
Risk Outlook

- NOTICE -

CEIOPS prepares a Financial Stability Report on the European insurance, reinsurance 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. Although some detailed information has been left out from this public version, the overall assessment on the European insurance and pension fund sector has not changed.

Introduction

This report is based on the main findings of the semi-annual analysis of the financial stability of the insurance market and the pension fund sector in the EU/EEA conducted by CEIOPS’ Financial Stability Committee (FSC). An interim report on the financial conditions and financial stability in the insurance sector had been sent to the EFC Financial Stability Table for its discussion on the macro-financial conditions and overall stability of the EU financial system at its meeting early September 2006.

This current report is based on:

- supervisory data on the insurance and reinsurance sector for 2003-2005, which are summarized in the statistical annex (SA) as well as fast-track reporting for parts of the reinsurance sector for 2005;
- qualitative information from the insurance supervisors pertaining to the insurance market situation and the occupational pension fund sector in the respective countries;
- market information.

The current report addresses the following issues:

1. Main issues and conclusions
2. Developments in the European insurance sector
3. Developments in the reinsurance sector
4. Longevity risk in the pension fund and life assurance industry

Box 1: Increasing appetite for long-term and inflation-linked bonds
Box 2: Solvency II and portfolio reallocations by EU insurers

1. Main issues and conclusions

Summary of recent trends and developments

- Despite large losses related to natural catastrophes, 2005 was overall a good year for the insurance sector in the EU/EEA member states. Market participants perceive that the stability of the insurance sector has increased further, viewing share price indices and financial strength ratings.

- Results in the non-life sector continue to improve overall. Various member states show in some business lines a dampening effect of enhanced competition on premium income, which in many member states seems to be accompanied by a low growth in claims.

- Overall, the life sector has shown a steady or continued premium growth, in many member states mainly fed by a strong growth of unit-linked products, with guaranteed contracts remaining the main source for premium income.

- The reinsurance sector was severely hit by several natural catastrophes in 2005 that entailed substantial losses and that also seem to have halted the expected trend towards softening premium rates. The reinsurance sector however appears resilient, partly due to the strong capital base that had been rebuilt after the terrorist attacks in September 2001.

- Solvency has remained adequate for the whole European insurance sector and appears to improve somewhat, partly helped by the recovery in the equity market. Equity exposures had declined significantly since the equity markets downturn during 2000-2003, but a gradual increase can be perceived afterwards, mainly due the market recovery.

- The insurance industry as a whole faces several risks and challenges, of which are the most prevalent financial risks and risks related to financial market volatility, e.g. the risk of a prolonged period of low or even again decreasing interest rates or of a sudden interest rate increase as well as risks related to equity markets. Member states also report reinsurance risks, risks related to premium competition and additional natural disasters as well as longevity risk as important risk factors.

- Recent pension reform efforts in Europe are geared towards the economic implications of an ageing population that is accompanied by a high level of future pension liabilities. As a result, growth of the occupational pension fund sector is expected to accelerate further over the coming decades as a means of diversifying some of the longevity risk related to traditional social security systems.

- The financial position of the occupational pension fund sector has improved in most member states, due to positive developments in equity markets as well as growth in contributions. In a number of member states defined benefit (DB) plans are gradually phasing out and being replaced by new defined contribution (DC) plans. This gradual trend will help reduce the vulnerability of the pension fund sector to funding risk traditionally related to DB plans and will also imply a greater transfer of investment risk from the pension fund sector to the household sector.
2. Developments in the European insurance sector

*Market developments*

Over 2006, the European life and non-life insurance sectors as well as the reinsurance sector outperformed the European wide share index (figure 1), after a rather weak performance compared to the European wide index in 2005. Life insurers and reinsurers in particular were evaluated initially with some scepticism, partly due to severe natural catastrophes during 2005 and the low yield environment that undermined profitability especially in the life sector. A catch up is visible though for the non-life and life sectors since the 3rd and 4th quarter of 2005. This catch up can partly be explained by M&A activities and speculation over potential M&A transactions that recently took place in the European and global insurance sector. The positive performance of the reinsurance sector can partly be explained by the low frequency of natural catastrophes this season (see chapter 3 for more details). See table 1 for full details on the performance statistics.

The performance of share prices is broadly confirmed by other market risk indicators, such as ratings. In terms of financial strength ratings, European insurers have been subject to more upgrades than downgrades since the end of 2004 (figure 2A ahead). Most of the insurance ratings have a stable outlook, which suggests that much of the continued improvement expected in 2006 is already factored into ratings. Only very few large European insurers are evaluated with a negative outlook. Since last year, Standard&Poors revised its outlook on the leading European insurance groups from negative/stable to stable/positive at the summer of 2006 (see figure 2B)

*Figure 1 EU stock market indices (31/12/2005 = 100)*
Figure 2 Development of leading European insurance financial strength

2A Counterparty credit ratings distribution

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Source: S&P

Figure 2B Outlook / credit watch distribution

Explanatory note - Rating outlooks are defined as follows:
A Standard & Poor’s rating outlook assesses the potential direction of a long-term credit rating over the intermediate term (typically six months to two years). In determining a rating outlook, consideration is given to any changes in the economic and/or fundamental business conditions. An outlook is not necessarily a precursor of a rating change or future CreditWatch action.

- Positive means that a rating may be raised
- Negative means that a rating may be lowered
- Stable means that a rating is not likely to change
- Developing means a rating may be raised or lowered
Development in premiums and claims

Most countries reported a high premium growth in the life insurance sector in 2005 and the first half of 2006. In the non-life sector, premium growth is generally more moderate. According to CEIOPS statistics, total gross premiums in life insurance enterprises increased by 5.8% from 2004 to 2005 (see figure 3 and SA table 2). Total gross written premiums for non-life insurance enterprises increased by 0.5%. The corresponding growth rate for composite insurance enterprises was 12.9%.

Figure 3 Growth in gross premiums written from 2004 to 2005*

Life sector

A majority of the countries experienced a continued high premium growth in the life insurance sector in 2005. Some reports indicate that the growth has continued in 2006. Total gross premiums increased by 5.8% from 2004 to 2005, but a number of countries experienced a considerably higher growth (see figure 3). In most countries, unit-linked or index-linked products are growing more dynamically than traditional products with guaranteed interest rates. In fact, the majority of the overall premium growth in the EU/EEA life insurance market is related to linked products, which represent about 27.5% percent of total life insurance premiums (see figure 4 and SA table 4).

*Excluding reinsurance premiums. No data available for GR.

It should be noted that unit-linked or index-linked products are sometimes guaranteed as well.
The increase in unit-linked and index-linked products can be related to the current low interest rate environment, which gives policyholders an incentive to choose products that are linked to equities and other assets with a higher expected return than interest bearing securities. These more risky assets are often limited in traditional guaranteed business, where solvency considerations give incentives for investments in interest bearing securities. Asset liability matching in a fair value regime makes investments in long-term bonds particularly attractive.

Companies that offer guaranteed products with small capital buffers can face severe limitations on their investment possibilities, which make it very hard for them to compete in the market. The move away from guaranteed products to unit-linked products means that policyholders bear a larger part of the investment risks. However, as linked products involve companies bearing less risk, they offer correspondingly lower margins.

The growth in life insurance premiums is very high in some countries, especially in the eastern part of Europe, due to a continued increased insurance penetration in the economy. The general economic development with higher investments and lending volume, particularly in the household sector, has increased the need for insurance to secure these loans. As such, both life insurance policies and property and casualty insurance policies are in higher demand.

In several markets, tax and pension reforms that affect life insurance products have been implemented. As a consequence, there are cases of strong shifts towards new products that are tailored to the new legislation.

*Non-life sector*

The growth in gross written premiums in the non-life sector is generally more moderate than in the life sector. The overall growth in the EU/EEA area was
0.5% from 2004 to 2005, and some countries reported a negative growth. Some countries also report a negative growth in the first half of 2006.

Following some years of healthy premium growth in the non-life sector, the trend seems to have turned towards lower premium rates in some countries. This is mainly caused by increased competition spurred by the improved underwriting results. However, the development differs between countries, and many countries have not observed any tendency towards lower premium rates.

The moderate growth in net premiums seems to be accompanied by a somewhat higher growth in claims. In most countries net loss ratios (claims ratios) are still at a low level (figure 5 and SA table 3.2). The aggregate net loss ratio for the reporting countries was 71.3% in 2005, compared with 69.6% in 2004 and 72.1% in 2003. The net loss ratio increased in all reported lines of business in 2005, ranging from 50% in credit and suretyship insurance to 82% in motor liability insurance (see SA table 3.2).

Figure 5 Net loss ratio*

* Claims divided by premiums, net of reinsurance. No data available for GR, LI and UK.

The aggregate expense ratio (cost ratio) for the reporting countries was 22.6% in 2005, compared with 22.7% in 2004 and 23.3% in 2003. The aggregate combined ratio deteriorated somewhat to 93.9% in 2005, compared with 92.6% in 2004 and 95.3% in 2003.

It is worth noting that while net loss ratio and net combined ratio (figure 6) have both increased between 2004 and 2005, gross loss ratio and gross combined ratio have both decreased slightly (see SA table 3.1). This indicates that the relative cost of reinsurance protection was higher in 2005 than in 2004. This can again be linked to the general conditions in the reinsurance market, and/or to lower claims (and reinsurance recoverable) related to natural catastrophes in Europe in 2005 (see also chapter 3).
**Figure 6 Net combined ratio**

*Claims and operating expenses divided by premiums, net of reinsurance. No data available for GR, LI and UK.*

**Financial strength and profitability**

A positive profit development has improved the financial strength of the EU/EEA insurance sector, especially for the non-life companies. The solvency ratio (available solvency margin divided by required solvency margin) has also increased in the life insurance sector last year, but is generally lower than in the non-life sector. The low long term interest rates in recent years have, however, raised some concerns over the ability of life insurance companies to meet the long-term obligations for products with guaranteed interest rates. In most countries, this is not reflected in the solvency ratio, as liabilities are not valued at market value. The rise in long-term interest rates observed so far in 2006 indicates a higher probability that future investment returns will exceed the guaranteed rates (see figure 7).

**Figure 7 The development of European long- and short-term interest rates**

*Source: Datastream*
There were no severe incidents of insolvencies in the insurance sector in 2005 or so far in 2006. Some countries have reported cases of companies with insufficient capital to meet the solvency margin requirement. None of these cases have resulted in losses for policyholders. The aggregate solvency ratio for the reporting countries has increased during 2005 for both life and non-life companies, as well as composite companies.

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. In many countries the regular stress tests do not consider the effect of interest rate shocks on the liabilities side, as these are currently not valued at market value on the balance sheet.

The overall profitability has increased in the life sector as well as the non-life sector the last years. Fairly good returns on equity investments contributed to positive profits in the life sector in 2005, while profits in the non-life sector were also favoured by good underwriting results (see figure 8). Measured by the return on equity\(^2\), profitability in 2005 in general looks healthy.

*Figure 8 The development of European and world equity indices (1/1/ 2004=100)*

![Figure 8 The development of European and world equity indices (1/1/ 2004=100)](image)

The aggregate return on equity has increased the last two years for both life and non-life companies, as well as composite companies. The aggregate (weighted average\(^3\)) return on equity in the life sector was 14.7% in 2005, almost unchanged since 2004 (14.8%; figure 9 and SA table 9). The aggregate return on equity in the non-life sector was 13.1% in 2005, up from 11.9% in 2004. The

\(^2\) It should be kept in mind that there are some shortfalls when comparing return on equity between countries. These have amongst other things to do with the treatment of revaluation reserve and equalisation provisions in the various countries. Whether or not a revaluation reserve exists and forms part of equity capital depends on how the items are valued in the annual accounts. In countries where equalisation provisions are not built up, the companies normally have to show a higher equity capital.

\(^3\) Weighted by total of capital and reserves.
corresponding figure for the composite companies was 16.7% in 2005, up from 14.5% in 2004.

Figure 9 Return on equity* of the insurance sector 2005

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* Profit or loss after tax for the financial year divided by total capital and reserves. No data available for GR and UK.

Asset allocation

There are no apparent trends in the overall assets allocation the last couple of years. Many countries report a stable mix of assets. Some countries report that investments in bonds and other fixed income securities have increased relative to other assets. Other countries report that equities have increased their share of total assets.

Many countries experienced large reductions in equity exposure between 2000 and the beginning of 2003. Since then equity exposure has gradually increased, mainly through the market recovery, but in some cases also through new investments. In most cases the exposure is still considerably lower than in 2000.

Reported figures indicate a relatively stable asset mix the last years. The aggregate equity share of total investment assets increased slightly during 2005. The aggregate (weighted average) share of equities was 27% in the insurance industry (excluding reinsurance companies) at the end of 2005, up from 26% at the end of 2004 (figure 10A and SA table 6). Fixed income investments amounted to 65% of total investment assets at the end of 2005, down from 66% at the end of 2004. On average, life enterprises invest more in

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4 Most countries have reported market values for both 2005 and the preceding years. Accordingly, the figures should in general be comparable, despite the fact that some countries have changed the valuation principles in the public accounts from acquisition cost to market value, as an adaptation of the IFRS standards.

5 Investments for the benefit of policyholders who bear the investment risk are excluded.

6 Weighted by total assets.
fixed income products (bonds and loans) and less in equity compared to the non-life insurers (see figure 10B).

Figure 10A Asset allocation insurance sector* 2005

* Excluding the reinsurance sector. Investments for the benefit of policyholders who bear the investment risk are excluded. No data available for GR.

Fixed income covers debt securities and other fixed income securities, loans guaranteed by mortgages and other loans. Equity and participations cover shares and other variable-yield securities, units in unit trusts and participation in investment pools. Other investments cover lands and buildings deposits with credit institutions and other financial investments and deposits with ceding enterprises. According to current accountancy valuation standards, in some countries some items in the balance sheet are reported on market basis (i.e. including capital gains and losses), such as equities and other financial assets, whereas other items are reported on acquisition cost basis, such as properties.

The current development seems to provide mixed incentives for asset allocation, at least in the life sector. On one hand, the positive profits the last couple of years has increased the financial strength of the sector, which gives the companies the ability to invest more in equities and other high volatility assets. On the other hand, the increased focus on asset liability matching, spurred by the prevailing process towards market valuation of technical provisions on the balance sheet as well as future solvency rules and supervisory tools, gives incentives for investing in long-term bonds that match the long-term liabilities.

Figure 10B Asset allocation by sub-sector* 2005
Asset liability matching considerations have increased the demand for long-term bonds. Some countries report of efforts to deepen the market for long-term instruments, to meet the demand from life insurance companies and pension funds (see box 1: Increasing appetite for long-term and inflation-linked bonds). In some countries there are signs of increased investments in structured products, like CDOs and hedge funds, which may be motivated by prospects of higher yields and better overall diversification in the investment portfolio. There are also reports that companies are adapting their fixed income investments towards higher return bonds, thereby taking on more credit risk.

**Challenges and vulnerabilities**

Various challenges and vulnerabilities are reported by member states regarding their insurance sectors. Financial risks and risks related to financial market volatility are apparently the most important risk factors facing insurers. Despite the recent rise in interest rates, the prolonged period of low or even again decreasing interest rates is still perceived as a major risk for the life insurance sector. The current low interest rate environment seems to have structural reasons, which could prevail for quite some time. In those cases where insurance contracts include guarantees, this could result in investment returns that do not cover the formerly guaranteed rates and thereby endanger the solvency of at least some companies in the medium term. Life insurance companies traditionally have a high interest rate exposure through their fixed-income securities holdings. Many insurance companies have raised this sort of investment in parallel to the reduction in equity over the last couple of years.

The persistent low yield environment has induced several risk mitigation actions, both from supervisory authorities and insurance companies. A number of member states further reduced the maximum guaranteed interest rate in 2005 and 2006 (see table 2 for an overview of the current maximum guaranteed rates for life insurers), but this provides only some degree of relief as the reduction only applies to new contracts. Insurers on the other hand increasingly aim at lowering the interest guarantee connected with insurance products as well as at offering fewer products with interest guarantees. Member states mention that interest rate risk on liabilities is mitigated by the use of interest rate derivatives by insurance companies. Moreover, portfolio maturities have been extended in order to reduce the asset-liability maturity mismatch by purchasing ultra long term government bonds recently issued in some European countries. Finally, it is noticed that interest rate risk is to an increasing extent passed on to policyholders through unit-linked contracts.

The risk of an upward shift in interest rates is mentioned as well. In general, a moderate upward shift in interest rates would result in increasing returns on new investments in fixed income securities, improving future 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. However, a more sudden and material upward shift might negatively impact the financial position of insurers, in case the sudden sharp rise in interest rates is accompanied by a drop in equity prices.

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7 Based on input from national insurance supervisors.
Member states also point out the risks related to equity markets and their importance for 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.

Member states report 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 (see box 2 on Solvency II and portfolio reallocations by EU insurers). Several member states also highlight 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 report various non-life insurance risks, of which the most common ones are related to the premium cycle, claims inflation and reinsurance (uninsurable risk). Various member states draw attention to the risks related to premium competition in the non-life sector. Some member states indicate that this put downward pressure on the premium rates in some business lines. The risk is that competition could drive the premium levels below a sound level. A few member states voice concern over rapidly rising cost of claims (claims inflation).

Risks related to reinsurance are highlighted by a number of member states. In that respect, an emerging trend towards higher damage claims owing to natural (and man-made) catastrophes is noted. In addition to a tightening pricing and acceptance policy, companies are becoming more exposed to changes in the reinsurance market. 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 member states signal that the increases in international reinsurance premium rates, e.g. after the autumn 2005 hurricanes in the USA (see also chapter 3 on the reinsurance sector), have gradually found their way to the premiums charged by direct insurers. A few member states finally highlight concerns about a tightening reinsurance market, leading to certain risks (e.g. natural catastrophes and claims arising from terrorist events) under reduced scope of protection or even excluded from coverage.

A longer term challenge for the annuity business of life insurers and of pension funds that is highlighted by some member states, is the improvement in longevity, (life expectancy), increasing faster than expected. This could hurt insurers' reserves for a long period of time. Member states report in that respect on the development and application of updated mortality tables, including the fundamental uncertainty of the duration of future improvements.
Finally, a few member states highlight the fragility of clients confidence resulting in lapse risk due to mis-selling practices in the life insurance sector as well as due to the prevalent lack of contract certainty in some non-life insurance markets. Some new EU member states mention the challenges posed by the entry of new insurance firms in their markets following the EU accession.

3. European reinsurance sector

The year 2005 was a very costly year for the reinsurance sector. It turned out to be the most costly natural-catastrophe year ever due to both the frequency and the magnitude of the natural catastrophes. Total economic losses from natural catastrophes exceeded more than $210 billion in 2005, far greater than the economic losses for the previous year (2004: about $145 billion). Total insured losses also reached a new dimension with more than $75 billion as can be seen from figure 11 ahead, which also includes insured losses from man-made disasters, like e.g. fires and explosions. Most insured losses were caused by hurricane Katrina (USA, August 2005; estimated $45 billion\(^8\)), which make them by far the largest insured losses from a single event, far exceeding the previous largest insured hurricane losses resulting from hurricane Andrew in 1992. The combined losses from hurricanes Rita and Wilma (USA, September and October 2005) are estimated to amount to another $21.5 billion.\(^9\) For comparison, in 2004, itself a high-cost year, the total insured hurricane losses amounted to $30 billion. Reinsurers as well as US based primary insurers are especially hit by these hurricanes.

Figure 11 Insured losses worldwide from 1970 to 2005
Inflation-adjusted figures

![Graph showing insured losses worldwide from 1970 to 2005](source: Swiss Re, sigma No 1/2005 and 2/2006.)

Structure of the European reinsurance market

European reinsurers play a dominant role in the world reinsurance market which amounted to about $170 billion gross premiums written according to the IAIS

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\(^8\) Source: Munich Re.

\(^9\) Source: Munich Re.
Global Reinsurance Market 2004\textsuperscript{10}. As regards the regional distribution within the EU major reinsurers have their headquarters domiciled in France, Germany and the UK.

\textit{Developments in the reinsurance market in 2005}\textsuperscript{11}

EU reinsurers initially performed positively in 2005, thus continuing the encouraging trend of the previous year. However, major natural catastrophes, especially US hurricanes, in the third and fourth quarters of 2005 were a considerable burden also for EU reinsurers, especially domiciled in Germany and the UK, and entailed substantial losses. As a result of these losses especially countries with major reinsurers reported an increase in the net combined ratios above the threshold level of 100\% in 2005.

US hurricane losses have positively effected the underwriting cycle, which was softening across most lines until late-summer 2005. As a result of these losses, contract renewals to date include a stabilization or in some insurance classes, especially property and offshore-marine policies, even a significant increase in reinsurance rates of 100\% or more. The formerly by market participants expected trend towards softening premium rates again seems to be stopped. Due to the heavy losses caused by the US hurricanes most EU reinsurers had to revise their profit expectations, others could keep their ambitious goals partly by realizing extraordinary income through sales of stockholdings.

Because of effective risk management techniques reinsurers were not as hard hit as they could have been by the incidents. The resilience of the reinsurance sector can be attributed in large parts to its strong capital base. After the series of storm events numerous reinsurers raised capital, inter alia in the form of hybrid capital, and/or issued catastrophe bonds which helped them to reduce their risk exposure. Furthermore, new reinsurance companies were founded, in particular in countries with lower regulatory density.

As a result of the heavy losses, reinsurers have reassessed their risk-management techniques and revised their risk models. Furthermore, a number of reinsurers have indicated their intention either to reduce significantly or completely withdraw from certain risks or from the retrocession market or to restructure their portfolios on a geographical basis.

\textit{Developments in 2006 and outlook}

Major EU reinsurers reported excellent underwriting results for the first half of 2006 with increased profits and improved combined ratios below the threshold of 100\%. This development is also reflected in the performance of the reinsurance equity market (see chapter 2). Beside the improvements made in risk management and catastrophe modelling in the aftermath of the US hurricanes and the stabilization and increase respectively in reinsurance rates especially the current hurricane season is the reason for this development. So far no significant

\textsuperscript{10} See \url{http://www.iaisweb.org/051215_RTG_report_final_2.pdf}. The report was published in December 2005 and analyses a number of reinsurers worldwide.

\textsuperscript{11} See also CEIOPS Spring 2006 Report on Financial Conditions and Financial Stability in the European Insurance and Occupational Pension Fund Sector.
natural catastrophes have occurred. Furthermore, according to forecasts by meteorologists of the US Tropical Meteorology Project the total Atlantic hurricane activity for 2006 will be slightly below long-term average. For this reason, a combined ratio of below 100% at the end of the year 2006 is expected.

Standard&Poors\textsuperscript{12} revised its outlook on the global reinsurance market from negative to stable at the beginning of 2006 and is maintaining its stable outlook on the global reinsurance market through the remainder of 2006 and into early 2007 because it does not expect a large number of rating changes during this period. The vast majority of reinsurers has currently a stable outlook. However, according to A.M.Best\textsuperscript{13} the global reinsurance market remains susceptible to competition from both established players and new entrants, as investor expectations run high. For this reason its outlook for 2006 on the reinsurance sector is negative although it has just a few negative rating outlooks on particular reinsurers.

Solvency II may also have an effect on the reinsurance market. In anticipation of the capital requirements under Solvency II, the demand for reinsurance coverage by European insurance companies seems likely to increase. This in turn may contribute to an improved financial situation of reinsurers in the medium term. However, on the contrary, the boost of the global reinsurance capacity may well limit the incumbent reinsurers’ ability to benefit from harder pricing in the medium to longer term.

4. Longevity risk in the pension fund\textsuperscript{14} and life insurance industry

As baby boomers approach retirement age, individual households and policymakers in Europe are increasingly concerned about the sustainability of retirement income security from public pensions. Dramatic advances in life expectancy over the last century now carry the risk that individuals may outlive their resources and be forced to reduce their living standards at an advanced age. Such policy concerns are related to what is generically called ”longevity risk”, or the risk that future trends in survival rates prove to be higher than projected. An increase in life expectancy at birth and the remaining life expectancy at 60 years age is already noticeable in recent statistics for a sample of EEA countries (figure 12). Such increases are observed for both male and female populations.

\textsuperscript{12} Standard&Poor’s, Global Reinsurance Highlights, 2006 Edition.
\textsuperscript{13} A.M. Best, 2006 Annual Global Reinsurance Report: Reinsurers humbled, but most not broken, by hurricane losses.
\textsuperscript{14} For the purpose of this report, pension funds refer to Institutions for Occupational Retirement Provisions (IORP), as defined by Directive 2003/41/EC on the activities of institutions for occupational retirement provisions.
Figure 12 Development of life expectancy by country

Source: World Health Organization, World Health Statistics

Life expectancy at birth (years)

Source: Eurostat, European Commission

Life expectancy at birth (years)

Source: National Statistical Office, Government of Germany
It has been observed for some time already that advanced economies face an unprecedented steep increase in their old age dependency ratio (the number of people above 65 relative to those aged 15 to 64; see figure 13), owing to declining fertility rates, increasing survival rates at old age as a result of medical advances, and the approaching of retirement age of the post-war baby boom generation. In addition, past projections of life expectancy have tended to underestimate the actual upward trend in longevity. These demographic developments are likely to have a number of significant effects on retirement providers and beneficiaries. It can also be expected that population ageing might result in shifting of risks between sectors of the economy (government, pension and life insurance providers, households).

The ongoing disengagement of governments in funding public pensions, is leading to a growing share of savings for retirement being invested in life
insurance policies and private pension plans. These private institutions are likely to bear the longevity risk borne previously by the public sector, and they are therefore seeking ways to hedge their exposure to longevity risk.

Figure 13 Development of old age dependency ratio by country*

* Ratio of projected inactive population aged 65 and over to labour force aged 15 to 64.

To the extent that the average life expectancy is correctly predicted, individual longevity risk can be diversified away by pooling contracts of those policyholders who have a longer and those who have a shorter life than the average life expectancy. However, underestimation of future trends in longevity cannot be diversified away through pooling, and would remain as a collective longevity risk.

The economic implications of collective longevity risk is leading to pension reform efforts becoming more and more geared towards promoting retirement provisions through Pillar 2 and Pillar 3 pension plans. By supplementing Pay As You Go (PAYG) systems with funded private pensions, the cost and risks of an ageing population can be shifted more evenly between contributory and beneficiary generations, especially in countries that traditionally rely on social security systems.

In addition, the more recent shift from Defined Benefit (DB) towards Defined Contribution (DC) plans in private pension schemes, as well as the introduction of individual pension accounts, will help transfer some of the longevity risk onto policyholders when the opting out option at retirement is through a lump sum rather than through a stream of annuities until death. The gradual shift from DB to DC schemes should also make later retirement more attractive for younger age cohorts, and help reduce some of their future cost of living longer. At the level of the household sector, it can also be expected that their savings behaviour will be adjusted in the face of rising longevity.
A potential demand for long-dated and inflation-linked bonds is developing in order to provide pension funds and annuity writers with a greater ability to hedge their long-term liabilities, including longevity risk. More recently, financial structuring has also focused on longevity-indexed bonds or survivor bonds, which pay coupons linked to the survival experience of a particular age cohort. If the survival rate grows faster than expected, the bond pays out more and thus helps match the cash streams of a pension provider’s liabilities. There may also be some scope for long-term longevity swaps, within the life insurance industry, whereby parties offset their exposure to longevity risk (for example an annuity provider entering into a contract with a provider of mainly term assurance).

Unexpected developments in longevity, and in particular sudden drops in mortality within the elderly cohorts, can place a heavy burden on pension funds and life insurance companies. Although these institutions are natural parties wishing to offload longevity risk, there are very few natural buyers of such risks, and possibly not of such size to provide an effective hedge against longevity exposures. One potential obstacle to the deepening of such markets is the difficulty to appropriately price and manage extreme longevity risk, which remains a tail risk for insurers and pension funds. Insofar as markets for such instruments lack the liquidity and depth, there may be a role for government agencies to assist in market building. Governments could act as issuer of securities that protect the investor against greater than expected longevity jumps, especially within the older age cohorts (protection against undiversifiable “tail” risk).

While more resources are being channeled into capital markets to provide for retirement income, these additional flows are managed inter alia by pension funds which have already become one of the largest institutional investors in many countries; see figure 14.

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15 See: Ageing and pension system reform: implications for financial markets and economic policies, Report prepared an expert group at the request of the Group of Ten (September 2005); How should we insure longevity risk in pensions and social security, Jeffrey R. Brown, Center for Retirement Research, Boston College (August 2000).
In order to better match their assets to the changing risk profile of their liabilities due to on-loading and off-loading of longevity risk, pension funds may be expected to undertake shifts in their asset allocation towards long-term bonds. Several jurisdictions already have a preponderant allocation towards fixed income instruments; see figure 15. An alternative investment strategy for pension funds could consist of allocating their equity exposure towards sectors that would benefit from the economic consequences of ageing and longevity (medical and pharmaceutical industry), and thus provide a natural hedge against the changing risk profile of their liabilities.
An essential aspect that insurance undertakings and pension funds take into consideration when setting up their investment policies is the selection of a set of assets able to generate high real returns but which are, simultaneously, well-suited to their particular liability profile. The need to adapt investment policies to, on one hand, crises of the financial markets and, on the other hand, a higher level of competition and product innovation, has fostered an enlargement of the array of asset classes under consideration by insurance undertakings and pension funds. Indeed, the coexistence of traditional asset classes such as bonds and equities with “new” asset classes such as structured products, absolute return funds, as well as long-term bonds and inflation-linked bonds is, nowadays, a common feature of investment portfolios.

Two distinctive aspects may help to explain the increase in interest by insurance undertakings and pension funds for long-term bonds and inflation-linked bonds. Firstly, the intrinsic characteristics of bonds. Steady, income-oriented returns make bonds well-suited to matching predefined cash flow and liability requirements – a critical need for pension funds, charities, insurance undertakings and some corporate treasury activities. In addition, long-term bonds fit investors with long-term responsibilities while inflation-linked bonds fit investors with responsibilities that are, directly or indirectly, linked to inflation, such as defined benefit pension plans and life insurance companies in the annuities business.

Secondly, the increasing interest by insurance undertakings and pension funds for long-term bonds and inflation-linked bonds may also be explained by the combination of particularly adverse financial markets with recent or prospect legislative changes. Indeed, the revival of these asset classes has coincided with the burst of the equity market bubble in March 2000 and the subsequent plunge of equity markets. In addition, during this period the bond market witnessed a constant reduction in interest rates which, despite partly compensating for the losses in equity markets, has resulted in an overall decrease in discount rates used by insurance undertakings and pension funds and a subsequent upward revaluation of liabilities.

During this period, pension regulation in several European countries changed including, in many cases, a move towards a mark-to-market valuation of liabilities which introduced a higher level of volatility on the liability side of the balance sheet. In particular, the introduction of IAS 19 implied that provisions had to be discounted using a market-consistent discount rate (which was low by historical standards) and that any unexpected movements in the value of assets are considered a loss (or gain). This in turn has led many to focus more on the way pension fund assets and liabilities can fluctuate on a short-term basis.

For insurance undertakings, the most important legislative change is the forthcoming new solvency regime, Solvency II, which is intended to establish a risk-based capital requirement. This will necessarily imply that, ceteris paribus, insurance companies with riskier profiles originating either from the asset or from the liability side of the balance sheet will be compelled to hold higher capital requirements.

Box 1: Increasing appetite for long-term and inflation-linked bonds

An essential aspect that insurance undertakings and pension funds take into consideration when setting up their investment policies is the selection of a set of assets able to generate high real returns but which are, simultaneously, well-suited to their particular liability profile. The need to adapt investment policies to, on one hand, crises of the financial markets and, on the other hand, a higher level of competition and product innovation, has fostered an enlargement of the array of asset classes under consideration by insurance undertakings and pension funds. Indeed, the coexistence of traditional asset classes such as bonds and equities with “new” asset classes such as structured products, absolute return funds, as well as long-term bonds and inflation-linked bonds is, nowadays, a common feature of investment portfolios.

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The characteristics of long-term bonds and inflation-linked bonds, the movements of financial markets and the recent and prospected legislative changes have led insurance undertakings and pension funds to increase their appetite for these assets, to publicly demonstrate their interest and to urge issuers to match the increasing demand. The increase in demand for these types of bonds has also been perceived by issuers as an opportunity for cheaper financing and, as a result, new public issuers have entered the market as well as, for the first time in history, private issuers.

The new issues have, naturally, led to a significant increase in the size of the market of global inflation-linked bonds. The outstanding value of these bonds doubled in less than 3 years reaching 570 billion euros by early 2005\textsuperscript{16}. By comparison to the global bond market including all maturities, the market for long-term bonds with maturities higher than 15 years is still small as the two largest markets, the Euro zone and the USA, represented, at the end of 2004, 553 and 371 billion euros, respectively\textsuperscript{17}. Nonetheless, the prospects for the long-term bonds market and the inflation-linked bonds market are positive. We should expect a significant growth in both markets in the medium to long term and for insurance undertakings and pension funds to be strong players in both.

\textsuperscript{16} Source: Barclays, various publications.

\textsuperscript{17} Barclays, various publications.
Box 2: Solvency II and portfolio reallocations by EU insurers

The Solvency II project – for which a draft Directive is expected by July 2007 and which is expected to be implemented by 2010 – will introduce a new solvency regime for the European insurance sector with an integrated risk approach replacing the underwriting-risk focused approach of the current framework. The Basel-type three pillar structure of the future EU solvency system will implement a combination of quantitative (rules for risk assessment and financial resources), qualitative (supervisory review process and risk management) and market discipline (disclosure and transparency) requirements expected to better take into account all risks facing insurers. Such requirements are expected to substantially enhance the risk management framework within the insurance industry, also by allowing the convergence of regulatory capital to economic capital estimation. It is evident that greater consistency across financial sectors, harmonisation of supervisory methods and prudential standards across EU countries, and an enhanced role for market discipline substantially and fundamentally enhance the overall resilience of the EU financial system. Notwithstanding such enhancements, the transition to a market-consistent valuation of assets and liabilities and the explicit quantification of risk interdependencies – together with their impact on the allocation of financial resources – may test some aspects of the industry’s resilience. This box aims at depicting the potential impact of Solvency II on the behaviour of EU insurers that may tangibly affect the financial system.

Preliminary results from QIS2 indicate that most insurers are currently adequately capitalised. However, the implications for certain undertakings may be significant as the transition may reveal previously hidden regulatory capital inadequacies. Owing to the transparency of the regulatory process and the ample time available until the implementation of the regime, it is unlikely that such particular instances will have an impact on the financial system.

Tentative industry analysis indicates a sizable impact on insurers’ products, investments and market structure. The combined assignment of risk capital to underwriting and investment risks is likely to weigh on the pricing and developments of certain products, such as those non-life products with above average loss volatilities (e.g. property covers or third party liability) or contracts with embedded options and guarantees offered in the life sector. Also, investments could experience a major impact as insurers weigh in their asset portfolio balance the relative risks of alternative investment strategies. Furthermore, the wider scope in acknowledging risk transfer instruments such as reinsurance, hedging and securitisation as a result of their recognition by supervisory authorities is likely to foster the overall risk management framework of the sector. Finally, when fully implemented, market-based valuation will impact on the scale of reserving and the risks pertaining to it, thus bringing reserving practice closer to market and risk-profile realities.

From a wider perspective, any possible rebalancing between investment assets and assets with more stable and predictable returns, could be expected to take place over a reasonable period of time, and is unlikely to have a significant effect on the market, also because differences across types of investors active in the market. As insurers would be managing their assets to more closely take account of the nature and characteristics of their liabilities, this would also render the insurance sector less fragile to abrupt market fluctuations, thus enhancing the overall resilience of the financial
system to shocks. There may also be an impact on the use of risk transfer instruments, as European insurers will need to manage carefully any net selling positions for credit protection instruments (see figure B1). The foreseen enlargement of eligible elements for regulatory capital, especially subordinated debt, may prove to be important for mutual insurers, some of which have already issued significant amounts of subordinated debt and hybrid capital (see figure B2).

The risk of market disruption in the EU will depend on the scale of portfolio shifts that may be needed to meet any possible capital increases required in the new solvency regime. Many insurers hold more capital than that currently required by the EU directive because they often aim at obtaining a certain credit rating, or because of stricter national regulations. The extent of reallocation of investment portfolios by EU insurers will depend on characteristics of the Solvency II project whose details have not been agreed upon yet, while individual strategies regarding capital funding may also prove determinant.

As a result, the potential impact on the financial sector of the future implementation of the Solvency II regime appears contained. Furthermore and given the spectrum of alternative funding solutions available to EU insurers potentially facing capital need, no concentrated shock is likely.
Table 1: Performance on the European stock markets

**percent change of indices quarter-on-quarter**

<table>
<thead>
<tr>
<th>Date</th>
<th>Life</th>
<th>Non-life</th>
<th>Reinsurance</th>
<th>Euro index</th>
</tr>
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<td></td>
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<td>13.12</td>
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<tr>
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<td>-2.65</td>
<td>-3.29</td>
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<tr>
<td>Q3 2006</td>
<td>8.37</td>
<td>8.66</td>
<td>16.94</td>
<td>7.37</td>
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<tr>
<td>Nov. 20</td>
<td>2.94</td>
<td>8.05</td>
<td>3.01</td>
<td>5.51</td>
</tr>
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</table>

**percent change of indices year-on-year**

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<tr>
<th>Date</th>
<th>Life</th>
<th>Non-life</th>
<th>Reinsurance</th>
<th>Euro index</th>
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<td>1.42</td>
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<td>-13.03</td>
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<td>38.81</td>
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source: Datastream
## Table 2 Maximum guaranteed rates life insurance

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<tbody>
<tr>
<td>AT</td>
<td>2.25% (from January 1, 2006)</td>
<td></td>
<td>2.75% (as of January 1, 2004)</td>
<td>3.25%</td>
<td>4.0% until July 1, 2000 3.0% until January 1, 1995</td>
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<tr>
<td>BE</td>
<td>unchanged</td>
<td>unchanged</td>
<td>unchanged</td>
<td>3.75%</td>
<td>3.75%</td>
<td>4.75% until January 1, 1999</td>
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<td>DE</td>
<td>unchanged (reduction to 2.25% as of 1/1/2007)</td>
<td>unchanged</td>
<td>unchanged</td>
<td>2.75% (as of 1/1 2004)</td>
<td>3.25%</td>
<td>4.0% until July 1, 2000 3.5% until July 1, 1994</td>
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<td>unchanged</td>
<td>unchanged</td>
<td>unchanged</td>
<td>2.0%</td>
<td>2.0%</td>
<td>5.0% until July 1, 1994 3.0% until January 1, 1999</td>
</tr>
<tr>
<td>ES</td>
<td>2.42%</td>
<td>2.42%</td>
<td>2.42%</td>
<td>2.68% (from 1/1/2004)</td>
<td>3.15%</td>
<td>4.0% until June 21, 1997</td>
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<td>FI</td>
<td>unchanged</td>
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<td>unchanged</td>
<td>2.5%</td>
<td>3.5%</td>
<td>4.5% until January 1, 1999</td>
</tr>
<tr>
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<td>Lt: 2% St: 2.5%</td>
<td>Lt: 2.25% St: 3%</td>
<td>Lt: 2.5% St: 3%</td>
<td>Lt: 3% St: 3.75% (until January 1, 1998)</td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>2.9% (from 1/4/06)</td>
<td>4.0%</td>
<td>4.0%</td>
<td>4.0% (as of 1/1 2002)</td>
<td>5.5%</td>
<td>5.5% (from Jan 1997)</td>
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<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
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<td>IT</td>
<td>2% (from January 1, 2006)</td>
<td>unchanged</td>
<td>unchanged</td>
<td>2.5% (from December 1, 2003)</td>
<td>3.0%</td>
<td>3% (from 1/7/1998) 2.5% (from 1/9/1999) 3% (from 1/5/2000)</td>
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<td>LT</td>
<td>2.16</td>
<td>2.25%</td>
<td>2.64%</td>
<td>2.99%</td>
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<td></td>
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<td>LU</td>
<td>2.25% (from 1 April 2005)</td>
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<td>2.75%</td>
<td>3.75% before 1998</td>
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<td>4.0% before 1998</td>
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<td>3.0% for new premium income, 1/1 2004</td>
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<td>4.0% until November 1993</td>
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<td>unchanged</td>
<td>4.0%</td>
<td>4.0%</td>
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<td>SE</td>
<td>unchanged</td>
<td>2.75% (for new business), 3.0-3.25 for existing portfolio</td>
<td>3.0%</td>
<td>3.0%</td>
<td>4.0% before 1998</td>
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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.

**Lituanian** 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 (there are some exceptions related to matched portfolios):

- 1998: 3.20%, 2003: 2.89%
- 1999: 3.15%, 2004: 2.68%
- 2000: 3.15%, 2005: 2.42%
- 2001: 3.11%, 2006: 2.42%

**Sweden** Maximum guaranteed rates: February 2005 2.75% (for new business from March 1 2005, for older business 3.0 - 3.25%).


Annex – Scope of CEIOPS’ pension fund data

**Austria:**
Data includes all occupational pension contributions to Pension Companies covered by the Austrian "Pensionskassen Act". The Pillar 2 provisions are not compulsory. Contributions cover about 11% of the working population.

**Belgium:**
Pension fund statistics relate to institutions for occupational retirement provisions, i.e. occupational pension funds and so called "pensioenkassen" for the self-employed.

**Denmark:**
Data on general pension funds are included in CEIOPS' statistical framework for the insurance sector.

**Finland:**
Data includes also statutory pension schemes operated by individual companies/foundations/funds. Volumes of occupational pensions by directive 2003/41/EC are only about 10% of total figures.

**Germany:**
In Germany, there are five different types of implementing occupational pensions:
- Direktzusage (book reserves)
- Unterstützungskassen (support funds)
- Direktversicherung (direct insurance)
- Pensionskassen (pension institutions)
- Pensionsfonds (pension funds).
The pension fund statistics relate to Pensionskassen and Pensionsfonds.

**Italy:**
Data cover autonomous pension funds instituted both as independent legal entities (contractual pension funds) and as pools of segregated assets (open pension funds) set and managed by financial intermediaries. Data do not include book reserve schemes.

**Luxemburg:**
All the pension funds under supervision of the CAA are up to today defined benefit pension plans, financed by the aggregate cost method.

**The Netherlands:**
Pension fund statistics relate to all pillar 2 institutions for occupational retirement provisions.

**Norway:**
Pension fund statistics relate to institutions for occupational pensions (so-called "pensjonskasser"), and cover both private and municipal pension funds.

**Poland:**
Occupational pension schemes operated in Poland cover:
- occupational pension fund
- agreements with life insurance companies
- agreements with investment fund companies
- foreign management companies
All information included in the pension funds statistics relates only to occupational pension funds. The activity of the occupational pension funds in Poland is based on similar regulations as the open investment funds.

**Portugal:**
Data include all occupational pension schemes including funds from the banking and telecommunication sectors established through collective agreements.

**Slovakia:**
No data was reported for 2003 and 2004 as recent pension system reforms have introduced mandatory funded occupational pensions as of January 2005.

**Spain:**
All the data relates only to occupational pension funds (by Directive 2003/41/EC) which account for about 40% of the total pension fund sector. In addition, there are also individual and associated pension funds operated in Spain.

**Sweden:**
The Swedish pension fund statistics refers to a special form of “friendly societies” and accounts for less than 10% of the overall non-state related occupational pensions. The remaining occupational pensions are almost entirely covered by life insurance companies.
### Abbreviations

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Statistical Annex (SA) (see icons below)

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