5. Risk assessment

This chapter aims to assess those risks which were identified in the first chapter and further elaborated in the next parts on insurance, reinsurance and occupational pensions.

5.1. Qualitative risk assessment

Qualitative risk assessment is an important part of the overall financial stability framework. EIOPA conducts regular bottom-up surveys among national supervisors to rank the key risks to financial stability for the insurance, as well as for the occupational pension sector. This chapter summarizes the main findings revealed from the survey.

Figure A Risk assessment for the insurance sector

Figure B Risk assessment for the pension funds sector

Source: EIOPA
Note: Risks are ranked according to probability of materialisation (from 1 indicating low probability to 4 indicating high probability) and the impact (1 indicating low impact and 4 indicating high impact). The figure shows the aggregation (i.e. probability times impact) of the average scores assigned to each risk.

Figure C Supervisory risk assessment for insurance and pension funds – expected future development

Source: EIOPA
Note: EIOPA members indicated, for each risk, their expectation for the future development of these risks. Scores were provided in the range -2 indicating considerable decrease and +2 indicating considerable increase.
Macro risks and risks from low interest rates

The survey confirmed that risks stemming from a prolonged period of low interest rates are the most important risks that the insurance and pension funds sectors are currently facing. These risks have been identified as highest both in terms of probability of materialisation and in terms of impact (see Figure A and B on the previous page). Although the continued period of low interest rates is challenging for life insurers who struggle to design profitable products that consumers want at an affordable price, non-life companies are also exposed to interest rate risk.

Slight increases in high-rated long term government bond yields can be observed, but the rates are still at historically low levels. As noted in Chapter 1, recent slight increases in European SWAP rates may signal the bottoming-out of interest rates. However, persisting low inflation in the Eurozone prompted the European Central Bank (ECB) recently to further cut their policy rate to the historical minimum (0.25%) and it is expected to be maintained at a very low level. So-called forward guidance by central banks such as The Bank of England, which promises to maintain a highly stimulatory stance of monetary policy until economic slack has been substantially reduced, reinforce the expectation that rates will not rise in the short term. However, in line with the slightly improved macroeconomic sentiment, the survey indicates a small decline in this risk (as seen in Figure C) in the coming 3 to 6 months.

Risks stemming from the low interest rate environment are closely linked to general macro risks, as low policy rates are a response to weak macroeconomic conditions. A deteriorating business cycle has a negative impact on insurance and pension fund business, e.g. via lower demand, higher lapse rates in insurance, higher occurrence of insurance fraud and lower asset prices. Even though there are some signs of improvement in economic conditions, the survey points out the high level of uncertainty regarding the economic outlook. It reveals decreases in life insurance premiums as tax increases, increased competition and reduced household income make policyholders more sensitive to premiums rates.

Macro risks are also important in the pension fund sector. As economic activity declines and in some cases tight fiscal policies restrict economic activity, unemployment increases and discretionary income available for long term saving declines. Moreover, the trend of defined benefit plans being closed and replaced by defined contribution plans continues in several jurisdictions (as noted in the Spring Financial Stability Report 2013).

Developments outside the EU impact macro risks as some insurers operate globally. For instance, in the past months, many European countries have experienced an improvement in local bond and equity markets, while new tensions have risen as a consequence of international developments such as the uncertainty surrounding US fiscal policy. As European insurers continue to
search for growth opportunities outside Europe, developments in emerging markets will increasingly affect the stability of the European insurance market.

**Credit risks**

**Credit risks from exposures towards sovereigns and financial institutions remain key risks for the insurance and pension fund sectors.** Although the survey suggests that these risks have decreased slightly as credit spreads and CDS spreads have declined, lower spreads may partly be an artefact of excess liquidity. This would raise the risk of a future reassessment of risk premia. As a result, even if near-term risks to the EU financial system have generally abated since the Spring 2013 survey, the exposures of insurers to sovereign risk and towards the financial sector continue to be closely monitored.

**In the eurozone, improved conditions have particularly been noted by authorities in countries which experienced dramatically elevated sovereign yields over the last years.** In several non-eurozone countries not affected by extensive sovereign downgrades, sovereign credit risk is considered less of a concern. Locally denominated liabilities are generally backed by investments in local government bonds. Some insurers, however, are also exposed to sovereign debt issued by another country, often US treasury bonds. The recent uncertainty in the US regarding the debt ceiling therefore raises concerns as any downgrade would have negative price effects.

**Overall, credit risk from the financial sector is also seen to be somewhat reduced.** This is partly due to liquidity support by the ECB to the banking sector, which has affected credit spreads. Although exposure to the financial sector is lower than sovereign exposure, financial bonds do account for a considerable share of insurers investments. In this context, it is also important to consider the sovereign-bank link which clearly shows that exposures to these sectors individually may be correlated to a certain extent. The planned asset-quality review to be carried out by the ECB may shed further clarity on the potential for hidden losses, and help insurers more accurately assess the credit quality of their portfolio.

**Credit risk from the corporate non-financial sector is seen as less of a concern due to its smaller share in insurers’ investments.** However, low returns on higher-rated government debt have contributed to increasing flows into corporate debt markets. Yields and spreads have witnessed a compression, raising concerns about a potential under-pricing of risk and the possibility of a subsequent re-assessment of the risk premia demanded by investors. Moreover, some insurers invest in corporate bonds issued by foreign corporates and would therefore be exposed to related credit risk and in some cases to unhedged foreign exchange rate risks as well.

**Equity risks**

**Equity risks are ranked much higher in the pension sector than in the insurance sector.** The reason for the higher risk ranking for pension funds is
the relatively high equity exposure of many pension funds. High equity holdings increase the effect any materialisation of this risk might have on the local market. For instance, pension funds in some European markets may have significant share of their portfolios in equity – although this figure hides a very large variation among countries. Overall, however, the survey results indicate that recent growth in equity prices may not have been matched by similar improvements in economic fundamentals, increasing the risk of negative corrections over the next 3 to 6 months. Top-down stress tests on equity are seen as a useful tool to monitor this risk to pension funds’ balance sheets.

The survey suggests that the equity exposures of insurers remain low. The potential impact of equity price falls is therefore often more limited. However, external factors such as changes in central bank quantitative easing programs and slower growth in emerging markets could have a negative impact on equity prices. Moreover, variable annuity (VA) writers are exposed to risks stemming from volatility in equity returns in generating guaranteed rates of return, as well as significant hedging costs.

Other risks
Overall liquidity risks are seen to be increasing, but remain a non-critical risk in both sectors. The survey points out that liquidity risks are fairly low as investment portfolios are generally highly liquid. However, some insurers hold investments that are not actively traded, which could limit their ability to quickly obtain cash. Moreover, it is possible that a lapse shock would force an insurer to sell assets below book value. An overall decrease in the use of liquidity swaps has also been observed, implying that some insurers are keeping more liquid assets on their own books.

Severe property price falls would impact insurers through mortgage loan exposure, and importantly, also through the banking sector. The risk score assigned in the EIOPA surveys to a property price correction is far lower than for equity because property only accounts for a very small share of insurers’ and pension funds’ investments. Some markets have already experienced dramatic falls in property prices. Moreover, in some countries, investment in property by pension funds is not allowed by local legislation. However, as the banking sector is generally highly sensitive to property price falls due to the large share of mortgages and loans on the asset side of their balance sheet, the indirect exposure to property is many times what the direct exposure may seem to be. Furthermore, some national authorities report that the interest from insurance companies in this investment category is growing.
5.2. Quantitative risk assessment

The quantitative financial stability framework for the insurance sector aims to identify and quantify the relevant transmission channels through which adverse macroeconomic scenarios are transferred to insurance companies’ balance sheet and profit and loss accounts. Gross written premiums and lapse rates are among key insurance variables highly correlated with the macroeconomic environment.

**Growth in gross written premiums is more sensitive to changes in economic activity in life than in non-life insurance.** Measured by simple co-movements, the correlation between growth in gross written premiums and gross domestic product is 1 in the life sector, compared to 0.85 in nonlife. Based on the current literature, there is some empirical evidence of growth of the insurance market being strongly connected with economic growth. However, economic growth is not the only macroeconomic variable that explains changes in premium growth.

Based on aggregate European data on premiums growth, it is possible to estimate a simple regression which suggests that contemporaneous GDP growth, lagged change in unemployment rate as well as gross written premium growth in the previous periods could explain contemporaneous gross written premium growth. However, the intensity of those links differs for life and non-life insurance. Box 3 summarizes the results of the estimated model for life and non-life insurance.

**Box 3: Macroeconomic modelling of growth in gross written premiums**

Annual models for growth in gross written premiums (GWP) for life and non-life insurance were estimated using panel regression techniques on the sample of 23 countries. Interest rates, unemployment rates, GDP and stock market indexes were considered as potential explanatory variables. Our empirical analyses point out the high persistence of GWP growth for both life and non-life insurance. Hence, dynamic panel regression with fixed effects using the Generalized Method of Moments (GMM) was employed. This approach is able to deal with endogeneity problem and provide unbiased and consistent estimates even though the dataset

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1 The quantitative assessment is based on aggregate data from 23 European countries from 2005 to 2012. The insurance data is published on EIOPAs website.


only spans an 8-year period. Moreover, cross-section weights were employed to control for the presence of cross-section heteroskedasticity.

The empirical analyses reveal that GWP up to three lags, contemporaneous nominal GDP and two year lagged unemployment rate (UNEMPL) have potential to explain contemporaneous GWP growth. Other variables do not contribute to the overall performance of the models. However, the estimated coefficients differ for the life and nonlife insurance sector. While unemployment seems to be the key driver of insurance premium growth for life insurance, its importance in non-life insurance is significantly lower.

Table 4: Models for gross written premium growth for life and non-life insurance

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>GWP_life</th>
<th>GWP_nonlife</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.018***</td>
<td>0.030***</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>GWP_life(-1)</td>
<td>-0.555***</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>(0.055)</td>
<td></td>
</tr>
<tr>
<td>GWP_life(-2)</td>
<td>-0.479***</td>
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</tr>
<tr>
<td></td>
<td>(0.047)</td>
<td></td>
</tr>
<tr>
<td>GWP_life(-3)</td>
<td>-0.295***</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>(0.039)</td>
<td></td>
</tr>
<tr>
<td>GWP_nonlife(-1)</td>
<td>---</td>
<td>-0.198***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.065)</td>
</tr>
<tr>
<td>GWP_nonlife(-2)</td>
<td>---</td>
<td>-0.300***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.062)</td>
</tr>
<tr>
<td>GWP_nonlife(-3)</td>
<td>---</td>
<td>-0.178***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.057)</td>
</tr>
<tr>
<td>GDP(0)</td>
<td>0.543***</td>
<td>0.533***</td>
</tr>
<tr>
<td></td>
<td>(0.140)</td>
<td>(0.128)</td>
</tr>
<tr>
<td>UNEMPL(-2)</td>
<td>-2.443***</td>
<td>-1.778***</td>
</tr>
<tr>
<td></td>
<td>(0.461)</td>
<td>(0.461)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.767</td>
<td>0.719</td>
</tr>
<tr>
<td>Adj. R-squared</td>
<td>0.670</td>
<td>0.600</td>
</tr>
</tbody>
</table>

Source: EIOPA calculations.
Note: Standards error of the respective coefficients are presented in parentheses, stars represent coefficients’ significance (<1% ***, <5% **, <10%*), only the variables significant at least at 10% level were included into the final model.

Logarithmic transformation was applied to all variables employed in the two models except unemployment. Then, first differences were applied to all transformed variables to ensure their stationarity. GWP variables as well as nominal GDP represent growth rate, UNEMPL express change in unemployment rate in both models.

*While market growth in life insurance will be negatively affected by current high unemployment in the next three years, non-life insurance might already benefit from gradual economic recovery.* (see Figure 27) This is due to e.g. compulsory insurance products for non-life business such as
car and accident insurance, whilst policyholders become more reluctant to enter long-term contracts in this weak economic environment on the life side. If interest rates rise again, the effect on life insurance companies could be even more harmful if life insurance products become unattractive in comparison to new available products combining life, pension or savings components. Life insurers could be exposed to a large number of policyholders exercising embedded surrender options, forcing insurer to liquidate their fixed income holdings. The rise in interest rates would then correlate to a sharp decline in the value of these assets which could hence force companies to realise large capital losses. Although the development in the economic environment is expected to be in line with the projections presented here, there is a risk of a much more pronounced decline in life insurance and weaker recovery in nonlife insurance if a double dip scenario materialises as described above. Changes in the tax regimes which have occurred in some European countries might have further significant effect on the future growth in premiums which is not captured by the projection.

![Figure 27 GWP projection for Eurozone](image)

Source: EIOPA and ECB survey of professional forecasters
Note: Dashed lines represent projection using macro scenario based on ECB SPF.

**The macroeconomic environment determines lapse rates development.**
EIOPA is currently working on quantifying the relationship between lapse rates and economic conditions. This work is at an early stage but preliminary findings indicate a positive link between lapse rates, the change in unemployment and
the level of interest rates.\textsuperscript{3} This suggests that the recent significant rise of unemployment would exert upward pressure on lapse rates, while the low yield environment would have an opposite, mitigating impact. Although GDP has been shown to be a key determinant in some studies focusing on particular countries and segments\textsuperscript{4}, the preliminary analysis conducted on the European level suggests tentatively that unemployment might better explain lapse rate development. However, the EIOPA empirical findings also show that there are important country differences and GDP growth rate can still contribute to explain average lapse rates in the insurance sector in some countries.\textsuperscript{5} It further reveals seasonality with the strongest positive impact on lapse rates in the beginning of a year and lowest in the end. This work will be presented in more detail when it is further developed.

5.3. Conclusion

Although the situation varies between countries, the quantitative and qualitative risk assessments have confirmed the challenging environment in which insurers throughout Europe operate.

\textit{The low yields and the weak macroeconomic environment continue to weigh negatively on the results of insurance companies as well as pension funds.} This has been clearly confirmed by the regularly conducted EIOPA bottom-up surveys among national supervisors as well as by the quantitative analyses which has shown the high sensitivity of gross written premiums and lapse rates to macroeconomic indicators as GDP, unemployment and interest rates. The EIOPA quantitative analysis further reveals that while non-life insurance growth is more robust benefiting from more stable demand, in part due to compulsory business lines, life insurance growth is more sensitive to change in the macroeconomic environment.

\textit{At the same time, overall risks have come down somewhat since the previous Financial Stability Report, and further improvement may occur in the coming six months.} This assessment is based mainly on the emerging indications that growth will return to the eurozone in the coming months and that the deep recession following the financial crisis in 2007 and 2008 might be losing its grip. A slight upward movement of swap rates has been observed and predictions for growth are positive, although only marginally. Moreover, the EIOPA bottom-up survey reveals that credit risks have fallen somewhat, in line with reduced credit spreads on large parts of insurers portfolios. Finally, EIOPAs

\textsuperscript{3} The analysis was conducted using a pool logistic regression with country dummies to account for cross section heterogeneity.

\textsuperscript{4} See e.g. Kiesenbauer D.(2011): "Main determinants of lapse in the German life insurance industry", the University of Ulm, Preprint Series: 2011-03.

\textsuperscript{5} GDP growth rate was significant only when interacted with country dummy for Germany.
quantitative financial stability framework predicts positive growth both in life and non-life gross written premiums in 2013 and 2014, in line with generally improved market conditions.

**However, any observed improvements are very slight and the potential recovery is extremely vulnerable.** Loss of confidence in the financial sector due to the lack of the reform progress or political uncertainty can easily lead to a spread-reversal. Moreover, the persistent low inflation is likely to keep short-term interest rates only marginally positive in the coming months. Finally, EIOPA’s quantitative framework clearly shows that premium growth in life insurance would be hit strongly under any adverse macroeconomic scenario (see coefficients for GDP and unemployment in Box 3).

At the end of 2013, therefore, low interest rates continue to threaten the profitability and sometimes the business model of many insurers, but also affect the economic growth which seems to be still fragile. If growth becomes more firmly anchored in the next six months, the insurance sector will benefit and risks to financial stability will decline.