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Committee of European Insurance and Occupational Pensions Supervisors

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Report on Financial Conditions and Financial Stability in the (Re)Insurance and Occupational Pension Fund Sectors 2004-2005

Risk Outlook

- NOTICE -

CEIOPS prepares a Financial Stability Report on the European insurance and occupational pension fund sector on a semi-annual basis. The autumn report is primarily based on supervisory information, whereas the spring report is primarily based on market information. The current version is the public version of the autumn report and only contains public information. Although some detailed information has been left out from this public version, it does not change the overall assessment on the European insurance sector.

Introduction

This publication of CEIOPS summarizes the main findings of the analysis of the EU/EEA stability of the insurance sector conducted by CEIOPS' Financial Stability Committee (FSC). The FSC consists of representatives of insurance and pensions supervisory authorities of EU/EEA countries. Its stability analysis provides a review of the resilience of the EU/EEA insurance sector and the potential threats to its stability.

This analysis is based on:

- a wide range of indicators on the insurance sector drawn from national supervisory data sources for 2003 and 2004, which are summarized in the statistical annex (SA);
- qualitative information from the insurance supervisors pertaining to the insurance sector situation in the respective countries; and
- market information.

CEIOPS FSC is currently developing a statistical framework for pension fund statistics, which will enable the FSC to conduct a more profound analysis of the pension sector in the near future. The recently promulgated European Pension Directive, which will focus on all pension products offered by pension funds as well as by life insurers, will facilitate this activity.

The current report addresses the following issues:

1. Main issues and conclusions

Most member states reported a steady or continued growth for their insurance markets in 2004 and the first half of 2005 compared to 2003. In the life sector, this was largely due to a strong growth in unit-linked production in some countries, which might be explained by the unattractiveness of interest-guaranteed products for consumers given the current low yield environment. Drivers behind the improvement in the non-life sector in most countries were strong premium rates for most lines of business, low losses related to natural disasters, except in some countries, a gradual recovery in equity markets, and the tendency in some countries to keep more premiums on the own account of non-life insurers. The favourable profitability situation of the non-life sector has in a number of countries attracted new entrants and also resulted in price strategies aimed at attracting new consumers. This may lead to a softening of insurance premium rates in the coming period, though varying from country to country. Severe floods and storms in Central and Eastern Europe during the summer season in 2005 however have resulted in high claims for a number of European non-life (re)insurers.

Overall, the EU insurance sector seems adequately capitalised, with no severe cases of insolvencies. The weighted average solvency ratio has improved in the life as well as in the non-life sector. European insurance companies seem able to fulfil their obligations (assuming prudent valuation of liabilities) and also indicators that take the dispersion of solvency ratios on the various national markets into account suggest that the insurance sector in most countries look healthy. Recovery in the equity markets in 2004 has helped life insurers to improve their financial position. Nevertheless, the volatility in equity prices and regulatory measures in various countries have led insurers in many countries to shift to fixed income investments. The on average positive development in the life and non-life sector has resulted in an increased overall profitability. Measured by the return on equity, profitability positions in general look healthy.

Member states reported a wide range of challenges and vulnerabilities with regards to their insurance sectors. The largest concern appears to be the current low yield environment: in countries where life insurance companies have guaranteed returns, low interest rates reduce the margin between investment returns and the guaranteed rates. The persistent low yield has already prompted several risk mitigation actions in a number of countries, like the reduction of the maximum guaranteed interest rate, the lowering of guaranteed rates for new

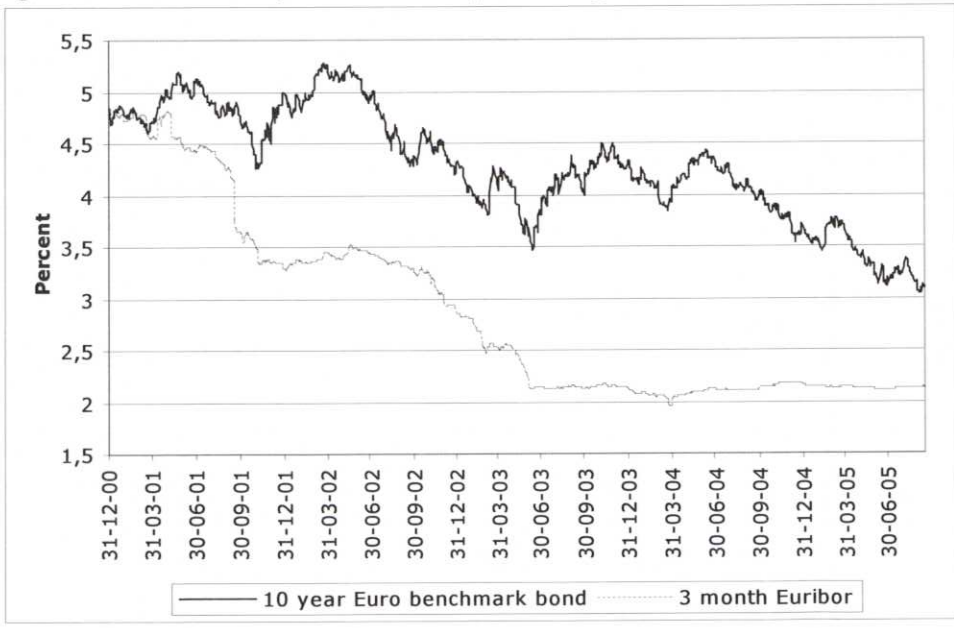
traditional saving products, to even zero % in exceptional cases, and the extension of the portfolio maturities by purchasing ultra long term government bonds. On the other hand, a moderate upward shift in interest rates would have exactly the opposite effect: the return on new investments in fixed income securities increases, improving profitability prospects. The resulting reduction in the value of technical provisions will, given the existing asset-liability maturity mismatch, exceed the reduction of the value of bonds and similar interest related securities, hence improving the solvency position.

Changes in accounting and regulatory framework, of which IAS and Solvency II were specifically mentioned, also present some challenges to the insurance sector, as well as specific taxation and pension changes that affect life insurance products. Finally, risks related to equity markets and their importance on life insurers, risks related to premium competition in the non-life sector, and risks related to reinsurance as well as longevity risks were reported.

2. General development on financial markets

In 2005, financial markets continued the trends that had started in 2002 and 2003. Short-term interest rates in the Euro area have been declining since 2002 as a consequence of the rate cuts by the European Central Bank (see figure 1). During the first nine months of 2005, the interest rate at the short end of the money market has been relatively stable, with the three-month Euribor at 2.13% at the beginning of September. The latest consensus forecasts (survey date August 8, 2005) indicate a slow increase in the 3-month Euribor to 2.5% by the end of August 2006. Long-term government bond yields in the euro area continued to decrease, declining from 3.7% at the end of March to 3.1% in mid-September. Many analysts expect only a slow increase in interest rates to 3.8% by the end of August 2006. Real interest rate expectations based on long-term inflation forecasts for the Euro area decreased to a historically low level of

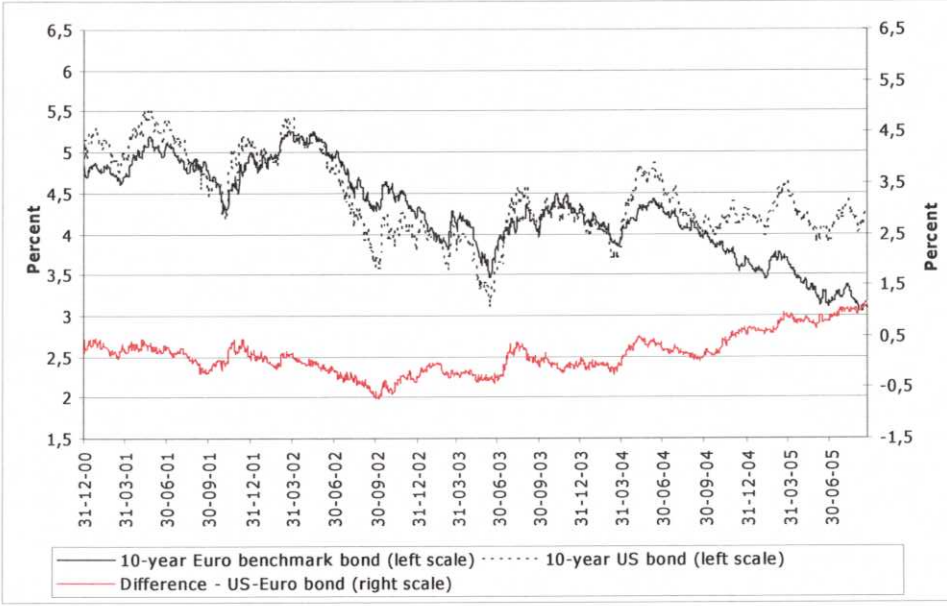
Figure 1. The development of European long- and short-term interest rates



Source: Bloomberg

1.25%. The average inflation for the Euro zone is forecast at 2.0% for 2005 and 1.7% for 2006. Future inflationary developments will depend on possible second-round effects, in particular on whether the perception of a permanent oil price increase has been built into the expectations of households. The gap between U.S. and European long-term yields has been increasing since the third quarter in 2004 to over 1% by mid September 2005 (see figure 2). This is mainly due to the decline in European yields whilst U.S. long-term bond yields have shown a more mixed albeit overall less strong decline.

Figure 2. Long-term yield in Europe and the U.S.



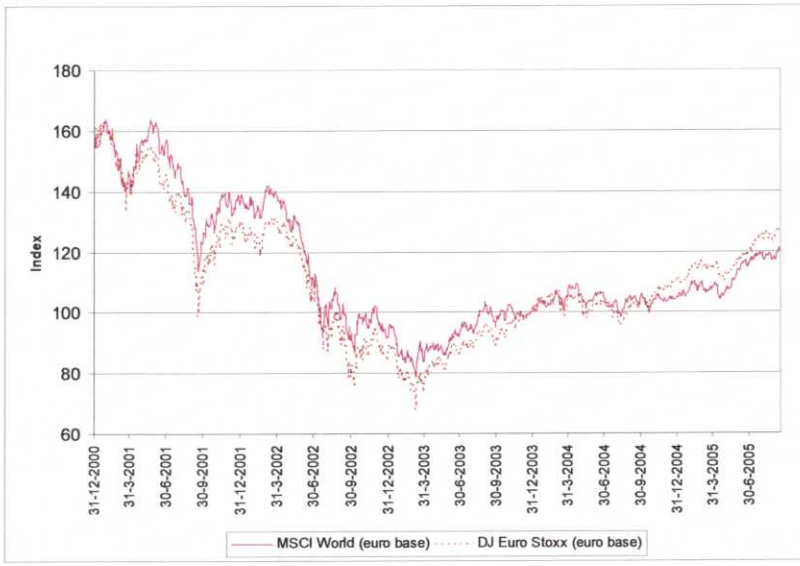
Source: Bloomberg

Some observers indicate that the relatively low yields on long-term global bonds have structural reasons, which might persist for quite some time ahead (next 6-12 months or longer). There exist different (partially competing) explanations for the persisting low yield environment:
(1) high saving rate of non-financial companies due to diminished need to finance investment activities and reduction in corporate debt. This combination of rising global savings and declines in corporate investment has sometimes been called a "global savings glut" (e.g., Bernanke (2005))[1];
(2) purchases of USD bonds by foreign central banks, particularly in Asia, to avoid exchange rate adjustments and thus a „hard landing" of the economy;
(3) high demand of pension funds and insurance companies for long term bonds to reduce asset-liability-mismatches – partly due to regulatory changes. Both a continued period of low long term interest rates and an abrupt increase due to a sudden correction of global imbalances would put pressure on life insurers and pension funds (see also chapter 6, Current challenges and vulnerabilities).

After three consecutive years of decline, both European and global equity markets recovered since the beginning of the second quarter of 2003 (see figure 3). Even though during the first six months of 2005 equity markets showed mixed signals, until September 15, the MSCI world index had increased

[1] Ben S. Bernanke (2005), "The Global Saving Glut and the US Current Account Deficit", BIS Review 16/2005, Bank for International Settlements.

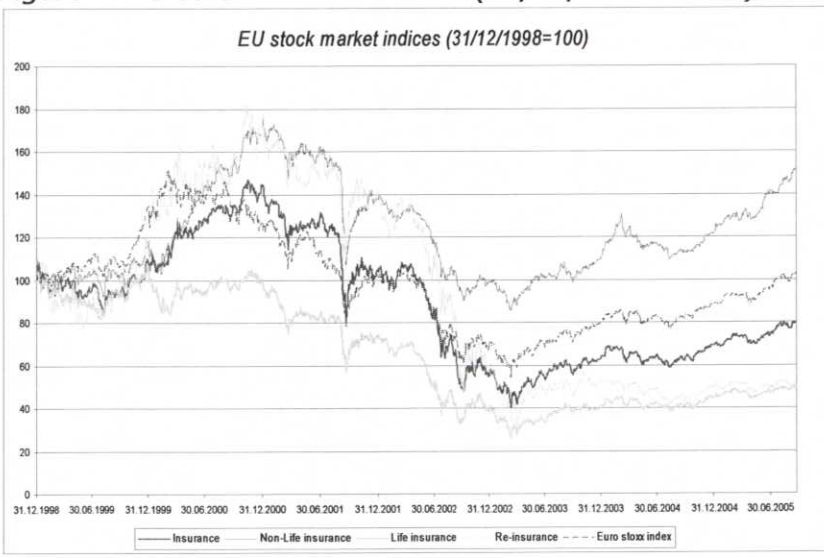
Figure 3. The development of European and world equity indices, rebased start 2004



Source: Datastream

by 15.5% and the European index by 14.7%. This development is particularly due to the strong performance in the third quarter 2005. Between the start of July and September 15, the European index had risen by about 5.6% whilst the world index had increased by 4.7%. The performance has improved compared to the increase in 2004 (World index: +4.7%; European index: +10,2%), equity markets have clearly indicated to have solid grounding and an ability to cope with recent obstacles such as large costs due to hurricane Katrina and high and increasing oil prices.

Figure 4. EU stock market indices (31/12/1998 = 100)

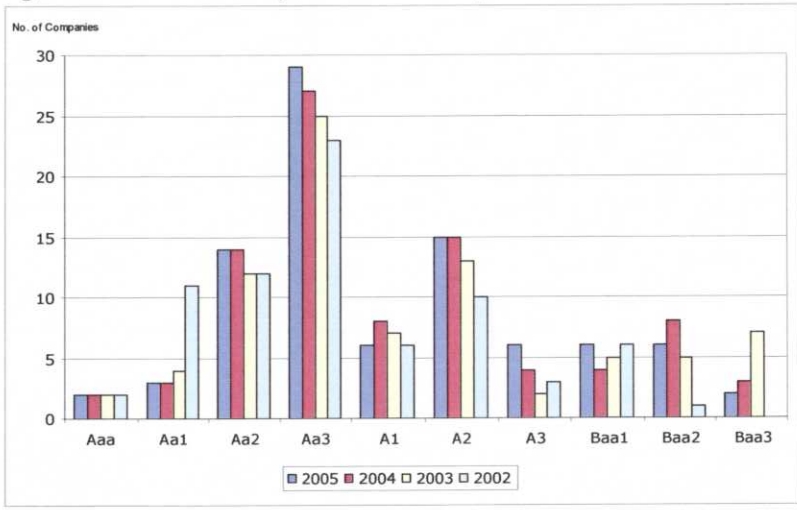


Source: Datastream

So far in 2005, the non-life insurance sector outperformed the wider European benchmark, rising by 22.8% year-to-date compared to a 17% increase in

European equities overall (see figure 4). The EU life sector has been lagging the overall market, rising by only 9.4%, although strong returns have been seen in some countries. In the reinsurance sector, the performance varied depending on the national market involved. The EU life insurers have performed worse than the life insurers in the U.S. and Japan, whilst the EU non-life insurers have also performed poorly in comparison to Japan, but better than the U.S.

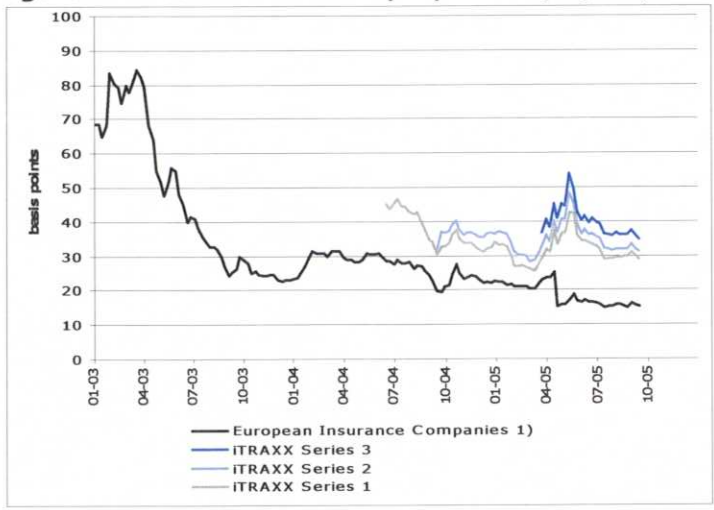
Figure 5. The development of European insurance financial strength ratings



Source: Moody's Investors Service (all European insurers rated by Moody's as of 21-09-05; 2005: current rating; other years: year end)

This information is broadly confirmed by market risk indicators such as ratings or credit default swap spreads (CDS spreads). During 2005, ratings on insurers in Europe showed some movement with a number of upgrades and only a few downgrades. Outlooks mostly continued to shift towards stable and positive ratings, whereas some companies covered continued with a negative outlook.

Figure 6. Credit Default Swap Spreads (5-year, Euro, senior)



Source: Bloomberg, own calculations

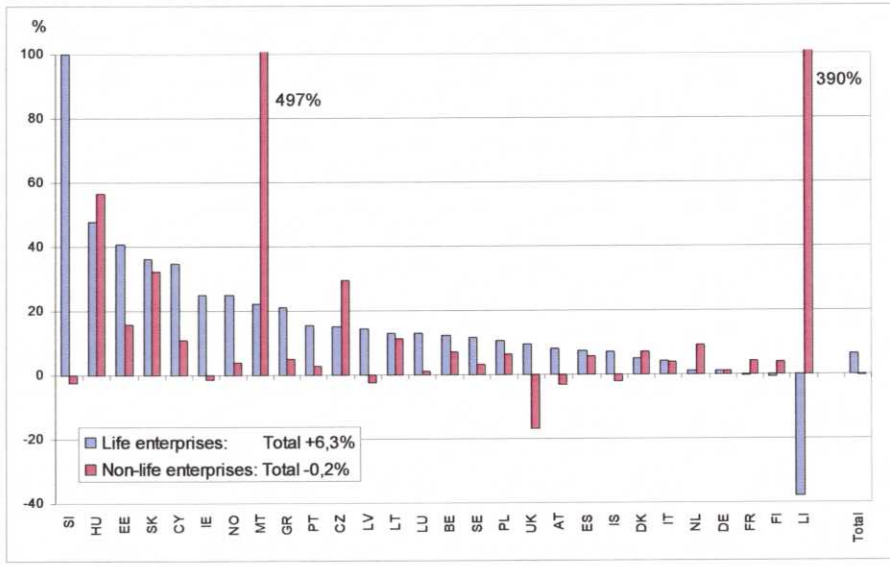
1) Simple average of CDS spreads of nine most liquid European insurance Companies. iTRAXX Europe is a tradable index of the 125 most liquid CDS spreads of European companies, which are equally weighted in the index. The iTRAXX series is reissued every 6 months and numbered consecutively. Series 1 started June 18, 2004.

Compared to 2003, where many companies were downgraded, external ratings improved (see figure 5). CDS spreads of European insurance companies continued to decline again in mid April 2005 from 25 to about 15 basis points above Euribor in mid September (see figure 6). The widening of spreads in March-April 2005 was due to an overall increase in market risk perception following downgrades of large corporate debtors (primarily General Motors and Ford) as well as the investigation into the financials of the world's largest insurance company AIG. In general, compared to the previously very high rates in 2003, market participants' risk assessment has decreased to a very low level in 2005. The market risk of the European insurance sector seems also very low compared to the European benchmark (iTRAXX), which ranged around 30 to 35 basis points in the third quarter 2005 (see figure 6).

3. Development in premiums and claims

Member states reported in general a steady or continued growth for their insurance markets in 2004 and the first half of 2005 compared to 2003 (see also SA table 2).

Figure 7. Gross premiums written
Growth in % between 2004 and 2003

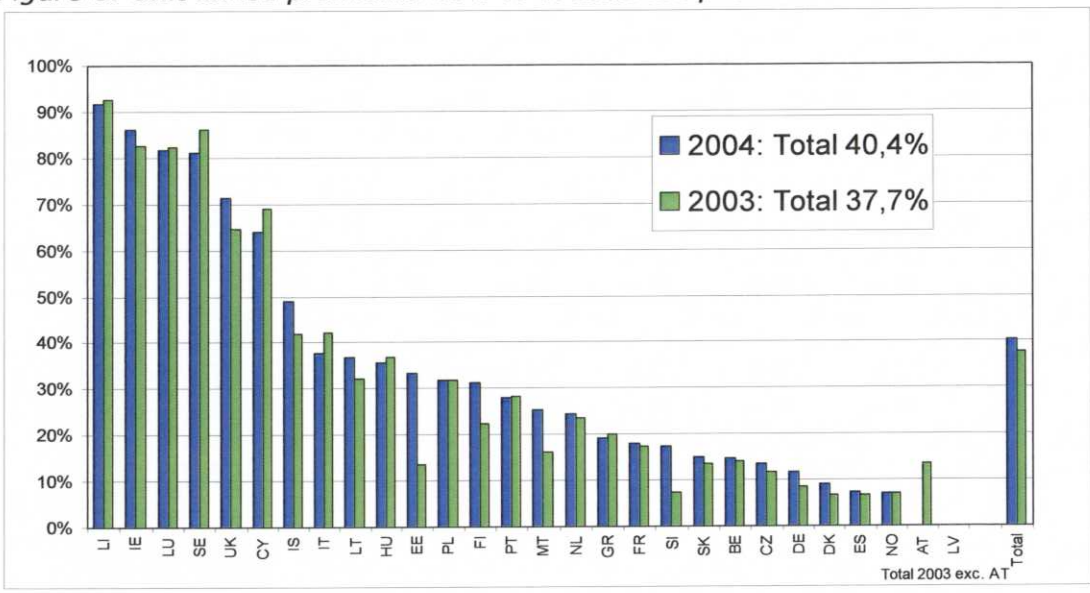


Source: CEIOPS-FSC

Life sector

In general, member states reported a steady or continued growth of premium income in the life sector in 2004 and the first half of 2005, although a few countries reported a rather weak or even negative growth compared to 2003 (see figure 7). In a number of countries, growth of business is largely concentrated in unit- or index-linked products (see figure 8), which for many insurance companies are the only way to attract new consumers, given the unattractiveness of guaranteed products for consumer in the low yield environment. This significant growth of unit- or index-linked premium income also reflects the life companies' common trend to move from traditional lines to less risky unit-linked products. The share of unit-linked premiums in total life premiums in the EU/EEA increased from 37.7% in 2003 to 40.4% in 2004 (see figure 8). However, the bulk of the premiums in most EU/EEA countries are still

Figure 8. Unit linked premiums as a % of total life premiums



Source: CEIOPS-FSC

generated from guaranteed return contracts (see SA table 4). The difficulty of servicing guaranteed return contracts in a low interest rate environment has further encouraged companies to offer guaranteed rates more in line with market rates (see also chapter 6). In one country, it is already noticeable that new life contracts in general apply lower guaranteed rates and reduced profit payouts.

In the new members states, the insurance business continued to grow very rapidly, recording peak growth levels since the beginning of this century in one country, as these markets emerge from a long period of relative under-insurance. However, first signs of saturation in some markets have become visible in some of the new members states countries.

In several markets, tax and pension reforms that affect life insurance products are under way. The partial omission of tax relief for new contracts concluded from January 1st 2005 onwards in Germany resulted in an increase of life insurance business in the second half of 2004. In France, the government introduced new pension plans in April 2004, which allow individuals to make tax-free contributions (up to a defined limit). The UK is simplifying its pension tax legislation from April 2006.

Non-life sector

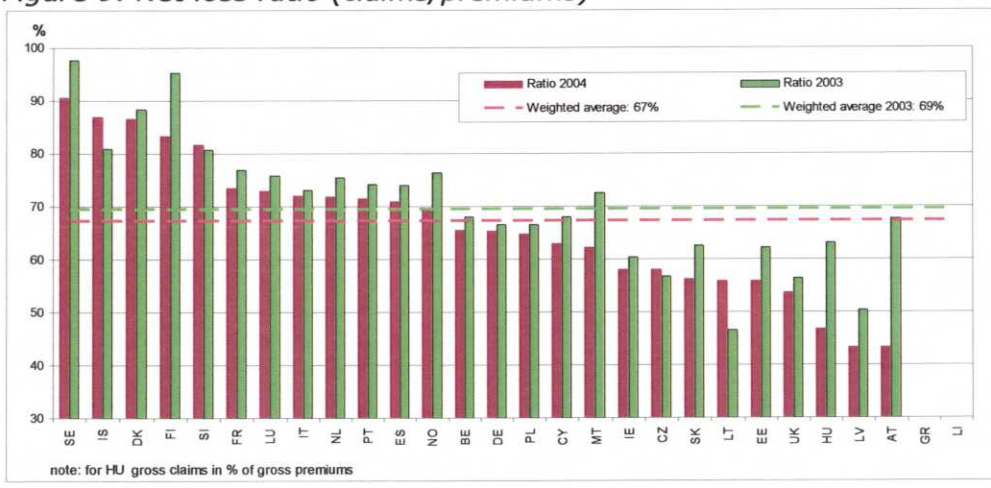
Premium income growth figures for the non-life sector for 2004 are in most member states positive, showing however disparate figures depending on the national market considered and resulting in a slight decrease of overall premium income in the EU/EEA (see figure 7). The developments in most countries resulted in improved average net combined and net loss ratios[2] in the EU/EEA in

[2] The combined ratio is the ratio of claims and costs to premiums; the loss ratio is the ratio of claims to premiums. The EU/EEA average is retrieved using net premiums written as weights.

2004 (see figure 9 and SA table 3.2). The improvement applies to most lines of business, with aggregated net loss ratios in 2004 ranging from 38% in credit and surety ship insurance to 78% in motor liability insurance (see SA table 3.2). Drivers behind the improvement were strong premium rates for most lines of business (esp. motor insurance and fire insurance), low losses related to natural disasters in most countries and a gradual recovery in equity markets. Moreover, in some countries insurers have reinsured fewer risks and have kept more premiums on their own account, which, given a favourable development of claims, have resulted in a better performance. However, keeping more risks on own account also increases insurers' risk profile, which could impair results in years with many and high claims. Finally, the storms and floods in Central and Eastern Europe during the summer of 2005 resulted in high claims for a number of European non-life insurers.

The favourable profitability situation of the non-life sector in a number of countries has attracted new entrants and also resulted in price strategies aimed at attracting new consumers and expanding the market share. This may lead to a softening of insurance premium rates in the coming year and eventually to lower premium income. A few countries already recorded falling premium levels due to fiercer competition between companies after some years of rising premium levels. There is also a risk that competition is driving the premium levels below a risk reflecting level. Some countries also reported that a cyclical downturn in

Figure 9. Net loss ratio (claims/premiums)



Source: CEIOPS-FSC

premium income in the non-life sector has already occurred (see also box 1: Cycles in non-life insurance and the present softening of markets). Hurricanes Katrina and Rita in the U.S. appear not to have had a severe direct impact on the European primary insurers although the European reinsurers are likely to be significantly impacted (see box 2: Impact of U.S. hurricanes on European reinsurers).

Box 1: Cycles in non-life insurance and the present softening of markets

It is a common opinion among practitioners and market observers that changes in premiums of non-life insurance business occur in regular cycles. Studies based on U.S. data prior to the mid 1980's suggest indeed that loss ratios and reported underwriting margins may exhibit cycles[3]. Similar results have been found for some business lines in some European countries with different turning points and cycle lengths[4]. However, the results (both for European countries and the U.S.) are less clear for the more recent period. They also need to be interpreted with caution[5]. Nevertheless, evidence about cycles is robust in some product lines (e.g. motor liability insurance and reinsurance)[6].

The issue of the existence and the explanation of cycles is important to the industry and regulators alike because price fluctuations may not only be large but indeed excessive with respect to fundamentals – including risk considerations. As a result, insurance companies could become unduly exposed to insolvency risk.

One of the main explanations for cyclical movement in the insurance business focuses on capacity constraints and external shocks[7]. Insurers hold equity capital in order to ensure that insurance contracts can be honoured and are credible given limited liability. After an event shock, the level of capital needs to be adjusted. As taxes and informational asymmetries render capital markets imperfect, insurers prefer to rely on retained earnings instead of costlier outside finance. This leads to a degree of persistence of underwriting profits in hard markets after unexpected shocks. Similarly, in soft markets, restored surpluses allow for some persistence of low premiums. In addition, there may also be a cost of paying out capital which induces insurers to hold excess capital, and prices to be low when this is relatively less costly.

The general weakening of premium rates since 2003 that firms have experienced after the strong premiums since the September 11 terrorist attacks are widely thought to reflect such a tightening and loosening of capital constraints. Supervisors in a number of member states are concerned with firms' underwriting controls in this softening market: it is imperative that pricing still reflects the risks underwritten and that reserving remains prudent. This is particularly important as there may be a disconnection between senior management rhetoric and actual underwriting behaviour, and as investment income might not compensate for underwriting losses as much as in the past. Thus, it is critical to monitor the prudence of firms' underwriting controls and reserving.

Soft market conditions can create financial pressures for individual companies. Firms that cut prices (or policy terms) too aggressively can quickly run up losses if their revenues no longer adequately cover underwriting risks. Conversely, firms that do not cut prices risk losing market share and revenues. In both cases financial pressures can quickly build. Worryingly, there are two reasons to believe that a return to soft market

[3] More precisely, they show the existence of a second order autoregression effect.

[4] Cummins, D. And F. Outreville (1987): "An International Analysis of Underwriting Cycles in Property-Liability Insurance", *Journal of Risk and Insurance*, 54, 246-262; Lamm-Tennant, J. and M. Weiss (1997): "International Insurance Cycles: Rational Expectations/Institutional Intervention", *Journal of Risk and Insurance*, 64, 415-439.

[5] For example, the definition of business lines may not be constant over time, the data may be obtained from sources without compulsory reporting, the number of (annual) observations may be too small to draw firm conclusions, the process generating underwriting profits may not be stable over longer periods of time, or the results about regular cycles could be spurious or reflect data snooping.

[6] See e.g. Fenn, P. And D. Vencappa (2005): "Cycles in Insurance Underwriting Profits: Dynamic Panel Data Results", University of Nottingham.

[7] For a survey see S. Harrington and G. Niehaus (2000), "Volatility and Underwriting Cycles", in Dionne, G. (Ed.), *Handbook of Insurance*, Boston, Dordrecht, London; the capital constraint model is due to R. Winter (1988): "The Liability crisis and the Dynamics of Competitive Insurance Markets", *Yale Journal of Regulation*, 5, 455-499.

conditions at this time might result in greater financial stress than normal:

- The sheer scale of losses resulting from WTC, adverse reserve developments and investment impairment means that – even given the recent hard market – few firms have rebuilt their balance sheets to the levels typically seen ahead of the soft market.

- Investment income may not compensate for underwriting losses as much as in the past – with the sustainability of recent equity gains questionable and fixed income yields remaining close to historic lows. However, this factor could limit the extent to which firms are willing to chase market share and cut prices.

Information of insurance pricing is most readily available for the U.S. market and the global reinsurance market. As a number of significant global reinsurances are based in CEIOPS' member states, it is illustrative to look at evidence available. This should give at least an idea of the current direction of the cycle. Before the U.S. hurricane season in 2005, there was an increasing amount of anecdotal evidence to suggest that rates are softening across the markets. At the beginning of the summer, A.M. Best reported further softening in prices for most reinsurance classes. Casualty insurance had provided a more stable income stream than property, but A.M. Best forecasted continued declines in both throughout 2005. In addition, Aon estimated that aviation rates have declined by around 10-15%, and marine by 5-10%. Trade publications in the U.S. reported declines of 10-25% on property lines, although Florida catastrophe prices were estimated to be some 10-20% higher.

It remains to be seen what impact the losses caused by hurricane Katrina will have on reinsurance pricing and thus on primary insurance. A number of commentators have suggested that despite the sizeable losses, reinsurance earnings, rather than capital, is likely to be hurt, which should limit the potential upside in pricing. Moreover, it is worth noting whilst price cutting is commonly perceived as the main driver, lowering deductibles and broadening of coverage are at least as important a cause of losses to the market.

4. Financial strength of the insurance sector

Overall, the EU/EEA insurance sector seems adequately capitalised, with no severe cases of insolvencies. The weighted average solvency ratio[8] in the EU/EEA countries in 2004 amounts to 225% for life insurers, 380% for non-life insurers and 320% for composites, which, considered on average, is a slight improvement compared to 2003 for the life sector and a significant improvement for the non-life sector. Based on these average solvency ratios, all insurance companies seem able to fulfil their obligations (assuming a prudent valuation of liabilities). These single average solvency ratios however do not give insight in the dispersion on the national markets nor say anything on possible companies that are potentially in difficulty. For that reason an indicator has been calculated that takes the dispersion to the lower side of the solvency ratios of firms in a country into account[9]. The indicator suggests that only in a few countries, a relatively comfortable average solvency ratio for the whole industry goes hand in hand with relatively high dispersion to the lower side, which could point to concerns for part of the market in these countries.

[8] Weighted by gross premiums written.

[9] Calculated as the difference between the weighted average solvency ratio and the reference (or threshold) value of 100%, divided by the weighted lower one-sided standard deviation with respect to the weighted average.

Box 2: Impact of U.S. hurricanes on European reinsurers

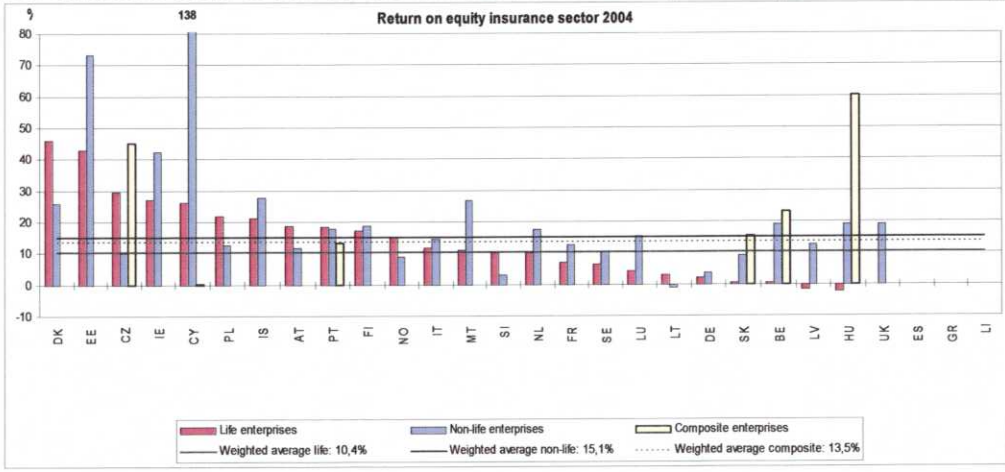
Insured losses from the U.S. hurricanes (Katrina and Rita) will be material to both the primary insurers located in the U.S. and to the global reinsurance industry. As a result, Standard and Poor's has put the whole reinsurance sector on negative outlook. The hurricanes are not expected to have a significant impact on the direct European insurance companies.

Total economic losses of Katrina are now expected to exceed $125bn; total claims on the global insurance industry are estimated at about $40. The total insured losses of hurricane Rita are expected to be between $4-$7bn. Insurance losses are likely to arise mainly from property (private and commercial), business interruption, oil and energy. The business interruption component is likely to be significant as New Orleans has been evacuated, and may be left vacant for twelve to sixteen weeks. Note that after September 11, business interruption losses were the largest single component of claims.

Comprehensive loss estimates may take even more weeks to compile because of the widespread flooding and debris left in Katrina's wake as well as the lack of power and the lack of lodging. The damage to offshore energy capacity has not yet been properly assessed because of the lack of helicopters and flooded helipads on offshore rigs.

A few weeks after the hurricanes struck the Gulf Coast, the loss estimates remain highly tentative both at the industry and company level. What seems to be clear is that natural catastrophe losses for 2005 will significantly exceed those of 2004, and could well prove the costliest-ever for the reinsurance sector (for comparison: Hurricane Andrew in 1992 – so far the costliest natural catastrophe - cost the industry $17bn/$22bn in today's prices). Moody's has warned that credit ratings of reinsurance companies could be revised downwards due to Katrina's impact. However, it is worth noting that the sector has been able to rebuild its capital following the premium rate increases after 9/11. It is expected that hurricanes Katrina and Wilma will have a positive impact on premium rate developments, and preclude any kind of decrease in reinsurance rates in the coming period.

Figure 10. Return on equity of the insurance sector 2004
RoE defined as profit or loss for the financial year divided by total capital and reserves (%)



Source: CEIOPS-FSC

Supervisors in many countries have reported the use of stress testing to evaluate the ongoing solvency situation of insurance firms. Results of these tests confirm the financial strength of the life sector and its ability to withstand shocks in

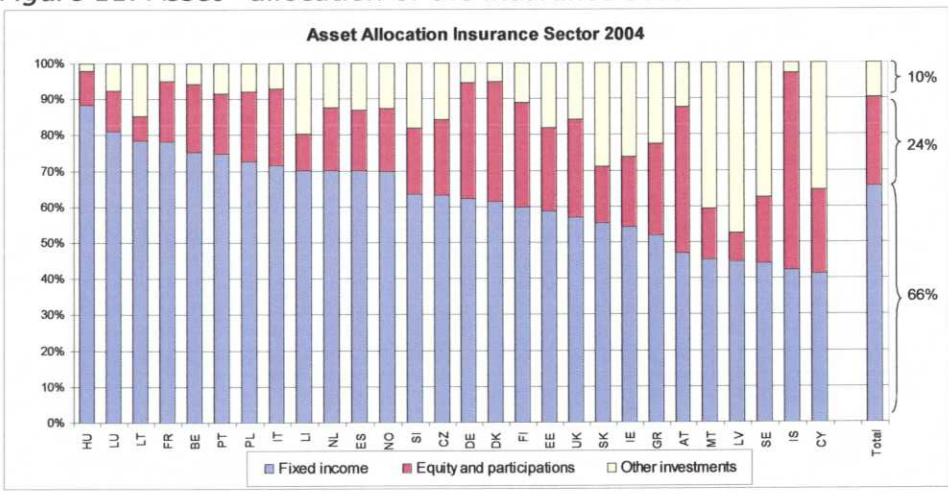
equity and bond markets. Some countries reported that a few, especially, smaller insurance companies currently show signs of solvency problems, of which some are under intensified supervision.

The positive development in the life and the non-life sector also has resulted in an increased overall profitability. Measured by the return on equity (see figure 10 and SA table 8), profitability positions in general look healthy. Figure 10 shows that in 2004 the return on equity on average amounts to almost 10.5% for the life sector, 15% for the non-life sector and 13.5% for composite enterprises in the EU/EEA countries (weighted by total of capital and reserves)[10]. The figure also shows significant differences between the life and non-life sectors and within the various countries.

5. Asset allocation

Recovery in the equity markets and in bond yields in 2004 has helped insurers to improve their financial position. Nevertheless, the volatility in equity prices and regulatory measures in various countries have led insurers in many countries to shift to fixed income investments. Insurance companies' holdings of debt securities and other fixed income securities (more than 60%) are on average[11] about three times as large as holdings of equities (more than 20%), see figure 11 and SA table 5. Some countries reported a further net decrease in equity exposures held, in favour of bonds and other fixed income instruments, the higher proportion of corporate exposures in their bond portfolio resulting in increasing credit risk exposure. It also appears that insurers have extended their portfolio maturities by purchasing ultra long term government bonds recently

Figure 11. Asset allocation of the insurance sector 2004*



Source: CEIOPS-FSC
*Excluding investments for the benefit of life-assurance policyholders who bear the investment risk.

[10] Some problems arise when comparing the return on equity between countries. The treatment of revaluation reserve and equalisation provisions varies a lot among various countries. Whether or not a revaluation reserve exists and forms part of equity capital depends on how the items are valuated in the annual accounts. Countries where equalisation provisions are not built up, the companies normally have to show a higher equity capital. In the UK profits for life companies are not recorded because of the supervisors focus on the adequacy of assets to cover the technical reserves and the solvency margin, and because of the diversity of fund structures and the division of surplus between policyholders and shareholders. Surplus allocated to policyholders by way of bonuses is a very different concept to profit.

[11] Weighted by total assets.

issued in some European countries. At the same time, insurance companies hedged part of the remaining equity exposure. While limiting their equity risk in this way, it also prevented companies to fully benefit from the recent rebound in stock prices since beginning of 2003.

Firms in most member states however have not been actively changing their asset mix after the large reductions in equity exposure between 2000 and beginning of 2003. This means that in general, changes in exposures to equity risk and interest rate risk in 2004 are mainly due to general market movements. Insurers in a few countries however report increases in exposure to equity risk due to new equity investments and active risk taking as well.

6. Current challenges and vulnerabilities

Member states reported a wide range of challenges and vulnerabilities with regards to their insurance sectors. The biggest concerns relate to *interest rates* and the current *low yield environment* (see also figure 1): in countries where life insurance companies have guaranteed returns, low interest rates reduce the margin between investment returns and the guaranteed rates, and have in some countries opened a gap between the two. This problem is particularly serious for insurers who provide guaranteed returns on or have embedded options in their life insurance products, and which have resulted in future obligations against which the insurer has not taken adequate provisioning. Insurers that provide contracts with interest rate guarantees (based on historic high rates[12]) are sensitive to further falls in interest rates. An interest rate decline would also imply capital gains on the bond portfolios, but these capital gains would not be sufficient to cover the need for further provisions on the liability side. On the contrary, insurance companies bear no interest rate risk on unit- or index-linked insurance products with limited or no capital guarantees. Investment risk on such policies is borne by policyholders and not by the insurance companies and movements in asset prices are immediately reflected in policy values. On the other hand, a moderate upward shift in interest rates would have exactly the opposite effect: the return on new investments in fixed income securities increases, improving future profitability prospects. The value of technical provisions decreases. Given the existing asset-liability maturity mismatch, this reduction exceeds the reduction of the value of bonds and similar interest related securities, improving the solvency position. Under the present regulation in many countries however, technical provisions are not valued at market value, and accordingly increased interest rates movements will not affect the book value of technical provisions.

The issue of the persistent low yield has already prompted several risk mitigation actions. A number of countries reduced the maximum guaranteed interest rate in 2004 and 2005 (see table ahead), but this provides only some degree of relief as the reduction only applies to new contracts. Other countries are currently debating possible reductions to the maximum guaranteed interest rate. Countries also mention that interest rate risk on liabilities is effectively mitigated by the prevalent use of interest rate derivatives by insurance companies. It also appears that insurers have extended their portfolio maturities in order to reduce the asset-liability maturity mismatch by purchasing ultra long term government bonds recently issued in some European countries. In addition, the lowering of

[12] The guarantee covers both contributions already paid and future contributions.

Table: Maximum guaranteed rates life insurance

Country	2006	August 2005	April 15, 2004	July 1, 2000	Before July 1, 2000
Austria	2,25% (from January 1, 2006)	2,75%	2,75% (as of January 1, 2004)	3,25%	4,0% until July 1, 2000 3,0% until January 1, 1995
Belgium	Unchanged	unchanged	3,75%	3,75%	4,75% until January 1, 1999
Denmark		unchanged	2,0%	2,0%	5,0% until July 1, 1994 3,0% until January 1, 1999
Finland		unchanged	2,5%	3,5%	4,5% until January 1, 1999
France		unchanged	Lt:2,5% St: 3%	Lt: 3% St: 3,75%	Lt: 3% St: 3,75% (until January 1, 1998)
Germany	Reduction planned for 2007	unchanged	2,75% (as of January 1, 2004)	3,25%	4,0% until July 1, 2000 3,5% until July 1, 1994
Hungary	2,9%	4,0%	4,0% (as of January 1, 2002)	5,5%	
Ireland	n.a.	n.a.	n.a.	n.a.	n.a.
Italy	2% (from January 1, 2006)	unchanged	2,5% (from December 1, 2003)	3,0%	3% (from July 1, 1998) 2,5% (from September 1, 1999) 3% (from May 1, 2000)
Lithuania		2,25%	2,99%		
Luxembourg			2,5%	2,75%	3,75% before 1998
Netherlands		unchanged	3,0%	3,0%	4,0% before 1998
Norway	Proposed 2,75% for new premium income (excl. individual business)		3,0% for new premium income (excl. individual business) from January 2004	3,0%	4,0% until November 1993
Poland	3,96% until April 30, 2006	3,96%	4,5%		
Portugal	Unchanged	unchanged	4,0%	4,0%	
Spain	2,14%	2,42%	2,68% (as of January 1, 2004)	3,15%	4,0% until June 21, 1997
Sweden		2,75%	3,0%	3,0%	4,0% before 1998
UK	n.a.	n.a.	n.a.	n.a.	n.a.

Source: National insurance supervisory authorities
Notes:
Belgium Maximum technical interest rate of 3,75% applies to life contracts denominated in Euro. For contracts with a duration of less than 8 years, an actuarial rate based on the spot rate of Belgian Government bonds for that duration is used.
France Two different interest rates are used, for durations above (Lt) and below (St) 8 years.
Lithuania The maximum interest rates are gradually reduced four times a year.
Portugal The maximum rate is subject to the term structure of business written and may only be allowed if stress tests show the capacity of the company to pay these rates.
Spain A dynamic adjustment to market changes (based on Spanish Treasury bonds) is used. The following maximum interest rates for mathematical provisions are used in each year, without considering when the policy was subscribed:

1999	3,20%	2001	3,15%	2003	2,89	2005	2,42%
2000	3,15%	2002	3,11%	2004	2,68	2006	2,14%

Sweden Maximum guaranteed rates: February 2005 2,75% (for new business from March 1 2005, for older business 3,0 - 3,25%).

guaranteed rates for new traditional saving products – to even zero % in exceptional cases – was mentioned. Finally, it was noticed that a huge portion of this risk is to some extent passed on to policyholders through unit linked contracts.

A lot of countries pointed out the *risks related to equity markets* and their importance on life insurers. This risk may have become less pressing over the past year, partly because of recovery in equity markets, and partly because of efforts by firms which had a heavy equity exposure to diversify their portfolios or hedge against share price fluctuations. As discussed above, several countries reported a further net decrease in equity exposures held during 2004, in favour of bonds and other fixed income instruments, the higher proportion of corporate exposures in their bond portfolio resulting in increased *credit risk* exposure. In general, insurers rely on asset liability management and stress tests to mitigate these financial risks.

Several countries reported challenges associated with changes to the *legal environment* and *reporting requirements*. Many of these relate to changes at the national level, but the Europe-wide initiatives of IAS and Solvency II were also specifically mentioned. Phase I of the implementation of the IASB standards will apply fair value to insurance assets, while liabilities will continue to be recorded at historical costs. The mismatch may in certain cases increase the volatility of financial statements, for example in case of interest rate movements, which would result in changes in bond holdings while liabilities would be unaffected. Phase II will extend the use of fair value accounting to insurance liabilities. For life insurers, this implies that the recognition of embedded options and guarantees attached to long-term policies might also significantly affect the value of liabilities. Several countries also highlighted specific *taxation and system reforms* that mean significant challenges to the insurance sector, varying from a regime shift in the health insurance system and the pension system, to the withdrawal of tax incentives attached to several life products, and changes in specific (tax or other) regulation.

Member states reported various non-life insurance risks, of which most common ones related to the premium cycle and reinsurance. Various member states drew attention to *the risks related to premium competition* in the non-life sector. The risk is that competition could drive the premium levels below a risk reflecting level. Box 1 discusses this risk in detail.

Risks related to reinsurance were also highlighted by a number of countries. In addition to a tightening pricing and acceptance policy, companies are becoming more exposed to changes in the reinsurance market. Overall it seems that paid reinsurance premiums are becoming more important relative to gross received premiums, while on the other hand, the benefits from reinsurance (in % of gross insurance costs borne by reinsurers) have declined. The trends indicate that on the one hand, reinsurance has become more expensive for a given coverage as a result of a general tightening in the reinsurance capacity while at the same time insurance companies have not been able to fully pass on the rise in reinsurance costs to their policyholders. Other countries signalled that the increases in international reinsurance premium rates have gradually found their way to the premiums charged by direct insurers. On the other hand, reinsurance companies had to pay out less in the context of improvements in the underwriting results of insurers. As such, lower claims up to a certain excess loss threshold have limited reinsurance cover. To this general risk was added that some insurance holdings simultaneously own reinsurers. In case of financial instability of the holding company, insurance subsidiaries may then be affected adversely via intra-group

reinsurance contracts. In that respect, a couple of countries highlighted concerns about a tightening reinsurance market, leading to certain risks being under reduced scope of protection or even excluded from coverage. Newly emerging risks (terrorism risk, asbestosis exposure and nuclear-bacteriological-chemical (NBC) risks) are leading to a strong demand from the industry to specifically exclude certain risks from coverage.

A longer term challenge for life insurers and especially to their annuity business that was highlighted by some countries is *longevity risk* – life expectancy increasing faster than expected – which could hurt insurers' reserves for longer periods of time (see Box 3 on longevity risk). As a mitigation action, one country cited the use of new mortality tables plus additional reserves.

Box 3: Longevity risk

In 1965, André-François Raffray, a lawyer in the southern French city of Arles, made a deal with ninety-year-old Mme Calment. In a contract relatively common in France, he agreed to pay her an income for the rest of her life in exchange for inheriting her house upon her death. Unfortunately for M Raffray, Mme Calment went on to be the longest-lived person in the world at 122 years. She outlived the luckless M Raffray, who paid more than the value of the house before pre-deceasing her.

This story describes the risk inherent in a contract that is comparable to lifetime products relatively common in a number of European countries. Longevity risk is the risk that future mortality rates (or survival rates) prove to be lower (higher) than formerly projected. It arises from uncertainty in future mortality trends. More generally, mortality risk refers to any deviation from anticipated mortality (be it positive or negative)[13]. This poses challenges to governments, insurers, reinsurers and pension plans albeit from different perspectives. With the ongoing disengagement of governments in funding public pensions, a growing share of private saving is expected to be invested in life insurance and pension funds policies. These financial institutions are likely to bear in the future more of the longevity risk borne now by public pension plans and they are therefore increasingly looking for ways to hedge their exposure.

During the 20th century, huge increases in life expectancy have been the result of medical and scientific advances as well as changes in attitudes of people. Some scientists see a potential for further increases in human life expectancy with no foreseeable limit[14]. Others argue that biological constraints limit the possibility of substantial increases in longevity in the future[15]. In the present state of knowledge, changes in mortality rates over longer time periods are not easily predictable – even though there is a stable statistical basis which allows for good results at shorter time horizons. This is because not all future changes are known at the time of evaluation and even small changes in the short and medium term can have strong effects in the long term. Key drivers of mortality change are the cohort effect (i.e. the influence of the year of birth on mortality improvement), "ageing" of mortality improvement[16], increased uncertainty at younger ages, changes in the prevalence of cigarette smoking, and widening social class differentials[17].

[13] Sometimes this term is also used as referring to extreme risks of mortality only.

[14] The record-performance of life expectancy has steadily increased by a quarter of a year per year. See e.g. Oeppen, J. and J. Vaupel (2002), "Broken Limits to Life Expectancy", *Science*, 296, 1029-31.

[15] For example, Olhansky, J., B. Cranes and A. Désesquelles (2001), "Prospects for Human Longevity", *Science*, 291, 1491-92, or Hayflick, L. (2001), "The Future of Ageing", *Nature*, 408, 267-69.

[16] This is different from the cohort effect in that the ages showing the greatest rates of mortality improvement are increasing over time and the pace at which mortality is improving at 'older ages' is accelerating over time (whereby the meaning of 'old age' changes).

[17] Willets, R.C. et al. (2004), "Longevity in the 21st Century", *British Actuarial Journal*, IV, 658-898.

Pension funds and annuity writers would suffer financially if people lived on average much longer than expected. The reason is that they can diversify away individual longevity risk, like the one in the introductory example, only as long as the average life expectancy is correctly predicted[18]. In theory, the diversification of this risk can be achieved by pooling the contracts of those who have a longer and those who have a shorter life than the average. The risk of an underestimation of survival rates and thus future costs has materialized in some European countries. Life insurance companies and pension funds have had to strengthen reserves on annuity portfolios. Mortality tables generally include substantial allowances for future improvements in mortality rates. Decreasing trends in these safety margins are observed carefully and longevity mortality tables are adapted accordingly at regular intervals to account for changes in mortality rates. The current frequency of this updating process is generally higher in comparison to previous practice.

The uncertainty which affects the projections of mortality rates could be problematic in the current economic context as low long term interest rates already put pressure on the profitability of life insurers and pension funds, and might exacerbate the longevity risk of current annuities portfolios. The scope of longevity risk that varies according to the nature of the respective contract (e.g. immediate annuities, deferred annuities, guaranteed annuity options, et cetera) has significantly increased over the last decade. The bulk of longevity risk is currently concentrated in balance sheets of life insurers and pension funds, which expose them mainly to the following risks[19]:

- losses being declared on existing annuity books,
- increased reserves for guaranteed annuity options,
- increased capital requirements,
- reinsurance being more difficult to obtain,
- asset/liability matching issues.

However, in the case of firms with defined benefits pension schemes, it is eventually the shareholders who bear a great part of longevity risk as they incur the risk of a sharp correction in share prices when the mortality projections used to assess the reserves prove to be inadequate[20]. The transition from defined benefit to defined contribution plans also contributed to transfer longevity risk to the policyholder when the opting out option at retirement is through a lump sum rather than through annuities.

In addition to prudent reserving, diversification of capital and high financial returns on the reserves may help to reduce or offset longevity risk, as does reinsurance and annuity insurance. However, traditional capital market instruments do not seem very successful in hedging longevity risk. For example, the absence of a substantial supply of reinsurance or capital market products to deal with longevity risk is evidence that the market for this risk is unattractive. It is the collective nature of longevity risk that poses challenges, as it cannot be diversified away through a pooling of individual longevity risks. In order for such a market of longevity risk to work, appropriate hedges must be designed and the market must be sufficiently liquid. Recently, new capital market instruments have been proposed as an additional way to alleviate longevity risk[21]:

- Survivor bonds/Longevity bonds – coupon payments are linked to the number of survivors in a given cohort. If the survival rate grows faster than expected, the bond pays out more and thus helps to match the pension provider's liabilities.

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[18] King, M. (2004), "What Fates Impose: Facing up to Uncertainty", the Eighth British Academy Annual Lecture 2004.

[19] Willets, R.C. et al. (2004), "Longevity in the 21st Century", *British Actuarial Journal*, IV, 658-898.

[20] Richard, S. and G. Jones (2004), "Financial Aspects of Longevity risk", Staple Inn Actuarial Society.

[21] Cairns, A., D. Blake and K. Dowd (2004), "Pricing Death: Frameworks for the Valuation and Securitization of Mortality Risk", Working Paper, Heriot-Watt University.

- In November 2004, the European Investment Bank issued a 25-year bond, which is managed by BNP Paribas. Ultimately the longevity risk contained in the bond is borne by Partner Re[22];
- Mortality bonds – market-traded securities whose payments are linked to a mortality index. Swiss Re's mortality bond issued in December 2003 is an example of a short-dated mortality bond with characteristics similar to catastrophe bonds;
- Survivor swaps – counterparties swap a fixed series of payments in return for a series of payments linked to the number of survivors in a given cohort[23];
- Annuity futures – prices are linked to a specific future market annuity rate;
- Mortality options – contracts with option characteristics whose payoff depends on an underlying mortality table at the payment date.

In practice, only longevity and mortality bonds received attention recently and the market is concentrated on a small group of firms. While academic research is providing useful insights into longevity risk products, adequate stochastic mortality models and reliable mortality indices are required to improve the practical relevance of these instruments. Up to now, these instruments have barely been used by insurance companies to shift risks as the standards for adequate investments are high.

Due to the collective nature of longevity risk and given that no clear solution has yet emerged from capital markets, some observers have proposed a role for governments to issue longevity bonds[24]. Throughout this issuance, only the residual undiversifiable longevity risk would be transferred to governments, whereas private annuity markets would diversify away individual longevity risks. However, the risk transfer could be substantial. Others argue that the functioning of markets should be developed further to make them sufficiently large and liquid so that groups with different risk profiles, i.e. those who loose and those who benefit from lower mortality rates, are able to participate[25]. Non-traditional underwriters such as investment banks, hedge funds and private equity funds may play an important role in tackling a specific portion of the risk. However, the practicability of the assumed diversification as well as the implications of such a development on the insurance industry and its regulation would require thorough analysis.

[22] Common press release by BNP Paribas, EIB and Partner Re from 8 November 2004; see also Cairns, A, D. Blake, P. Dawson and K. Dowd (2005), "Pricing the Risk on Longevity Bonds", Working Paper, Heriot-Watt University.

[23] Dowd, K., D. Blake, A. Cairns and P. Dawson (2004), "Survivor Swaps", CRIS Discussion Paper – 2004.VII, University of Nottingham.

[24] Pension Institute (2005), "Is longevity risk a one-way market?".

[25] See e.g. Shiller, R., „Longevity bonds can help retirees prosper" in *The Japan Times*, 2 May 2005.

Abbreviations

AT	Austria
BE	Belgium
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GR	Greece
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LI	Liechtenstein
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom

Statistical Annex (SA) 2003 and 2004 (see excel icons below)

Tables:

1. Number of enterprises
2. Gross premiums written
3.1 Breakdown of the main items of the gross technical account in non-life insurance
3.2 Breakdown of the main items of the net technical account in non-life insurance
4. Breakdown of the gross direct premium written and gross technical provisions in life insurance
5. Investments of insurance enterprises
6. Gross technical provisions
7. Capital, reserves and subordinated liabilities
8. Result