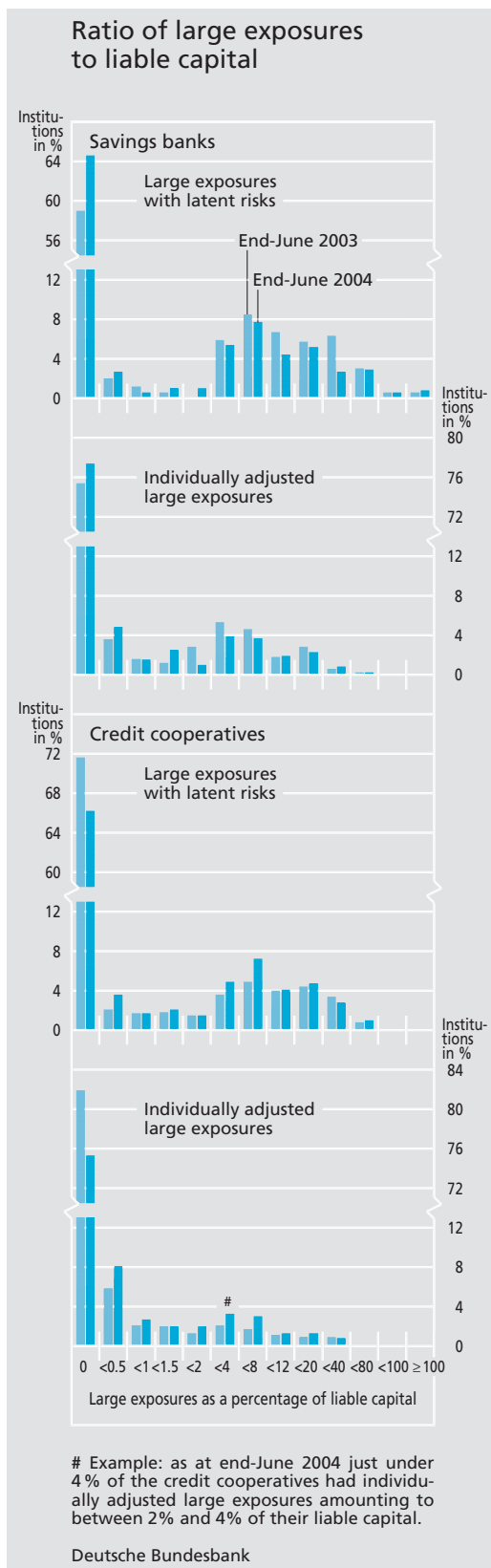
As a percentage of the average balance sheet total



In 2003, the developments in the capital market resulted in a positive net result from the valuation of assets in the securities portfolio<sup>39</sup> which ultimately led to a decline in the overall level of risk provisions. By contrast, the

*Positive net result from the valuation of assets in the securities portfolio*

<sup>39</sup> Provisional projection based on 90% of all savings banks and 95% of all credit cooperatives: profit contribution from securities portfolio – savings banks +0.07% and credit cooperatives +0.04% of the average balance sheet total. Profit contribution from loan portfolio: savings banks – 0.53% and credit cooperatives – 0.47% of the average balance sheet total.



second component of the net result from the valuation of assets, namely loan loss provisioning, increased compared to last year owing to cyclical developments.

Institutions' risk positions in both banking groups are concentrated largely on loans to domestic enterprises and self-employed persons and on loans to domestic households.

As regards commercial loans, a large portion of these are granted for the construction or acquisition of real estate. In the current market environment, outstanding real estate loans, particularly loans for office buildings, may necessitate write-downs, especially if the bulk of an institution's business – given by the regional principle – is in areas with a poorly performing real estate market.

*Manageable risks in the commercial...*

The analysis of the data on large exposures<sup>40</sup> shows that the quality of the portfolios<sup>41</sup> of credit cooperatives has deteriorated slightly compared with last year's *Stability Report* while that of the savings banks has improved slightly. Thus, in particular, the percentage of savings banks which have neither large exposures with latent risks nor specific provisions for large exposures in their portfolio has increased.

<sup>40</sup> Pursuant to sections 13, 13a and 13b of the Banking Act, large exposures are loans which exceed 10% of a bank's tier 1 and tier 2 capital. Such loans are divided into three risk classes: Class 1 – has no recognisable risks. Class 2 – has latent risks. Class 3 – specific provisions have already been made.

<sup>41</sup> While large exposures, with respective shares of 26% of the average volume of business at the savings banks and 33% at the credit cooperatives, do not give a full picture of the commercial portfolios of the two categories of banks, they do allow an approximation.

... and retail  
portfolio

Private real estate loans represent the most important credit class in terms of volume in both banking groups. There are indeed signs that the risks in this portfolio are likely to increase slightly. But, with respect to financial stability, the still high creditworthiness of these borrowers and the mostly stable value of the collateral indicate that the large share of privately financed real estate in the savings banks' and credit cooperatives' portfolio does not represent any particular risks.

However, it cannot be excluded that individual institutions in both banking groups may face an increased need for value adjustments in future, mainly in respect of their commercial loan portfolio.

Increase in  
equity capital  
and core capital

On a positive note, the cushion against losses at the savings banks and credit cooperatives has been enlarged as a result of the improved earnings situation in 2003. In the first eight months of this year, savings banks' and credit cooperatives' tier 1 and tier 2 capital rose by 5.2% and 6.0% respectively. The capital ratio and core capital ratio are both considerably above the minimum regulatory requirement of 8% and 4% respectively.

Results of a  
hazard rate  
model

The overall positive assessment of savings banks' and credit cooperatives' stability is supported by the results of a hazard rate model used by the Deutsche Bundesbank to assess the creditworthiness of individual banks (see box on page 50). Various ratios on the earning situation, solvency and risk are condensed into one probability of default figure. The creditworthiness assessment for 2004 and

### Selected balance sheet items of savings banks and credit cooperatives

As at 30 June 2004, € billion

Loans to	Savings banks	Credit co-operatives
Domestic enterprises and households	574.7	338.9
<i>of which</i>		
Domestic enterprises and self-employed	279.6	154.4
Domestic employed persons and other persons	291.2	181.4
Construction loans (commercial and private)	352.4	216.9
<i>of which</i>		
to households for residential construction	217.9	133.3
to commercial borrowers for residential construction <sup>1</sup>	74.2	38.6
loans for commercial construction, secured by mortgages <sup>1</sup>	60.3	45.0

<sup>1</sup> Loans for commercial construction which are not secured by mortgages are not included in the statistics.

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2005 based on this model has improved for both categories of banks.

A key component of the stability situation of these two categories of banks that are organised in networks are their institutional mutual insurance schemes. The wave of insolvencies in the corporate sector in the wake of the economic stagnation of the past years has caused the rate of contributions to the mutual insurance scheme of the credit cooperatives to be raised to 2 per mill of the respective asset base. The savings banks pay only 0.3 per mill of a similarly defined base; however, the solvency of the individual institutions is currently insured not only by the general fund but also by guarantees from state government. As these state support mechanisms will be abolished in future, these public-sector

Institutional  
protection

## Hazard rate models

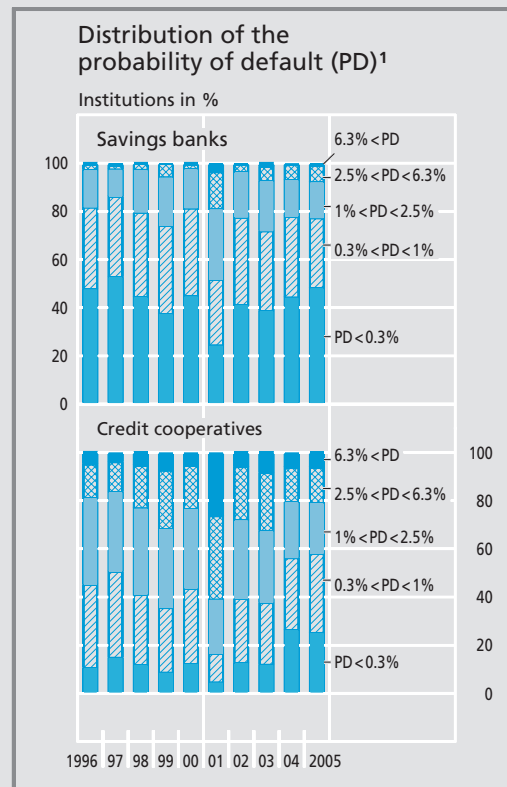
Hazard rate models (lifespan models) are used to determine the probability of default over time. Compared with other methods used to estimate default probability, they are distinguished by the fact that data collected both over time and in a cross-section analysis are processed simultaneously (panel data). The Bundesbank has developed a hazard rate model to estimate the probability of default of savings banks and credit cooperatives.

The hazard rate model supports macroprudential supervision when assessing risks in the banking sector. The model is calibrated to a forecast horizon of one year and so estimates the probability of default over 12 months. Institutions are considered to have defaulted if their existence is endangered within the coming year without support from their affiliated network. The likelihood of this happening is determined by institution-specific, regional and macroeconomic ratios. The institution-specific ratios relate to the capital base, profitability, credit risk and market risk of the respective savings bank or credit cooperative. In addition, regional and macroeconomic factors determine the development of the average probability of default over time.

A panel of historical data on all savings banks and credit cooperatives since 1993 was available for the selection of the ratios and the determination of the weights (full survey). The default dataset comprised *inter alia* restructuring mergers and capital support measures of the affiliated network. The hazard rate model was estimated with a Logit link function, taking due account of the data panel structure. This produced a good fit of the estimated probabilities of default to the historical default rates and a high discrimination between defaults and non-defaults (Gini coefficient: 0.62). The estimation shows that the capital base is by far the most important feature for discrimination. This was followed by profitability, credit risk and market risk, which were of roughly equal importance. Regional and macroeconomic factors also make a significant

contribution to explaining default rates over time. It is not possible to extend the model to the whole banking industry owing *inter alia* to the greater heterogeneity and the smaller number of institutions in the other categories of banks.

The chart below illustrates the distribution of the institutions into various risk categories for a period of ten years. The relative population frequencies in the individual categories fluctuate substantially over time. Thus in 2001 the share of institutions in the high-risk categories was well above the average. Since then, there has been a relative increase in the share of the low-risk categories. The share of credit cooperatives in the low-risk categories is actually higher at the current margin than in the other years of the observation period.



<sup>1</sup> Based on the data from year *t* (eg 2003), the hazard rate model assigns a default probability to each institution for year *t*+2 (eg 2005).

institutions may also face higher average charges in future. In the light of these developments, the institutional reforms of both mutual insurance schemes recently carried out are a welcome move. For example, initial experience shows that simply the awareness that contributions will be geared in future to the institution's rating, along with the internal credit risk assessments within each institutional network, has heightened the price risk awareness of the member banks, thus promoting the long-term soundness of the mutual insurance schemes. Overall, the institutional mutual insurance schemes of both banking networks make an appreciable contribution to the stability of the financial system as they strengthen creditor confidence. Privately organised and financed schemes like these do not conflict with a liberal economic system.

### Regional and other commercial banks

Against the general trend, several institutions of this rather heterogeneous group of banks managed to expand even in the past few years of economic stagnation. For example, particularly banks which specialise in retail business were able to increase their lending to domestic households at an above-average rate in 2003; this trend continued in the first half of 2004 at a similar pace. It is true that the increasing number of private insolvencies is placing a strain on the profitability of retail institutions: contrary to the general trend, these institutions faced a sharp rise in write-downs and value adjustments on claims as well as transfers to provisions in their lending business. Even so, the situation of these spe-

cialised institutions is quite comfortable. First, the business model they pursue is economically attractive on account of the high margins involved. Second, the portfolios of these banks are very granular and the individual risks have a low correlation, so no concentration of exposures or domino effects occur. At the same time, the large amount of customer data which they accumulate provides a good statistical basis for developing credit risk assessment procedures.

Retail business was not the only area in the recent past that was blessed by commercial success. Last year, for example, institutions which specialise in managing the assets of private clients were able to increase their net profit for the financial year before tax considerably. The aforementioned examples show that a clear profile and a simple business model which is readily understandable for customers and employees alike can be successful in a difficult market environment. The fact that individual institutions within this banking group have meanwhile made an exit from the market is a – welcome – sign of the normal selection process in a market economy and does not conflict with the good results attained by many commercial banks.

### The situation at private mortgage banks<sup>42</sup>

Particularly the pure mortgage banks have been finding it hard to generate sufficient in-

*Success  
through  
specialisation*

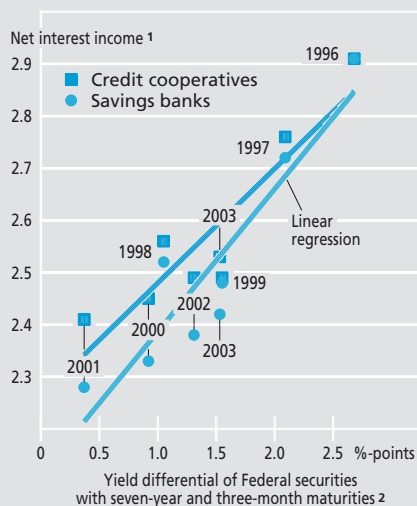
*Limited  
business  
opportunities*

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<sup>42</sup> The private mortgage banks analysed here (excluding Bayerische HypoVereinsbank) belong, in line with the Bundesbank's classification of institutions, to the group of real estate credit institutions. In June 2004, the private mortgage banks held over 96% of the average balance sheet total of all real estate credit institutions.

*Earnings  
potential of  
specialised  
retail banks*

### Correlation between the yield differential of Federal securities and net interest income



1 Up to end-1998, as a percentage of the average business volume; from 1999, as a percentage of the average balance sheet total. — 2 Source: Bloomberg.

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come for several years now. Despite several additions over time, the scope of business of these banks still mainly comprises the financing of real estate and property and providing credit to the public sector. While the Fourth Financial Market Promotion Act extended the business scope of these institutions by allowing them to engage in ancillary commission business and extended their regional radius of action considerably, the majority of such institutions have not yet been able to earn a sizeable surplus from commission business. In 2003 interest income accounted for 98% of all income at mortgage banks and interest expenditure accounted for 91% of all expenses.

*Declining net interest income...*

However, the net interest income of these banks has been on the decline for some years now as margins in both private and in public

sector mortgage lending business have eroded substantially in the past few years. Furthermore, the business volume of private mortgage banks in Germany has declined in tandem with shrinking market shares. As a result, the volume of outstanding housing loans of these institutions to domestic enterprises and households fell by 2.8% in 2002, by 1.7% in 2003 and by 1.4% in the first half of 2004. In the early 1990s, their share of all housing loans to domestic enterprises and households had stood at 18%; by the end of 2003 this figure had fallen to 13%. The margins in their "second-pillar" of business, public sector financing, are tight owing to the nature of the business. Despite rising government debt, the scope for boosting income by expanding the business volume is limited by the fact that government is nowadays resorting increasingly to bonded debt to the detriment of traditional bank borrowing. The endeavours by some mortgage banks to gain premature access to future interest income streams through derivative transactions can provide only temporary relief.

The drop in mortgage banks' income is compounded by increased risks and large value adjustments. The price adjustments for real estate after the German reunification boom along with rising vacancy rates, particularly in the east German real estate market, led to rising risk provisions. Consequently, the operating result after risk provisioning is much lower than it was in the late 1990s.

*... and high risks*

Against the backdrop of households' increasing debt servicing problems and the continued poor market outlook, particularly for

*Far-reaching restructuring measures*

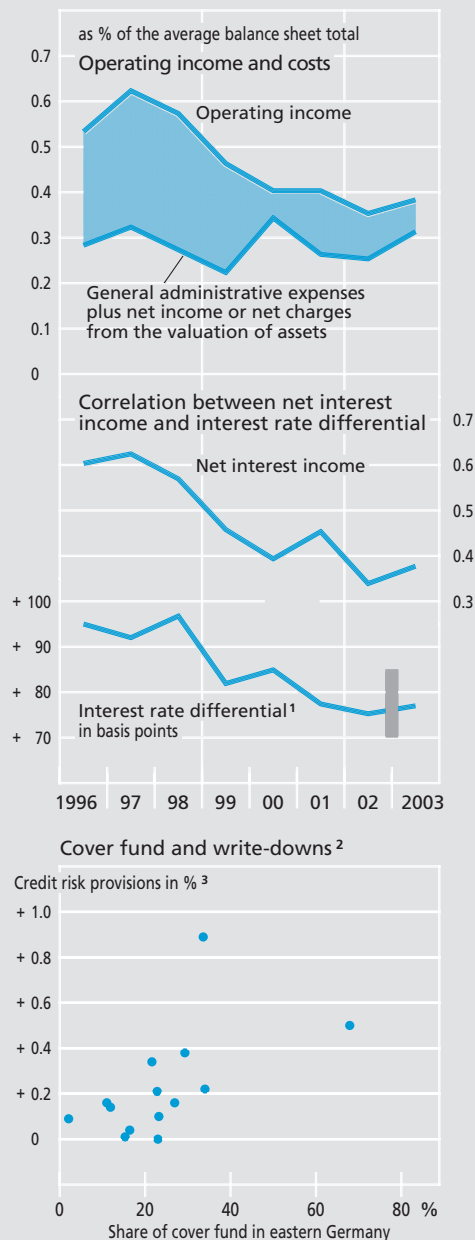


commercial real estate, the far-reaching restructuring programmes implemented by many mortgage banks must therefore be seen as a very positive development. The focus of such measures has been adjusting the portfolio for "old debt", developing new sources of income, including commission business and/or business in foreign markets, and further refining their risk management system. The latter is of particular importance given the rise in foreign exposure. While it may be possible to achieve higher margins outside Germany, the risks are considerable owing to volatile and/or high-priced markets.

*Likely changes  
in legislative  
setting*

The Federal government is planning to replace the existing Mortgage Bank Act and the Act relating to public-sector Pfandbriefe by a general Pfandbrief Act (see box on page 54). This would spell the end of the specialist bank principle, which has existed for more than 100 years. The advantage of this legislative change for the pure mortgage banks would be that their business scope and hence income opportunities would be extended. The threat of greater competition for the existing mortgage banks in the Pfandbrief market is limited as nearly all categories of banks are already present in the mortgage market and new competitors would presumably consider market entry unattractive on account of the low margins. Moreover, the acceptance of issuers in the Pfandbrief market can only be secured through high volumes and a good credit standing. This limits the range of potential issuers. Even if individual mergers and exits from the market cannot be excluded, the currently available information points towards an orderly transition to a new legal en-

### Analysis of profit and loss account of selected private mortgage banks



<sup>1</sup> Mortgage rates (up to 2002, ten-year fixed rate mortgage on residential properties, effective rate; from 2003, housing loans to households, interest rate fixation over ten years; effective rate) less yield on mortgage Pfandbriefe outstanding with an average residual maturity of over nine to ten years. — <sup>2</sup> Values of 14 selected mortgage banks. — <sup>3</sup> Amount plus expenses for rescue acquisition of real estate.

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## The planned Pfandbrief Act

The Federal Government has presented a draft Act to reform German Pfandbrief legislation. The Pfandbrief Act (*Pfandbriefgesetz*) is intended to replace the Mortgage Bank Act (*Hypothekendarbankgesetz*) and the Act on Pfandbriefe and Similar Instruments Issued by Public-Law Credit Institutions (*Gesetz über die Pfandbriefe und verwandten Schuldverschreibungen öffentlich-rechtlicher Kreditinstitute*). The aim of the new Act is to allow all credit institutions which fulfil the stringent quality standards for Pfandbrief issuance set out in the legislation to engage in Pfandbrief business. At the same time, the specialist bank principle applicable to private mortgage banks, ie the restriction of permissible business to low-risk mortgage loans and municipal loans and refinancing via collateralised debt securities, will be abolished.

The restrictions of the Mortgage Bank Act, which allow private mortgage banks little scope to diversify their range of services, have proven to be increasingly counterproductive in recent years as they limit the institutions' means of generating income. In addition, the parallel coexistence of private mortgage banks governed by the Mortgage Bank Act and public-sector issuers of Pfandbriefe governed by the Act on Pfandbriefe and Similar Instruments Issued by Public-Law Credit Institutions (essentially Landesbanks, but also some savings banks) needs to be improved in the interests of fair competition. This is especially important given the fact that the two Acts lay down different requirements for issuing Pfandbriefe. Moreover, the elimination of the guarantors' responsibility for ensuring the solvency of a public-law institution (*Anstaltslast*) and guarantors' uncalled liability (*Gewährträgerhaftung*) will result in a fundamental change in the underlying conditions for Landesbanks and savings banks.

Under the new Act, the requirements for Pfandbrief issuance will be based on high standards, particularly with regard to the choice of property used as collateral, establishment of the loan value, compliance with the lending limits, risk management, increased demands on the trustee, insolvency remoteness and more intensive supervision. The Pfandbrief Act is intended to further improve the already high quality of the Pfandbrief and strengthen investor confidence in this form of investment. It is to enter into force before the elimination of the guarantors' responsibility for ensuring the solvency of a public-law institution and guarantors' uncalled liability.

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vironment. From a banking supervision standpoint it is important that mortgage banks do not incur new and unmanageable risks as a result of their extended business scope and without sufficient expertise.

## Insurance companies

Aside from credit institutions, insurance companies are also of key importance for the stability of the German financial system. Life insurers in particular are closely linked to the banking sector; they are often affiliated to non-life insurers within a corporate group.<sup>43</sup> Reinsurance companies have a network position in the industry owing to their role as insurers of direct insurers' insurance business.<sup>44</sup>

The earnings situation and solvency of the German insurance industry stabilised in 2003. There was an improvement in the respective return on equity in the life and non-life sectors, thanks to the parallel enhancement of the results from insurance business and from capital investments, from 6.3% and 7.9% in 2002 to 9.3% and 15.8% in 2003. Life insurers have, however, not yet regained their level of 1999 (12.1%)<sup>45</sup> as the extraordinary burdens of the past three years (capital market developments, overly generous bonuses etc) are still having an effect.

*Stabilisation  
of earnings  
and solvency  
situation*

<sup>43</sup> Of the 50 largest life insurers, 46 are part of a composite corporate group.

<sup>44</sup> In 2003, the 50 largest German non-life insurers transferred 25.9% of their primary insurance business to reinsurance companies. Life insurers transferred 7.8%.

<sup>45</sup> This percentage and the following figures relate to the 50 largest German life insurers (market share: approximately 95% of the gross premiums written in 2003) and the 50 largest German non-life insurers (market share: 92.6% of the gross premiums written in 2003).

*Net investment  
income today...*

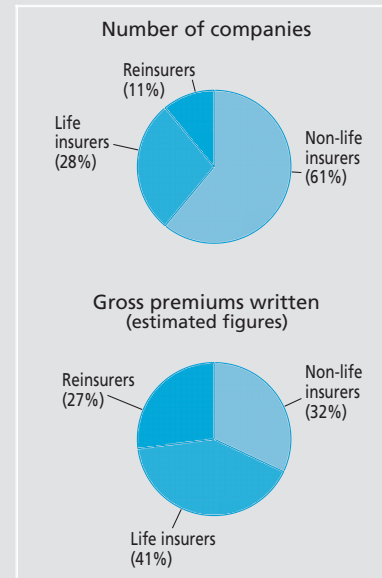
The easing of the situation on the capital markets led to a distinct improvement in the net investment income of all insurance companies in 2003 (+13.8% in the life sector and +7.4% in the non-life sector). Another positive development is that – according to estimated figures from the German Insurance Association (*Gesamtverband der deutschen Versicherungswirtschaft*) – the hidden losses in life insurers' equity portfolio fixed assets fell from €16 billion in 2002 to around €5 billion at the end of 2003 owing to sales and write-downs and now amount to less than 1% of total investments. However, as this decline is attributable partly to sales of equities, the life insurance industry will be able to participate in possible future capital gains to only a limited extent, despite the share price-related increase in the ratio of equities (held both directly and via funds) to total investments from 7% in 2002 to 8% in 2003.

*...and in the  
future*

Compared with five years ago, life insurers are investing more and more in bond-based funds, followed by borrowers' notes and loans; the share of fixed-income investments is now around 80%. The life insurance industry can thus match the interest sensitivity (duration) of long-term actuarial reserves tied to the statutory minimum rate of return on the liability side of their balance sheet more closely to that of the – on average – shorter-term investments on the asset side. Furthermore, switching to fixed-income investments reduces the volatility of the assets. Therefore, only a small number of insurers have invested significantly in alternative instruments such as corporate bonds, hedge funds, private equity and structured products, although invest-

### Structure of the German insurance sector

As at end of 2003



Source: Federal Financial Supervisory Authority (BaFin).

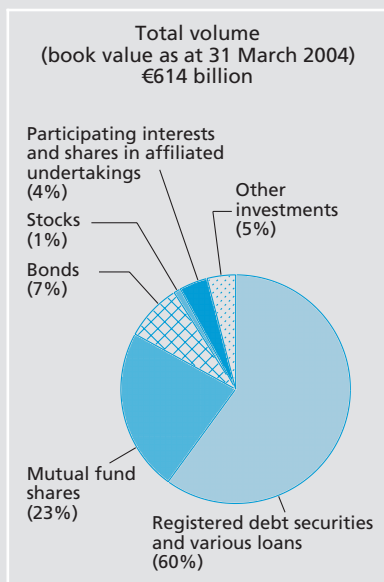
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ments in credit-linked notes and asset-backed securities increased slightly in the last twelve months.

Life insurers' considerably stronger performance – measured in terms of the increase in the profit for the year (2002: €494 million, 2003: €754 million) – is also a consequence of the improvement in the insurance technical result. The volume of gross premiums written by the 50 largest companies grew by 4.1% to €63.2 billion. The buoyant new business indicates that, partly owing to the lack of alternative private pension products, there is still a high degree of public confidence in the life insurance policy product. However, compared with previous years, it is noticeable that the difference in individual companies' profits from new business is becoming more

*Greater  
competition  
among life  
insurers in  
writing new  
business ...*

### Investments of German life insurance companies



Source: Federal Financial Supervisory Authority (BaFin).

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pronounced. This heterogeneous trend across the industry suggests a heightening of the already intense competition which, owing to the changing circumstances – eg partial abolition of the tax privilege for the flagship product, ie the endowment life insurance policy, and the growing importance of private old-age provisions – will become even stronger.

The life insurance industry has reacted to this development by redesigning and restructuring its products. It has done so firstly in response to shifts in demand. For example, in recent years, life insurers have set up or provided access to pension schemes and – less significantly – pension funds which, whilst noticeably enhancing premium income growth in 2003, constitute relatively low-margin business in comparison with individ-

ual policies. Secondly, insurers are favouring products with which they can reduce their own risk. These include unit-linked life insurance policies which, without a statutory minimum rate of interest, shift the capital market risk onto the customers, who are showing only a lukewarm interest in this kind of insurance (average share of regular premium volume: 8.9%). These changes – although required for operational reasons – lead to a rise in the volatility of the industry's earnings, which in itself may, in principle, increase the risk of difficulties in the industry.

The intense competition within the industry has, in the past few years, also been reflected in the high expectations of policyholders with regard to bonuses over and above the statutory minimum rate of return. These expectations could be met only by continuously running down income reserves. In the meantime, however, the low financial base is forcing the industry to reduce these amounts. In 2003, it was again possible to fully fund the overall interest on policyholders' credit balances from the improved net investment income, which meant that the income buffers in the reserve for premium refunds as well as the valuation reserves from investments expanded once again. However, if these permanently sustainable dividends are to be continued, sufficient investment earnings will have to be attained at all times, including in periods of low interest rates.

In non-life insurance, a combination of the falling volume of claims incurred and the rising volume of premiums written meant that, in 2003, this sector had a combined ratio of

*... with lower bonuses*

*Good results achieved by non-life insurers*

under 100% for the first time since 1998. Having recorded a profit of €2.7 billion (€2.4 billion in 2002), non-life insurance proved to be the most stable sector; this made it easier for composite groups to provide their life insurance segments with capital support. Non-life insurers may also produce stable results in 2004: firstly, the prevalent hard market<sup>46</sup> – characterised by high premiums and more restrictive policies – is only slowly drawing to an end; secondly, the number of major losses, man-made disasters and natural catastrophes covered by German non-life insurers has been relatively small up to now.

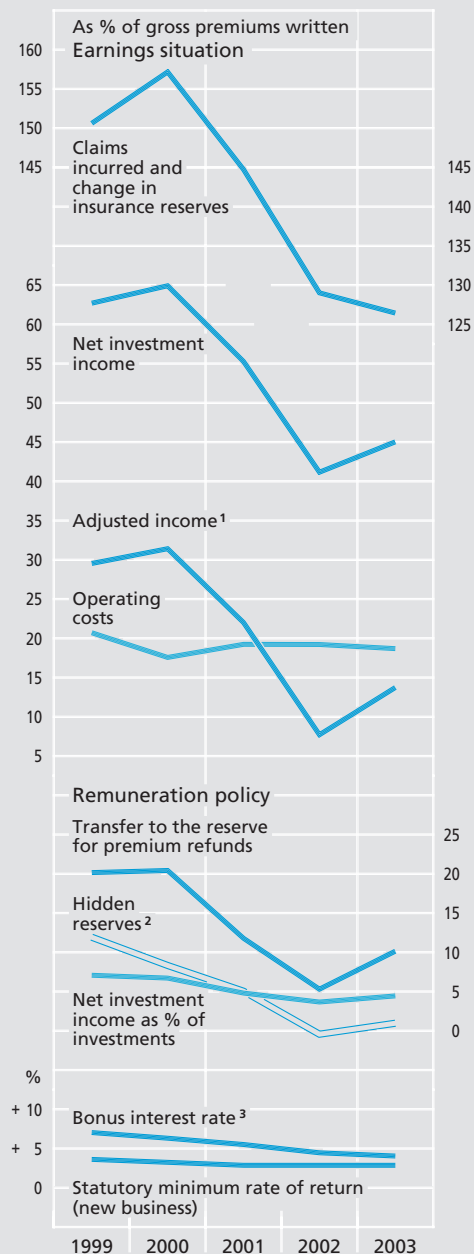
*Improvement  
in situation for  
reinsurers*

While (largely one-off) strains in the reinsurance industry – owing to ties with banks and primary insurers – depressed the result in 2003, generally favourable conditions in operational business also led to a reduction in reinsurers' combined ratio to well below 100% – measured in terms of the two globally active German market leaders. They may be unable to match this good ratio in 2004 owing to the recent spate of major hurricanes.

The sustainability of the fundamentally positive earnings trend depends not only on the occurrence of losses and loss payments, but also on how reinsurers respond to the emerging phase of cyclically-induced lower premiums. German reinsurers appear initially to be maintaining their cautious premium policy,

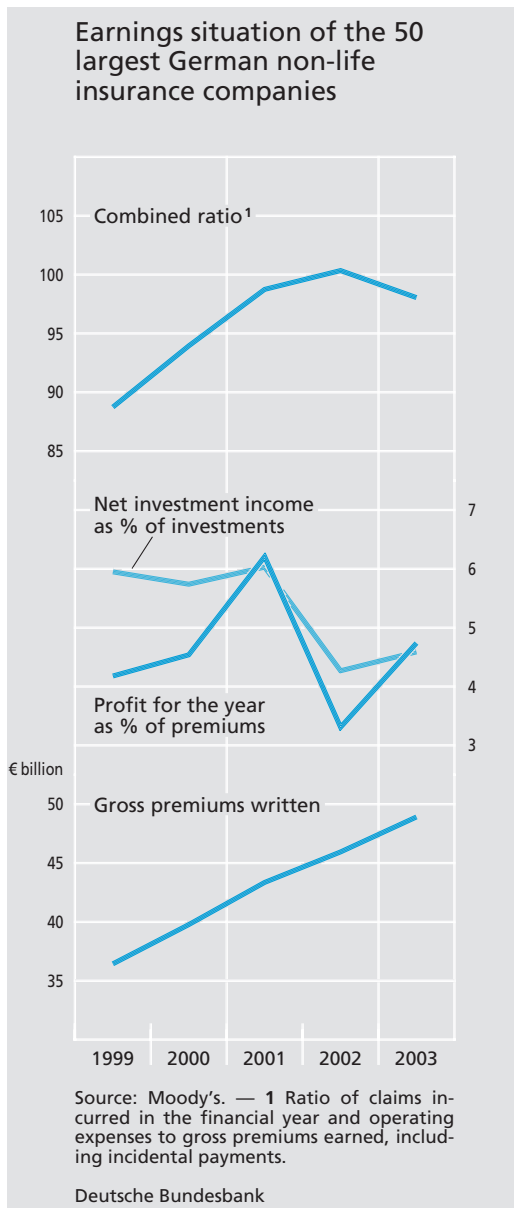
<sup>46</sup> The operational results in non-life business follow a cyclical pattern caused, amongst other things, by (un)favourable loss experiences, the return on investments and insurers' endeavours to gain larger market shares. The cycles are divided into phases with low premium rates (soft markets) and ones with high premium rates (hard markets).

### Data on the 50 largest German life insurance companies



Sources: Federal Financial Supervisory Authority (BaFin), Moody's, Assekurata. — <sup>1</sup> Profit for the year plus transfer to the reserve for premium refunds. — <sup>2</sup> Ratio of the difference between the market value and book value of all investments and the book value of the investments. — <sup>3</sup> Interest rate on policyholders' credit balances for the following year.

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which can be explained by the losses suffered in recent years, the capital market yields – which will probably remain at a low level in the future – and the desire to regain the high ratings essential for price negotiations. However, the German reinsurance industry is confronted by the problem that new rival companies which have recently been set up offshore are unencumbered by the capital market and loss developments of the past few

years and therefore have a wider action radius in their pricing policy.

The stress tests for life and health insurance companies, which have been conducted by the Federal Financial Supervisory Authority (BaFin) since 2003, serve as an early warning system in investment management. Stress situations on the capital markets defined by the supervisory authority<sup>47</sup> are used to examine whether the market value of a company's investments will still adequately cover the company's reserves and own funds under certain extreme circumstances. At the reference date of 31 December 2003, a total of twelve life insurers and two health insurers had failed in at least one of the three test scenarios. Owing to the specific assumptions of the test, however, a "fail" does not necessarily mean that the insurer concerned would be immediately insolvent if the relevant scenario were to occur. For example, the test is based on the premise that all of an insurance company's obligations fall due immediately and simultaneously. In actual fact, however, life insurers' obligations are spread across 20 or more years. It is, therefore, not possible to deduce any direct risks to financial stability from the outcome of the test; it may, however, indicate that the industry has not yet fully regained its financial strength.<sup>48</sup>

*Stabilisation of financial strength: stress test results...*

<sup>47</sup> Scenario A measures the effect of a 35% fall in equity prices. In scenario R, a 10% decline in the value of bonds is imputed. In scenario AR, the effects of simultaneous decreases in equity prices (-25%) and bonds (-5%) are examined.

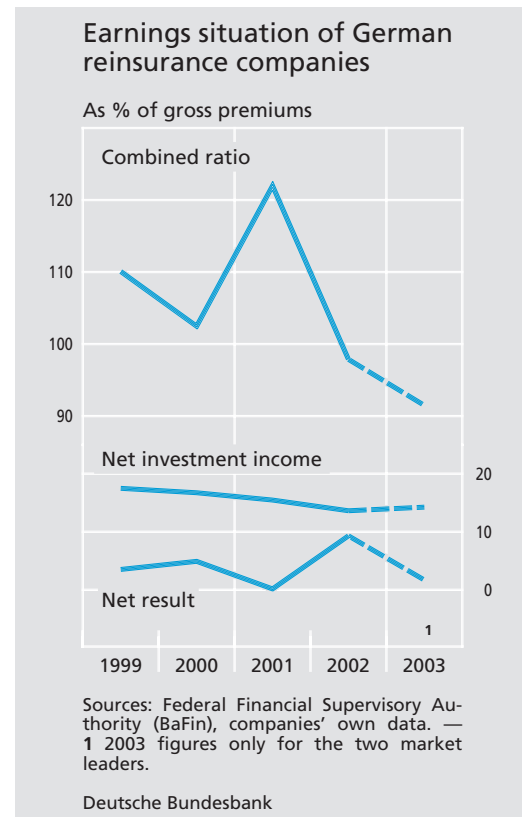
<sup>48</sup> A comparison with the previous year's figures would not make sense as BaFin has refined and greatly changed the scenarios and assumptions on which the tests are based.

...and solvency ratios

This impression is mirrored in the solvency ratios of the life insurance companies. Although solvency improved – like in the other fields of insurance – thanks to a better earnings situation and increases in own funds (the solvency margin<sup>49</sup> – estimated on the basis of companies' annual reports – widened from an average of 159% in 2002 to 167% in 2003), the previous level has still not yet been regained. It is worth noting that the solvency of medium-sized companies does not fall short of that of major players, rather some smaller life insurers are reporting above-average figures – not least owing to their fairly conservative capital investment policy of recent years.

Future challenges

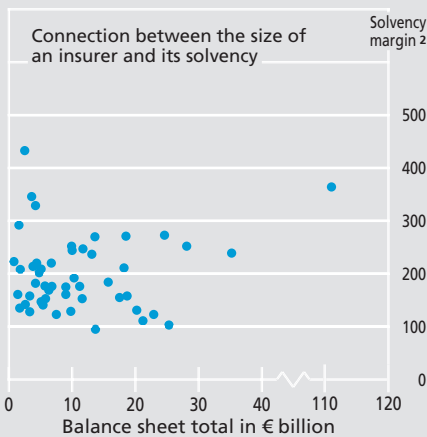
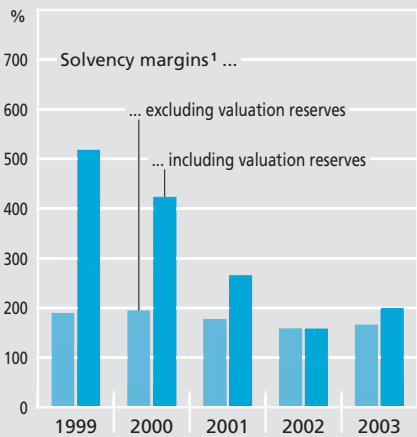
The information value of the solvency ratios is qualified by the fact that neither investment risks nor full market values are taken into account in their calculation. Nor do they capture the rapidly changing underlying conditions, which will force German – but also other European – life insurers to significantly increase their regulatory and economic capital in future. The phased introduction from 2005 of fair value accounting in accordance with International Financial Reporting Standards (IFRS) will, in connection with Solvency II – the more risk-appropriate EU solvency regime for insurance companies –, align regulatory capital more closely with economic capital. The latter especially is likely to rise as a result of demographic developments. For example, owing to the higher life expectancy of the population, the mortality tables drawn up in 1994 have been revised for the coming year. Furthermore, once the baby-boom generation reaches retirement age, the number of



traditional new business customers will tend to fall. In order to ensure that this changed setting poses no risks to financial stability, attention should be paid to the further development of asset and liability management and to the competitive behaviour of insurers. It will be crucial for insurers to convert the population's growing interest in non-state pension provisions into a large number of lucrative new contracts. To achieve long-term success in this field, insurers will need, firstly, to strengthen their financial base as a competitive parameter for customers and insurance agents alike and, secondly, to pay a bonus that matches the returns offered elsewhere within the industry, but also by banks

<sup>49</sup> The solvency margin expresses the ratio of an insurance company's own funds to certain insurance technical reserves, insured sums and premiums.

### Solvency of the 50 largest German life insurance companies



Source: Moody's. — 1 The solvency margin expresses the ratio of an insurance company's own funds to certain insurance technical reserves, insured sums and premiums. — 2 Including valuation reserves as a percentage.

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and mutual funds with their very different calculation basis.

#### Insurers' response

The insurance companies are attempting to tackle this dilemma by means of capital increases, ambitious cost-cutting programmes and general risk mitigation, whether by reducing their equity exposure as described above, adopting more judicious competitive behaviour or marketing unit-linked insurance

products. These measures must be resolutely continued, especially as earnings in the coming years are likely to be less strongly bolstered by investment income. Lastly, to achieve returns to scale, the much discussed but hitherto barely initiated possibility of consolidation within the industry is a conceivable option. Despite financial weaknesses and serious efforts on the part of public sector insurers to cooperate more closely, the strongly fragmented life and non-life insurance markets have made little progress towards concentration in the past five years.

The market indicators for the insurance industry on the whole suggest that the situation has stabilised. Credit default swap premiums, as a measure of the default risk in the markets' perceptions, indicate no particular risks for the two largest German insurers by international comparison. Equity prices bottomed out in late spring 2003 and have now stabilised at a low level. Nevertheless, life insurers and reinsurers have so far hardly shared in the upswing in the DAX Index. The markets' scepticism about future earnings prospects which this expresses is also reflected in the negative outlook of the rating agencies for the German – and the British – life insurance sector and reinsurance industry. However, the rating outlook for reinsurers was upgraded to "stable" in September, an improvement which is suggestive of stabilisation in this sector. Moreover, a European comparison of ratings shows that German insurers have not experienced an above-average number of rating downgrades in the past five quarters.

Market indicators confirm stabilisation



## Legal framework and financial infrastructure

### IAS accounting

Topicality of public disclosure issues

The disclosure of corporate information is currently a particularly topical issue for financial intermediaries in two respects. Firstly, Pillar 3 (market discipline) of the recently adopted new Basel Framework (Basel II) will raise transparency requirements for banks in the future. Secondly, pursuant to the relevant EU regulation,<sup>50</sup> all publicly traded companies will have to draw up and publish their consolidated financial statements according to International Accounting Standards (IAS) – new standards will in future be called International Financial Reporting Standards (IFRS) – as of 2005. A number of German credit institutions are already making use of the option available since 1998 under section 292a of the German Commercial Code (*Handelsgesetzbuch*, HGB) which lets them draw up consolidated financial statements according to internationally recognised accounting standards rather than the German Commercial Code.

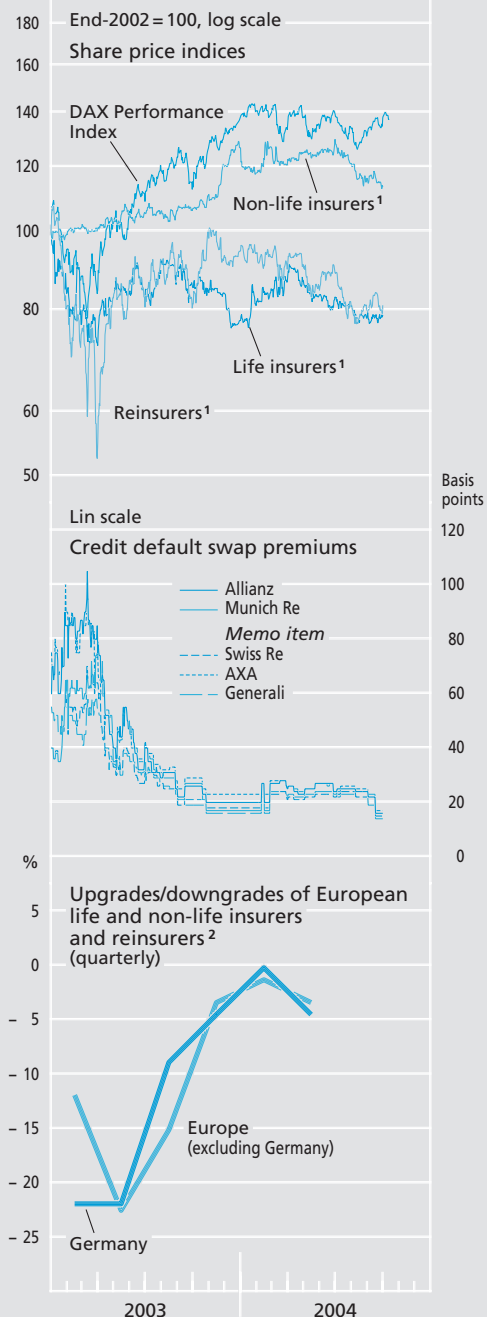
IAS concept

Whereas the defining features of traditional German accounting principles as enshrined in the Commercial Code are creditor protection and, by association, the principle of prudence, IAS is geared towards informing investors, for whom the balance sheet is primarily intended. Consequently, IAS contains

<sup>50</sup> Regulation (EC) No 1606/2002 of the European Parliament and of the Council of 19 July 2002 on the application of international accounting standards (the IAS Regulation); Official Journal of the European Communities, L 243 of 11 September 2002, p 1.

### Market indicators for the insurance sector

Daily data



<sup>1</sup> German insurance companies. Sources: Thomson Financial, Bundesbank calculations. — <sup>2</sup> Balance of upgrades and downgrades as a percentage of the number of insurance companies in each group. Sources: Moody's, Bundesbank calculations.

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more comprehensive recognition rules than the German Commercial Code. For example, all derivative instruments are to be recorded on the balance sheet for the first time. Moreover, under IAS, valuation is largely based on the concept of fair value, expressed either as actual market values or estimated present values regardless of realisation. Such a transition to less prudent accounting and valuation rules has aroused misgivings among central banks owing to its possible adverse effects on the stability of the financial markets. They fear that the abandonment of tried and tested principles such as the historical cost principle, the realisation principle and the impartiality principle could contribute to increasing the systemic risks on the financial markets, in particular, in turnaround phases.

*Fair value option*

IAS 39 (Financial Instruments: Recognition and Measurement), which is of major significance for banks, is still hotly disputed. The possibility of measuring any financial instrument at full fair value without requiring any proof of an intention to trade (fair value option) appears to be problematic. For example, in the case of instruments for which appropriate market values do not exist, the question arises as to the reliability of the valuation approach, in particular if values estimated on the basis of models are used. Initial studies have shown that banks intend to make use of the possibility of fair value measurement to varying degrees. Less uniformity in measurement practices would impair the comparability of financial statements in future. Moreover, if full fair value measurement is adopted, the balance sheet values are likely to be more volatile. This could result in greater un-

certainty on the part of market participants and a possible move towards shorter-term financial relationships. From a stability point of view, the decisive factor will ultimately be the practical application of more or less extensive fair value accounting for financial instruments. If the fair value option is appropriately limited and is applied in a risk-sensitive manner, a reduction in balance sheet volatility is also quite possible.

Furthermore, the application of IAS 39 could provoke artificial volatility owing to the inaccurate accounting of hedging activities (hedge accounting). The IAS rules primarily admit micro hedge accounting. Macro hedge accounting, however, is to be possible only to a limited extent. The non-recognition of internal contracts is likewise a problem in this connection.<sup>51</sup> Continental European banks use these as a key part of their prudentially approved risk management procedures and so they should be duly permitted in external accounting. Different internal and external accounting approaches inevitably create sources of errors and hence potential hazards in risk management.

*Hedge accounting*

Apart from the discussion about the contents of IAS 39, it is important to create a level of certainty with regard to its legal implementation. Following lengthy negotiations, it was recently agreed that IAS 39 will be only partially endorsed at a European level. The controversial rules concerning the fair value op-

*Endorsement*

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<sup>51</sup> Credit institutions use internal contracts to bundle together the risks from their various business areas in a central treasury where they can manage them cost-effectively.

tion and macro hedge accounting have been carved out for the time being. It is imperative to end this transitional situation as quickly as possible.

### IMF Financial Soundness Indicators project

*FSIs as part of macroprudential analysis*

The intensified international efforts to strengthen the stability of financial systems in recent years are reflected *inter alia* in the project on Financial Soundness Indicators<sup>52</sup> (FSIs) initiated by the International Monetary Fund (IMF). Conceived as part of a comprehensive macroprudential analytical framework, these quantitative indicators of financial stability are intended to contribute towards enhancing the transparency of financial systems and strengthening market discipline. In addition, the chances of preventing crises are to be improved with the aid of a continuous assessment of the situation and risks based on these indicators. Against this backdrop, the IMF's initiative also serves to use such indicators as part of Article IV consultations and Financial Sector Assessment Programs (FSAPs) to assess the stability of financial systems.

*Indicators for the banking system and...*

In 2001, following initial preliminary work (including a survey among member states), the Executive Board of the IMF adopted a set of FSIs deemed relevant, a revised version of which is now available. The set of indicators comprises aggregate microprudential data on the banking system, including capital adequacy, profitability, asset quality, liquidity and sensitivity to specific market risks. This reflects the pivotal role which credit institutions play in financial systems and the fact that

their financial situation and/or shock resistance is of paramount importance for systemic stability. But the FSIs also include structural measures of the state of the enterprise and household sectors as well as indicators reflecting developments in markets that are of key relevance to financial institutions (such as the capital or real estate markets). In order to allow a certain degree of flexibility, allowing for the varying availability of individual indicators, especially in less developed countries, and in order to set priorities, the list of indicators is split into two categories. It consists of a core set, whose 12 indicators are binding on the countries taking part in the project, and an encouraged set, with 27 indicators to be calculated to the extent possible and available.

In a further stage of the project, the IMF invited a larger group of countries to a trial (Coordinated Compilation Exercise) in spring 2004 to compile national FSIs. The methodological requirements for this are documented in an extensive handbook (Compilation Guide on Financial Soundness Indicators<sup>53</sup>), the final version of which was published in the middle of this year. The Bundesbank has, after consulting the Federal Ministry of Finance and the Federal Financial Supervisory Authority, promised the IMF that Germany will take part in this exercise and will act as the national coordinator. According to the IMF's plans, concrete national figures on the FSIs, which could, in the long term, be included in the Special Data Dissemination Standard

*... the relevant sectors and markets*

*Coordinated  
Compilation  
Exercise*

<sup>52</sup> Details at [www.imf.org/external/np/sta/fsi/eng/fsi.htm](http://www.imf.org/external/np/sta/fsi/eng/fsi.htm)

<sup>53</sup> Available at [www.imf.org/external/np/sta/fsi/eng/guide/index.htm](http://www.imf.org/external/np/sta/fsi/eng/guide/index.htm)

## The IMF's Financial Soundness Indicators

### Core Set

Deposit-takers

Capital adequacy

Regulatory capital to risk-weighted assets  
 Regulatory Tier I capital to risk-weighted assets  
 Nonperforming loans net of provisions to capital

Asset quality

Nonperforming loans to total gross loans  
 Sectoral distribution of loans to total loans

Earnings and profitability

Return on assets  
 Return on equity  
 Interest margin to gross income  
 Noninterest expenses to gross income

Liquidity

Liquid assets to total assets (liquid asset ratio)  
 Liquid assets to short-term liabilities

Sensitivity to market risk

Net open position in foreign exchange to capital

### Encouraged Set

Deposit-takers

Capital to assets  
 Large exposures to capital  
 Geographical distribution of loans to total loans  
 Gross asset position in financial derivatives to capital  
 Gross liability position in financial derivatives to capital  
 Trading income to total income  
 Personnel expenses to noninterest expenses  
 Spread between reference lending and deposit rates  
 Spread between highest and lowest interbank rate  
 Customer deposits to total (non-interbank) loans  
 Foreign currency-denominated loans to total loans  
 Foreign currency-denominated liabilities to total liabilities  
 Net open position in equities to capital

Other financial corporations

Assets to total financial system assets  
 Assets to GDP

Nonfinancial corporate sector

Total debt to equity  
 Return on equity  
 Earnings to interest and principal expenses  
 Net foreign exchange exposure to equity  
 Number of applications for protection from creditors

Households

Household debt to GDP  
 Household debt service and principal payments to income

Market liquidity

Average bid-ask spread in the securities market <sup>1</sup>  
 Average daily turnover ratio in the securities market

Real estate markets

Real estate prices  
 Residential real estate loans to total loans  
 Commercial real estate loans to total loans

<sup>1</sup> Or in other markets that are most relevant to bank liquidity, such as foreign exchange markets.

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(SDDS<sup>54</sup>), will be published by the IMF for the first time at the end of 2006.

*Significance of  
metadata*

The project promotes the international availability and comparability of data for assessing national financial systems, although constraints need to be taken into account. Due to differences in the conception of the banking statistics and prudential reporting system as well as divergent national legal frameworks (such as accounting rules), cross-country comparisons based purely on indicators are still not very meaningful. During the FSI project, therefore, particular importance will need to be attached to the so-called metadata that will be published with the figures, which will detail national deviations from the methodological requirements of the handbook accepted by the IMF. Furthermore, FSIs can only represent one component of a more comprehensive stability analysis. Besides monitoring additional macroeconomic data, eg on inflation and exchange rates, this also comprises qualitative analyses and stress tests to simulate shocks.

**Infrastructure of payment and securities settlement**

Secure and efficient infrastructures for settling payment transactions are an important requirement for the stability of the financial system. The ongoing development and improvement of these infrastructures has helped to reduce the risks to financial stability.

Being responsible for payment systems oversight,<sup>55</sup> the Bundesbank carried out an analy-

sis of correspondent banking this year on behalf of the European System of Central Banks (ESCB). To this end, major market participants were asked about the features of their euro payment operations as well as other payments which they clear and settle directly with other credit institutions bilaterally. The analysis applied a broad interpretation which deviated from the normal approach since not only cross-border but also domestic links were examined. The objective of the study was to analyse whether transactions are subject to risks which could impair the smooth functioning of the payment system. Risks may, for example, arise from the fact that bilaterally exchanged incoming and outgoing payments are finally settled only at the end of the day (netting). This means that if a participating correspondent bank were to become insolvent during a business day, transactions would be subject to unwinding risks, which might result in credit and liquidity risks for the recipient banks involved. However, the data collected and the in-depth discussions carried out with the German credit institutions with the highest turnover in this business showed that euro payments settled via correspondent banks currently represent no potential risk for Germany's financial stability.

*ESCB study of  
correspondent  
banking*

The service provider SWIFT (Society for Worldwide Interbank Financial Telecommunication), a cooperative based in Belgium, provides the banking industry with facilities for

*SWIFT oversight*

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54 Special Data Dissemination Standard, see <http://dsbb.imf.org>

55 Section 3, second sentence of the Bundesbank Act: "It ... shall arrange for the execution of domestic and cross-border payments and shall contribute to the stability of payment and clearing systems."

the exchange of messages. SWIFT participants – financial institutions from all continents – use these services, *inter alia*, for carrying out their payments and securities transactions. Furthermore, SWIFT actively defines and promotes global standards for the financial sector (eg message formats suitable for automated processing). The German banking industry is the third largest SWIFT user worldwide. The high availability of the SWIFT network makes an important contribution to financial stability. The RTGS<sup>plus</sup> system operated by the Bundesbank is likewise based on SWIFT standards and uses the SWIFT communication network. Based on corresponding agreements of the G10 central banks, a cooperative oversight of SWIFT has been carried out since 1998 with the National Bank of Belgium as lead overseer. It is responsible for the ongoing oversight activities and is supported by a working group made up of members from various G10 banks – including the Bundesbank – in much of the basic work. The objective of the oversight is to focus primarily on the security and availability of the SWIFT infrastructure, the resilience of SWIFT in crisis situations as well as the implications of strategic decisions (for example, the ongoing development of the SWIFT network architecture).

*Continuous  
Linked Settlement (CLS)*

The Continuous Linked Settlement (CLS) system, which has been operating since September 2002 for the global settlement of foreign exchange transactions, is designed to largely eliminate FX settlement risk. It is subject to cooperative payment system oversight under the direction of the Federal Reserve Bank of New York, in which the Bundesbank

is also involved. At present, 11 currencies can be settled via CLS. Of the 55 current settlement members of CLS,<sup>56</sup> five are German credit institutions. The new IT platform implemented at the end of May 2004 improved the transparency of the settlement process for participants and speeded up the clearing of transactions. In view of the further increase in the settlement volumes from new participants and the acceptance of additional currencies envisaged by the CLS group, the high availability of the CLS system is now of even greater importance.

The stability of the payment and settlement systems is reinforced by the Bundesbank through various preventive measures in and for the banking industry. For example, in agreement with the German banking federations represented on the Central Credit Committee (CCC) and major market players, a communication network was set up which will be used to exchange key information and to agree subsequent procedures in individual payment transactions in the event of a crisis or other serious contingency. This communication network was successfully tested for the first time in the first half of this year as part of the regular oversight activities.

*Crisis  
management*

Owing to its large volume, the monetary settlement of securities transactions is of great importance for the stability of the German financial centre. In November 2003, Clearstream Banking AG (Clearstream) successfully introduced the first stage of the new settlement model with support from the Bun-

*New settlement  
model from  
Clearstream*

*First stage ...*

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<sup>56</sup> "Settlement members" are shareholders of the CLS group and direct participants in the CLS system.

desbank. As a result, the risk of an unwinding of the transactions during overnight processing should a participant be unable to meet its monetary obligations has been eliminated. It should be pointed out, however, that this risk has never actually materialised. A possible unwinding could have negative implications for the securities processing cycles and the payment system (domino effect).

As part of the new settlement model, banks are now required to provide secure central bank money for overnight processing up front. In a further extension, it is intended to expand this procedure to daytime processing, too. This will eliminate the above-mentioned risk for all processing cycles and means that the Clearstream settlement system will be fully compliant with the recommendations made by the G10 central banks and IOSCO.<sup>57</sup>

Since the introduction of the new methodology, new issues as well as interest payments and capital repayments of the Federal Government have also been processed overnight. Thanks to the early availability of incoming payments from the Federal Government's debt service, which can, for example, be used to finance new (follow-up) issues of the Federal Government, this promotes the smooth placement of Federal Government issues and thus contributes to the stability of the financial markets.

Furthermore, following the introduction of the new settlement model and in cooperation with Clearstream and other interested Euro-system central banks, the Bundesbank developed a model which enables foreign

participants to directly connect to Clearstream overnight processing. With a guarantee from their home central bank, foreign participants are able to use the central bank liquidity available there to collateralise securities transactions in Clearstream overnight processing (so-called guarantee model). This cross-border use of central bank money outside of the opening times of the TARGET payment system supports the central liquidity management of pan-European banks and simultaneously reduces systemic risks since foreign participants can settle directly in central bank money and do not depend on the services of commercial banks. In a further enhancement of liquidity management, from November 2004 Clearstream customers can simultaneously draw on several liquidity sources for securities settlement; this will promote the willingness to provide high liquidity amounts for very early settlement in overnight processing, which is designed to be free of systemic risk. In spring 2005, a further settlement cycle will be introduced in overnight processing. This means that a considerable part of daytime settlement, which is still threatened by the above-mentioned risks, will be shifted to safe overnight processing. The associated improved interlinking with the two international central securities depositories will speed up cross-system settlement and reduce the number of non-settled transactions. At the same time this represents an important contribution to the European objectives of enhancing efficiency in cross-border settlement, avoiding operational and systemic risks and integrating European capital markets.

*... and next stage*

*Overnight processing of Bund issues*

*Guarantee model for connecting foreign participants*

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<sup>57</sup> International Organization of Securities Commissions

*European and  
international  
initiatives*

At the European level, the Bundesbank supports various initiatives aimed at enhancing the efficiency and security of cross-border securities settlement, for example through participation in a joint committee of the ESCB and the CESR<sup>58</sup> or by advising the Federal Government on initiatives from the European Commission concerning securities clearing and settlement. At an international level, it is involved, *inter alia*, in a CPSS<sup>59</sup>/IOSCO working group, which is drawing up recommendations for central counterparties (CCPs) that are to be adopted in the near future. CCPs take on a risk management and hedging function for many financial and commodities futures markets. The recommendations primarily concern risk management and should contribute to the stability of the financial markets.

#### Act improving investor protection

*Act improving  
investor protec-  
tion as part of  
a 10-point  
programme*

Stable financial markets require investor confidence in the integrity of market players, a fair and orderly functioning of the markets and the soundness of traded products. With the introduction of the 10-point programme for improving corporate governance and investor protection, which was first presented in summer 2002 and finalised in February 2003, the Federal Government was aiming to comprehensively modernise and stiffen all statutory provisions in this area. The Act improving investor protection, which was adopted by the Bundestag on 1 July 2004, is an important component of this programme. This Act – which entered into force in October – implemented the EU market abuse directive<sup>60</sup> and introduced a disclosure obliga-

tion for investment vehicles in the so-called “grey capital market”.

The Act improving investor protection has noticeably tightened the prohibition on insider dealing as defined in the Securities Trading Act and significantly increased the ad hoc disclosure and reporting requirements of so-called directors’ dealings. The currently used term “insider *fact*” has been replaced by the much broader concept of “insider *information*”, which will also apply in the future to obligations for ad hoc disclosures. Insider information encompasses concrete information about not-yet publicised circumstances or events which, on being made public, are liable to considerably influence the price of the corresponding securities. Circumstances or events also expressly apply to those for which it can be assumed with a sufficient likelihood that they will occur in the future. An additional innovation is that issuers are obliged to maintain a list of insiders.

*Changes con-  
cerning ban  
on insider  
dealing ...*

The circle of people who, pursuant to section 15a of the Securities Trading Act, are required to report “directors’ dealings” in shares will be enlarged in the future. Previous exemptions cease to apply. In addition, the current *de minimis* exemption for the reporting requirement of €25,000 within 30 days per reporting entity will be reduced to €5,000 per year.

*... directors’  
dealings ...*

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<sup>58</sup> Committee of European Securities Regulators

<sup>59</sup> Committee on Payment and Settlement Systems

<sup>60</sup> Directive 2003/6/EC on insider dealing and market manipulation.



... *ban on price manipulation* ...

The prohibition of market and other price manipulation also defined in the Securities Trading Act has likewise been made more concrete and stricter. The rights and powers of the Federal Financial Supervisory Authority to investigate insider dealing and market manipulation have been extended.

... *and in the Securities Prospectus Act*

The Act improving investor protection has also brought about considerable amendments to the Securities Prospectus Act, which is designed to protect private customers from purchasing dubious capital market products by enforcing appropriate prospectus requirements on the seller. This prospectus obligation, which has previously only applied to securities, will be extended from 1 July 2005<sup>61</sup> to certain products on the so-called "grey capital market" with a share value of up to €200,000<sup>62</sup> as part of the Act improving investor protection. The new regulation also af-

fects corporate equity holdings (such as shares in private limited companies, shares in cooperatives) and closed-end mutual funds (such as real estate funds, ship funds, wind energy funds etc). The Federal Financial Supervisory Authority (BaFin) is obliged by this law to check the prospectuses which have been submitted within 20 days for formal accuracy. Investors' liability claims on the seller have also been improved; in future they will include an obligation on issuers to provide compensation not only if prospectuses are erroneous but also if they have failed to submit a disclosure at all.

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<sup>61</sup> This long lead time should prevent the need for prospectuses to be issued retrospectively for current sales. The other provisions of the Act improving investor protection enter into force on the day of the promulgation of the Act.

<sup>62</sup> In this way, considerably more sellers will be affected by the prospectus obligation than with the originally envisaged threshold of only €50,000 – which was considered by consumer protection experts to be too low.

## Annex

### Indicators of international investors' risk aversion

*Risk and risk propensity*

The extent to which fluctuations in the prices of securities are triggered by changes in the risk situation or in risk premiums is often a decisive factor for the stability of the financial system. The marked decline in yield premiums on corporate bonds in 2003 can be cited as an example. This could be attributable to a decrease in the probability of default or an increase in the expected rate of redemption as well as to an increase in market participants' risk propensity. In the former case,

the decline in the yield premium is a sign that the situation in the financial markets is easing in response to real economic fundamentals; in the latter case, it might be an indication of speculative exaggerations which later lead to painful adjustments.

As the degree of risk aversion, which fluctuates over time, cannot be observed directly in the market, various indicators are used to try to approximate it. A distinction can be made between simple indicators and more complex indicators which are derived with the aid of statistical methods.

*Indicators of risk appetite*

*Simple indicators ...*

The information value of simple indicators is generally based on the subjectively perceived "safety" of certain assets. The underlying hypothesis is that during periods of uncertainty investors shift resources to "safe havens" such as gold. An increase in risk aversion would consequently be reflected in rising gold prices. However, the problem is that simple indicators are affected by a number of other factors that are unrelated to risk aversion and therefore present only unreliable measures of risk appetite among market players.

*... derived from surveys ...*

Another simple method is to ask fund managers about their risk preferences. For instance, a US investment bank conducts a global fund manager survey each month among more than 200 institutional investors and records the degree of risk that they factor into their investment strategy. It has to be noted that the level of perceived risk frequently rises over the investment time frame. In addition, the frequency of indicators based on surveys differs is lower than that of indicators derived from market prices.

*... and from bond market prices, ...*

More broadly defined indicators of "risk appetite" can be gleaned from the bond markets. A widely used measure is the yield spread between safe government bonds and risky corporate bonds with a given rating. However, a change in yield spread does not necessarily mean a change in investors' risk aversion, as the probability of default of the rating category in question does not remain constant over time.

*... in the equity market, ...*

The equity risk premium also fluctuates in line with investors' risk appetites. Investors require this premium as a mark-up on the yield on safe investment alternatives in return for investing in the equity markets because of the associated risks. Using the Gordon equity valuation model it can be estimated

as the sum of dividend yield (dividend-price ratio) and expected dividend growth less the yield on a risk-free bond.

Finally, information implicit in option prices can be used to gauge risk appetite. In particular, implied volatility<sup>63</sup> on options and its deviation from historical data may provide an indication of how much investors are prepared to pay for hedging against the risk of adverse market movements. For instance, the Chicago Board of Exchange markets its VIX index as an "investor fear gauge". Nonetheless, an expected change in the volatility pattern does not necessarily mean that there has been a parallel change in risk appetite. High implied volatility could reflect actual risks rather than risk propensity.<sup>64</sup> Overall, however, the indicator's high sensitivity to the daily flow of data seems to render it eminently suitable to detect turnarounds in attitudes to risk.

In addition to these "simple" indicators, a range of more complex indicators have been developed recently. For instance, Kumar and Persaud construct a risk appetite index that is based on a number of different foreign exchange markets.<sup>65</sup> Another example of a complex indicator is the State Street Investor Confidence Index, which is based on the portfolio shifts of a large number of institutional investors and focuses on the changes in the regional composition of the portfolios.

*... and in the derivatives market*

*More complex indicators*

<sup>63</sup> The variance of future price adjustments assumed by investors. For further details, see Deutsche Bundesbank, The information content of derivatives for monetary policy, *Monthly Report*, November 1995, pp 17-32.

<sup>64</sup> Furthermore, experience has shown that during crisis periods expected future volatility is estimated as being particularly high, which could distort the assessment of risk propensity.

<sup>65</sup> See M Kumar and A Persaud (2001), *Pure Contagion and Investors' Shifting Risk Appetite: Analytical Issues and Empirical Evidence*, IMF Working Paper 01/134.

In addition, new methods of interpreting the information inherent in option prices have been developed.<sup>66</sup> In particular, preference-weighted probability density functions can be derived from options contracts and compared with the statistical (or risk-neutral) density function.<sup>67</sup> Empirical analyses of option prices show the tendency of investors to attribute a particularly high probability to very negative events. The extent of the deviation from the "statistical" probability thus gives valuable indications of the varying degrees of risk aversion over time. The quality of such indicators stands and falls with the statistical model's ability to explain future price trends.

*Principal component analysis of risk aversion*

A further possibility is to use a principal component analysis to form a composite indicator by aggregating several separate indicators of risk propensity. Principal component analysis is a statistical method that extracts a common time-variable determinant from several correlated variables. The advantage of this approach is that – in an ideal case – it can separate the impact of risk appetite, which is apparent in all observed markets or variables, from the numerous other autonomous determinants that relate only to the individual market or the individual variable. It thus comes far closer to capturing "global" risk appetite than other indicators. Principal component analysis has so far been used, for example, by McGuire and Schrijvers in their study of variations that are common to interest rate spreads in several emerging market economies.<sup>68</sup>

Baker and Wurgler also use a principal component analysis to create a composite indicator of risk appetite.<sup>69</sup> In contrast to McGuire and Schrijvers, they extract the common factor from six categories of data that they expect to evolve in tune with investor sentiment: the difference between the book

value of closed-end stock fund shares and their market prices, the share turnover on the New York Stock Exchange (NYSE), the first-day return on IPOs, the share of equity issues in total securities issuance and the dividend premium, ie the difference in the market-to-book ratios between stocks that pay dividends and those that do not. Another analysis, by Sløk and Kennedy, identifies a common factor from time series of yield spreads on corporate and emerging market bonds and from equity risk premiums for both the United States and Europe.<sup>70</sup>

In the following a principal component analysis is used to attempt to extract a time series for risk aversion as the common factor of various financial variables. The underlying sample was derived from time series on the yield spread of investment grade and high-yield corporate bonds and emerging market bonds over Treasuries as well as from estimated data on equity premiums in the United States between 1994 and 2004. A shorter sample starting from July 1998 also includes corresponding data for Europe. Other potential explanatory variables for risk appetite, such as the gold price and the VIX volatility index, were added to the core dataset but they provide little, if any, additional information on the profile of the resultant common component.

*Risk aversion as a common factor...*

*... in yield premiums, ...*

*... equity premium, the gold price and the volatility index*

<sup>66</sup> See N Trashesv, D Tastsaronis and K Karampatos (2003), Investors' attitude towards risk: what can we learn from options, *BIS Quarterly Review*, June 2003.

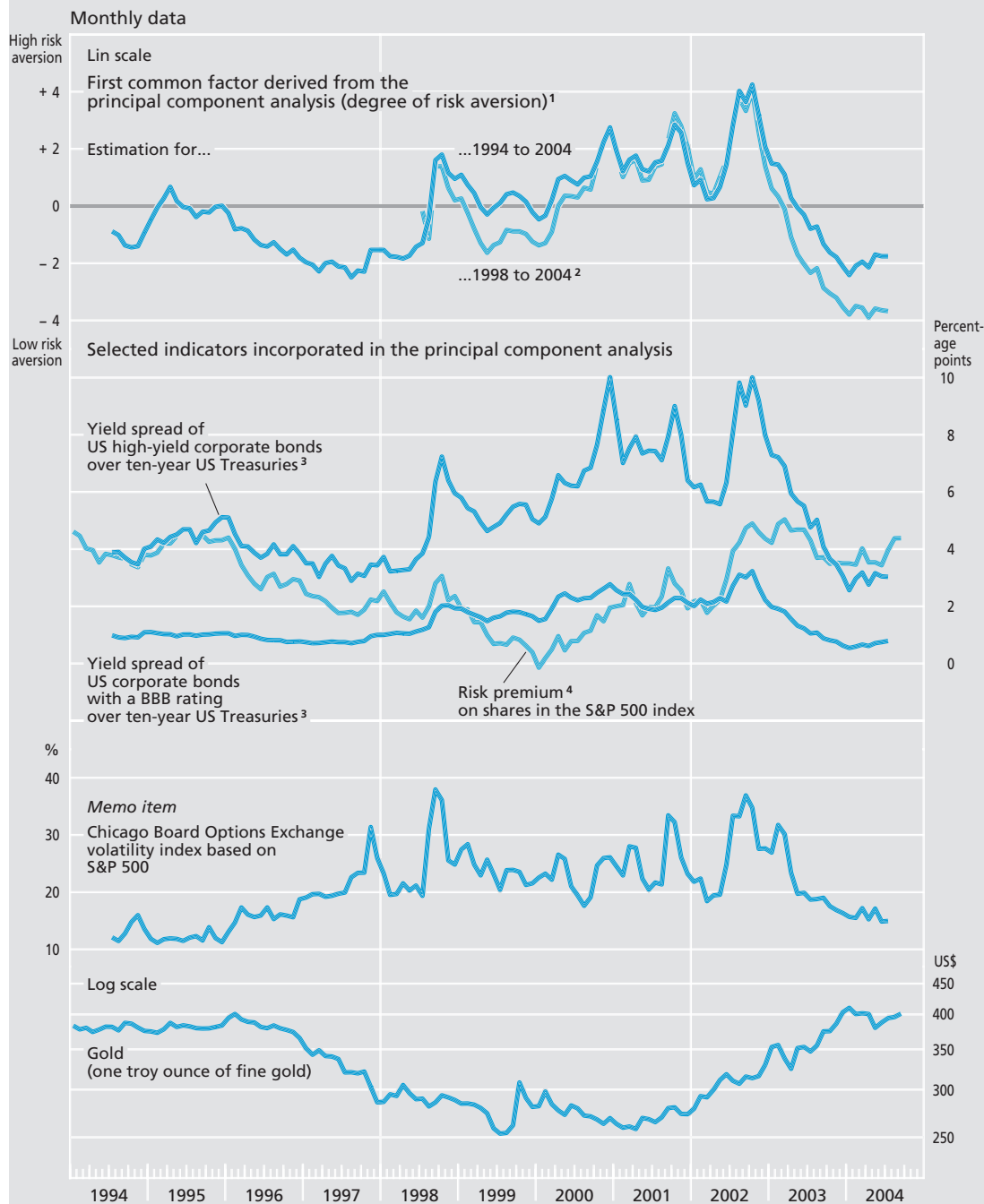
<sup>67</sup> See Deutsche Bundesbank, Instruments used to analyse market expectations: risk-neutral density functions, *Monthly Report*, October 2001, pp 31-47.

<sup>68</sup> See P McGuire and M Schrijvers (2003), Common factors in emerging market spreads, *BIS Quarterly Review*, December 2003.

<sup>69</sup> See M Baker and J Wurgler (2004), *Investor Sentiment and the Cross-Section of Stock Returns*, NBER Working Paper 10449.

<sup>70</sup> See T Sløk and M Kennedy (2004), *Factors driving risk premia*, OECD Economics Department, Working Paper No 385.

## Estimation of risk aversion using principal component analysis



**1** Monthly averages of the estimations using daily data. Positive (negative) figures indicate excessively high (low) risk aversion. As additional indicators that are not shown in the chart, the principal component analysis also took account of yield spreads of Asian and Latin American government bonds over US Treasuries. — **2** In this estimation, the following indicators were taken into account in addition to those in this chart and indicated in footnote 1: yield spreads of seven to ten-year European corporate bonds with a BBB rating over government bonds, yield spreads on similar bonds with a lower rating over government bonds and risk premiums on DAX values, measured as a quotient of expected year-on-year earnings and the DAX price index less the real interest level. — **3** Source: Lehman Brothers. — **4** Measured as a quotient of expected year-on-year earnings (Source: I/B/E/S) and the S&P 500 share index less the real interest level in the USA.

*High  
explanatory  
power of first  
principal  
component*

Roughly half the overall variance can be traced back to the first principal component. However, its ability to explain the equity risk premium is relatively limited. This is likely to be due primarily to the marked divergence in price developments in the equity and bond markets since early 2002. It therefore presents merely an approximation of stock market participants' risk aversion and should hence be considered only in connection with other variables.

Anecdotal evidence of general investor sentiment gleaned from individual events in recent years seems to depict the data series of the common factor far better than individual indicators such as the price of gold (see chart on page 72).

*Development  
of risk aversion*

In 1994-95 – which coincides with the currency crisis in Mexico – the common factor shows a distinct increase in risk aversion. A period of relative investor confidence from 1996 to 1997 ended in the emerging market crises in 1997 and 1998, with the Russian crisis and the subsequent collapse of the LTCM hedge fund in the summer of 1998 probably having the strongest negative impact on

investor confidence. From 1999 to 2000 it recovered slightly at first but then followed a period which was characterised by a general aversion to risk; extreme caution could be observed among investors at times. Three periods of marked risk aversion can be clearly identified. The first phase of high risk aversion occurred in October/November 2000 and was linked to fears of an equity meltdown, especially in the technology sector. A second spike occurred in the month following the September 2001 terrorist attacks. Investor anxiety reached its climax in the second half of 2002 in the wake of corporate scandals in the United States (most notably the Worldcom and Tyco scandals). Risk aversion remained strong in the run-up to the Iraq war in early 2003 but the indicator then reversed sharply as the year progressed, as evidenced by the sharp compression of yield spreads between riskier bonds and Treasuries. As for 2004, the indicator points to a relatively relaxed attitude to risk on the part of investors, buoyed by the current positive expectations for the global economy. The extremely small yield premiums that are currently observable in the corporate bond market are also likely to be related to investors' high risk appetite.