EIOPA-FS-14-034

12 March 2014

EIOPA Risk Dashboard – Background note

Executive Summary

EIOPA publishes a Risk Dashboard on a quarterly basis, in accordance with its obligations under the EIOPA Regulation[1] and following a framework determined in cooperation with the other ESAs, the ESRB and the ECB.

The Risk Dashboard is based on mechanical aggregation of indicators and additional expert judgment if deemed necessary. Besides publicly available market data, extensive use is made of company data which is reported by 32 large and important insurance groups from the EEA and Switzerland under EIOPA's quarterly fast-track reporting.

Within the common structure agreed upon by the ESAs, the ESRB and the ECB, the Risk Dashboard is designed to be flexible, so EIOPA can react quickly to upcoming risks which are deemed necessary to be covered.

EIOPA expects the Dashboard to gradually evolve further, taking feedback by the addressees of this product into account.

Context

As part of the new European legislation, EIOPA as well as the other ESAs and the ESRB are called upon to "*develop a common set of quantitative and qualitative indicators (risk dashboard) to identify and measure systemic risk*". The legislation further stipulates that these dashboards should be constructed in cooperation between the ESAs and ESRB. In response to this requirement, the ESAs, together with the ESRB and the ECB have determined a set of general features for all dashboards to follow:

- Each risk dashboard will be constructed based on the same set of risk categories: macro risk, credit risk, market risk, funding and liquidity risk, profitability and solvency risk and risks resulting from interlinkages and imbalances. Furthermore, each institution has the option to add categories to allow for sector specific risks (e.g. insurance risk).

[1] EIOPA Regulation Art 22.2; ESRB Regulation Art. 3.2(g)

- It was noted that all Risk Dashboards should be constructed on a flexible basis in order to allow each authority to reflect the most imminent risks identified.
- Further development and implementation of the Risk Dashboards should be taken forward individually by each of the authorities concerned. However, the ESAs and ESRB should continue to work together closely in this regard to ensure interplay regarding the underlying information presented e.g. consistency when the same indicator is used in different Risk Dashboards.

Approach

Work on the EIOPA Risk Dashboard has since been brought forward by the Financial Stability Committee of EIOPA. In defining the methodology for the Risk Dashboard, the Committee has considered the approach taken by other institutions in the field of risk assessment, for instance by the IMF[2]. The Risk Dashboard has been created to give a structured view of risks to the insurance sector and the environment in which it operates, in order to facilitate a regular assessment of these risks and possible mitigating policy actions. In creating it, care has been taken to keep the dashboard as concise, forward-looking and flexible as possible. Furthermore, it is worth noting that the dashboard is designed as a high-level tool showing the most relevant trends and risks on a macro level. As significant differences between individual institutions exist, the findings presented are not always applicable to all EU insurers.

Methodology

Indicators

A set of currently 40 quantitative indicators[3] forms the basis of the risk assessment presented. These indicators, which signal potential risks and vulnerabilities for the European insurance sector as well as its resilience, are generated using both supervisory and publicly available data. This data is used – and in some cases combined – as the basis of the risk assessment for each indicator. Given that the distribution of risks and vulnerabilities is at least as important as its central tendency, the risk indicators are, where possible, assessed by taking both the median and outliers (e.g. 10^{th} or 90^{th} percentiles) of the underlying sample into account. Based on this information an initial risk score for each indicator is derived. These scores basically serve as proxies when combining various risk indicators to an assessment for the overarching risk category.

Nevertheless, it is important to stress that even by including the outliers of the sample of reporting groups into account in the analysis, no direct conclusions can be drawn on the heterogeneity of risk profiles across EU member states. Specifically, in times of stress the dispersion of many indicators tends to increase as some companies, groups or countries perform better than others.

[2] Dattels et al (2010). Can You Map Global Financial Stability? IMF working paper WP/10/145

[3] See Annex 1

Risk categories

The indicators are mapped to aggregated categories of (1) macro risk, (2) credit risk, (3) market risk, (4) funding & liquidity risk, (5) profitability & solvency, (6) interlinkages & imbalances and (7) insurance risk. Based on the individual risk scores for each underlying indicator an aggregated risk score for each category is generated by either

- an unweighted average (for categories 4, 6 and 7);
- a weighted average referring to a long-term average of actual portfolio holdings (for categories 2 and 3);
- a sub-aggregation within some indicators of a risk category and an aggregation of these "sub-risk scores" by using the simple average
    - for category 1 with a split in (1a) real-economy risks and (1b) the riskiness of the insurance sector as perceived by financial market participants,
    - for category 3 with a split in (3a) asset side risks and (3b) ALM matching risks,
    - for category 5 with a split in (5a) life business, (5b) non-life business and (5c) total business.

For a quick and comprehensive interpretation the overall risk score are visualized through four color codes in the Risk Dashboard. Quarterly changes are represented through arrows.

Risk assessment

The mechanically estimated risk scores per category form the basis of the risk assessment in the Risk Dashboard. These scores are complemented by other information available on risks, e.g. from stress test results, topical risk analyses or other available data. If necessary, this information is used to adjust the scores. This way, it is ensured that all available information is used for the risk assessment and the most complete picture is generated. However, decisions to change the mechanically aggregated scores (i.e. expert judgment) are documented to ensure transparency of this process. To ensure flexibility, the Risk Dashboard contains space to elaborate further on the most prominent risks in a 'user-defined' non-mechanical way. Additional dimensions of each risk (e.g. the potential impact as well as timing aspects) have been derived partially on expert judgment as well.

Expert judgment

Expert judgment is considered crucial for complementing or substituting the mechanical process of the risk assessments and for making forward-looking statements about the expected evolution of risks. The process for adjusting the initial risk scores (both upward and downward adjustment) by expert judgment is intended to be transparent and used consistently over time. Any uncertainty in the assessment and/or element of judgment that will influence the final assessment, such as risk mitigating factors will be made explicit and will be documented. The transparency and documentation requirements should ensure a sufficient level of confidence in the expert judgment. This confidence in expert

judgment is important in order to produce credible risk assessments. This confidence should be further maintained by tracking the adjusted assessments against actual experience or new information that becomes available. Such "reality checking" is especially important where the expert judgment leads to significant deviations from the mechanical assessment or where it has a material impact on the overall assessment output.

Data sources

Data for the Risk Dashboard is obtained from both public sources (market data) and the quarterly supervisory reporting of 32 large European insurance groups to EIOPA (fast-track reporting)[4]. The reporting entities report on a best efforts basis, so that not all groups supply data for all indicators. Data availability for Risk Dashboard purposes is expected to improve substantially with the introduction of Solvency II reporting.

Indicators used

Macro risk

As macro risks are obviously the major domain of the ESRB's Risk Dashboard[5], EIOPA's contribution focuses mainly on insurance-linked aspects. Besides consensus forecasts of GDP growth, development of consumer prices and unemployment rates, this section therefore encompasses the financial markets' perception of the healthiness and profitability of the European insurance sector. For this purpose, relative stock market performances of European insurance indices against the total market are assessed, as well as fundamental valuations of insurance stocks (price/earnings ratio, price/book-value ratio), CDS spreads and ratings/rating outlooks.

Market risk

Market risk is, for most asset classes, assessed by analysing both the investment exposure of the insurance sector and an underlying risk metric. The holdings give a picture of the vulnerability of the sector to adverse developments; the risk metric gives a picture of the current level of riskiness. For equity investments, the relevant risk metrics are the implied volatility as a short-term indicator and the price/book-value ratio as medium-term indicator. Also for property investments the valuation comes in as a risk metric, via the current yield of commercial real estate investments. In addition, the current level of long-term interest rates and some asset-liability matching indicators are assessed, e.g. by comparing the duration of the bond portfolio (including the effect of derivative holdings) with the duration of technical provisions. The difference between guaranteed interest rates and investment returns completes the assessment in this risk category.

Credit risk

[4] See Annex 2
[5] See www.esrb.europa.eu

For measuring credit risk the holdings of credit asset classes are combined with risk metrics applicable for these asset classes. For instance, the holdings of government securities are combined with the credit spreads on European sovereigns. Such indicators are also constructed for the holdings of bank bonds (secured and unsecured) and non-financial corporate bonds.

Liquidity and funding risk

Generally speaking, insurers are less prone to liquidity risk than banks. As indicators, the lapse rate of the life insurance sector has been used with a high lapse rate signaling a potential risk. Furthermore, holdings of cash & deposits are used as a measure of the liquidity buffer available, both in absolute terms and as a share of less liquid assets. The last indicator used is the issuance of catastrophe bonds, where a very low volume of issuance and/or high spreads signal a reduction in demand which could form a risk.

Profitability and Solvency

Nine risk indicators were considered in the determination of the risk score for this category. While the return on equity provides an overall assessment of the profitability in the whole sector, a more detailed breakdown of profitability trends is available by analysing the combined ratio and the return to premiums for non-life business and the return on assets for life insurers. Solvency ratios for both life and non-life insurers complete the picture in this risk category as well as the year-on-year change in capital&reserves.

Interlinkages and Imbalances

Under this section various kinds of interlinkages are assessed, both within the insurance sector, namely between primary insurers and reinsurers, between the insurance sector and the banking sector, as well as via derivative holdings. In addition, as an indicator on imbalances the debt/equity ratio of the insurance sector has been included.

Insurance Risks

As indicators for insurance risks gross written premiums of both life and non-life business are an important input. Both significant expansion and contraction are taken as indicators of risks in the sector; the former due to concerns over sustainability and the latter as an indicator of widespread contraction of insurance markets. Premiums are also analysed in comparison to insurers' capital&reserves (insurance leverage). Information on insurance losses due to natural catastrophes rounds up this risk category.

Annex 1: List of indicators used

#	Indicator	Methodology	Risk metric (if applicable)
Macro Risks			
1.1	GDP consensus forecast	Forecasted YoY growth for Eurozone, US, UK, Switzerland, BRICS (average of next 4 quarters); source: Bloomberg	--
1.2	CPI consensus forecast	Forecasted YoY growth for Eurozone, US, UK, Switzerland, BRICS (average of next 4 quarters) ; source: Bloomberg	--
1.3	Unemployment rate	Current rate in EU-27; source: Eurostat	--
1.4	Outperformance insurance stocks	3-months-performance of Stoxx insurance index minus 3-months-performance of Stoxx 600	--
1.5	Price/earnings ratio insurance stocks	Median and 90th percentile for a sample of 26 European insurers; source: Bloomberg	--
1.6	Price/book value ratio insurance stocks	Median and 90th percentile for a sample of 26 European insurers; source: Bloomberg	--
1.7	Ratings insurance companies	Median and 90th percentile for a sample of 29 European insurers; source: Standard&Poor's, Bloomberg	--
1.8	Rating outlooks insurance companies	(Number of negative outlooks – number of positive outlooks) / number of all outlooks for a sample of 29 European insurers; source: Standard&Poor's, Bloomberg	--
1.9	CDS spreads insurance companies	Median and 90th percentile for a sample of 16 European insurers; source: Bloomberg	--
Credit Risks			
2.1	Government bonds	Government bonds to total assets (each excluding unit-linked business); median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	Sovereign CDS spreads Western Europe (SovX); 20-day average; source: Bloomberg
2.2	Financial bonds – unsecured	Financial bonds (unsecured) to total assets (each excluding unit-linked business); median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	European financials CDS spreads (itraxx Financials); 20-day average; source: Datastream
2.3	Financial bonds – secured	Financial bonds (secured) to total assets (each excluding unit-linked business); median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	European financials covered bond spreads (iboxx Covered, 7-10Y); 20-day average; source:

			Datastream
2.4	Corporate bonds	Non-financial corporate bonds to total assets (each excluding unit-linked business); median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	European corporate bond spreads; 20-day average; source: Datastream
Market Risks			
3.1	Long-term interest rates	10-year swap rates for EUR, GBP and CHF	--
3.2	Equity exposure	Equity investments to total assets (each excluding unit-linked business); median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	Implied volatility (VSTOXX); price/book value ratio of Stoxx 600; source: Bloomberg
3.3	Property exposure	Property investments to total assets (each excluding unit-linked business); median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	Rental yield of European commercial real estate (offices and retail); source: IPD, Bloomberg
3.4	Duration mismatch	Duration of bond portfolio (incl. derivatives) to duration of technical provisions; median, 10th percentile, 90th percentile; source: EIOPA Quarterly Fast-track Reporting	--
3.5	Guaranteed interest rate (life business)	Difference between guaranteed interest rates and investment returns; median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	--
Liquidity and Funding			
4.1	Lapses/surrenders (life business)	Median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	--
4.2	Cash holdings	Cash&deposits to total assets (each excluding unit-linked business); median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	--
4.3	Liquid assets to less liquid assets	(Cash&deposits) to (property + alternative funds + loans& mortgages + structured finance) (each excluding unit-linked business); median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	--
4.4	Issuance of CAT bonds	Issued volume in current quarter to 4-quarter average; issued volume to announced volume; spread at issuance in current quarter to 4-quarter average; source: Bloomberg, artemis.bm, Standard&Poor's	--
Profitability and Solvency			
5.1	Solvency ratio (life business)	Available solvency capital to required solvency capital (life business); median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	--

5.2	Return on assets (life business)	Median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	--
5.3	Solvency ratio (non-life business)	Available solvency capital to required solvency capital (non-life business); median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	--
5.4	Return to premiums (non-life business)	Median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	
5.5	Combined ratio (non-life business)	Median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	--
5.6	Solvency ratio	Available solvency capital to required solvency capital (all business); median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	
5.7	Return on equity	Median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	--
5.8	Investment returns	Median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	--
5.9	Change in capital&reserves	YoY change, median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	
Interlinkages and Imbalances			
6.1	Financial bonds – unsecured	Financial bonds (unsecured) to total assets (each excluding unit-linked business); median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	European financials CDS spreads (itraxx Financials); 20-day average; source: Datastream
6.2	Financial bonds – secured	Financial bonds (secured) to total assets (each excluding unit-linked business); median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	European financials covered bond spreads (iboxx Covered, 7-10Y); 20-day average; source: Datastream
6.3	Derivative holdings	Derivatives to total assets (each excluding unit-linked business); median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	--
6.4	Retention rate	Net written premiums to gross written premiums; median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	--
6.5	Insurers' indebtedness	Capital&reserves to total assets (excluding unit-linked business); median and 10th percentile; source: EIOPA Quarterly Fast-track Reporting	--
Insurance Risks			
7.1	Premium growth (life business)	Median YoY growth of gross written premiums (life business); source: EIOPA Quarterly Fast-track Reporting	--
7.2	Premium growth (non-life business)	Median YoY growth of gross written premiums (non-life business); source: EIOPA Quarterly Fast-track	--

		Reporting	
7.3	Insurance leverage	Net premiums written to capital&reserves; median and 90th percentile; source: EIOPA Quarterly Fast-track Reporting	--
7.4	Natural catastrophe losses	Loss rates due to natural catastrophes; source: Munich Re	--

Annex 2: List of groups reporting quarterly fast-track data

	Jurisdiction	Insurer
1	NL	Achmea (Eureko group)
2	NL	AEGON
3	BE	AGEAS
4	DE	Allianz
5	UK	Aviva
6	FR	AXA
7	FR	BNP Paribas
8	ES	Grupo CATALANA OCCIDENTE
9	FR	CNP Assurances
10	UK	Royal Bank of Scotland Group
11	IT	Generali
12	FR	Groupama
13	FR	Groupe Credit Agricole Assurances
14	DE	HDI/Talanx
15	SE	IF P&C Insurance
16	NL	ING Groep
17	BE	KBC
18	UK	Legal & General Group plc
19	ES	Mapfre S.A.
20	DE	Munich Re
21	UK	Old Mutual plc
22	UK	Prudential
23	UK	Royal Sun Alliance
24	FR	SCOR
25	UK	Lloyds HBOS and Scottish Widows .
26	CH	Swiss Re
27	CH	Swiss Life
28	UK	The Standard Life Assurance Company
29	IT	Unipol
30	AT	UNIQA Insurance Group
31	AT	Vienna Insurance Group
32	CH	Zurich Insurance Group