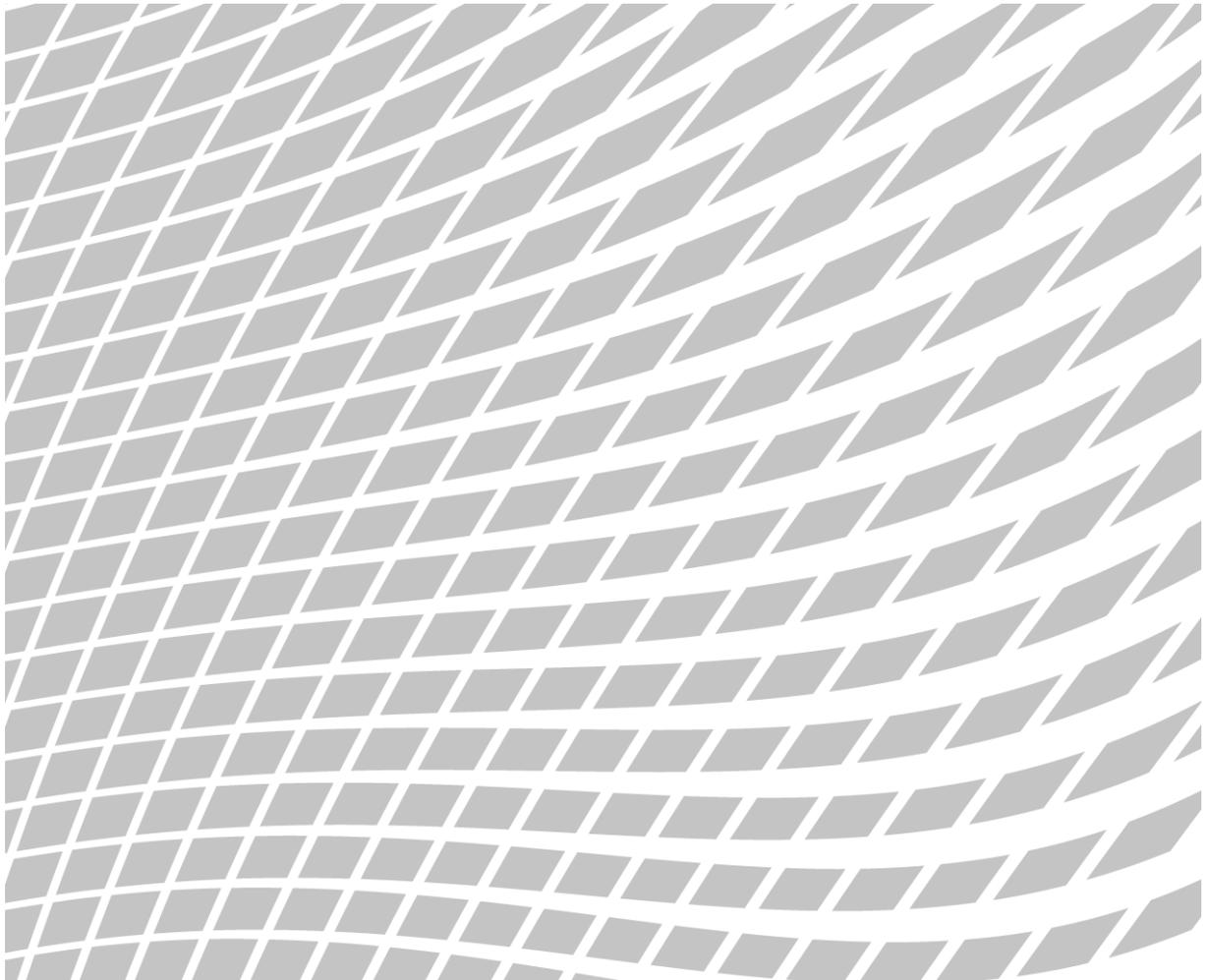


22 October 2012

SST 2012 Survey

FINMA Report on the Swiss Insurance Market



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1 Introduction

This document contains a survey of the SST results 2012. To take into consideration comparable results only, FINMA includes the unrevised figures in this analysis which were sent in by 30th June 2012. It includes the results of 120 insurance undertakings (19 life companies, 55 non-life companies, 21 health insurers and 25 reinsurers); the results of the 9 insurance groups are excluded. The data must meet minimum quality requirements. When the data was deemed unreliable, it was excluded in order to prevent a distortion of the analysis. Out of the 124 solo-entities that submitted their SST results on time by 30 April 2012, the data of 4 companies had to be excluded due to missing data quality standards.

The analysis is based on the uncorrected data as reported by the insurance undertakings. Hence, the numbers do not include any adjustments in the form of capital add-ons or markdowns imposed by FINMA due to non-compliance with the SST principles. Note that in 2012 FINMA was urged to make corrections or to prompt companies for filing revised figures in 22 cases (out of 120 submissions).

The figures are either based on the SST standard model or on the company specific internal models. If the internal model review was still under way, FINMA generally granted the permission to use the internal model on a provisional basis, provided that the first inspection did not show any apparent insufficiencies.

The so called “Fundamental Data Sheet” (FDS) represents the primary data source for this survey. The FDS contains detailed quantitative information such as the composition of the risk bearing and target capital. Each insurance undertaking is requested to fill in the FDS and to submit it to FINMA, regardless whether they use an internal model or not. Checks for completeness and significant errors have been carried out by FINMA. Nevertheless, the correctness of the numbers cannot be fully guaranteed as filling the FDS is often carried out manually and thus error-prone.

In order to make the results more meaningful, companies of a comparable size are grouped together. For this purpose, the supervisory categories according to the FINMA circular no 19 of 14 January 2011 are used. Thus all insurance companies are allocated to the categories 2 to 5 (neither category 1 nor category 6 are relevant for insurance companies). The classification mainly depends on the balance sheet total. The 120 companies are categorized as follows: 5 insurance companies are in category 2, 35 in category 3, 44 in category 4, and 36 in category 5, see section 2. In order to not allow for conclusions as to the specific risk situation of an individual company, the companies of two neighboring categories will be pooled if deemed necessary.

A glossary of all the relevant terms and expressions used in this document can be found in the last section.

2 Scope

The following table shows the number of solo-companies whose data were used in the present and past surveys. Due to missing minimum quality standards, the data of a few companies generally has to be excluded.

	Considered 2012 (*)	Participants 2012	SST Ratio <100% (**)	Considered 2011	Considered 2010
Life	19	20	8	21	21
Non-Life	55	57	0	58	59
Health	21	22	0	19	19
Reinsurer	25	25	0	22	26
Total	120	124	8	120	125

Table 1: (*) Number of (solo-) companies whose data are used in the present survey, split by the different branches. (**) Figures stem from the total number of participants, before FINMA corrections.

Throughout this document, the analysis is broken down into the branches life, non-life, health and reinsurance. This approach entails that in each branch very small companies are grouped with very large undertakings. Therefore, we decided to further split each branch and to take into account the size of a company too. To this end, the supervisory categories according to the FINMA circular no 19 of 14 January 2011 are used. The allocation of the 120 companies to the different branches and categories is as follows:

	Category 2	Category 3	Category 4	Category 5	Sum
Life	2	12	5	0	19
Non-Life	2	9	16	28	55
Health	0	4	13	4	21
Reinsurer	1	10	10	4	25
Total	5	35	44	36	120

Table 2: Split of all companies according to branch and supervisory category.

Due to the comparatively small numbers, the companies in categories 2 and 3, and in categories 4 and 5 will always be pooled. For the sake of simplicity, we refrain from splitting into the categories 4 and 5 when analyzing the SST results from non-life companies.

3 Target capital, market and insurance risk

3.1 Life Insurers

3.1.1 Best estimate of the liability, the market value margin and the expected shortfall

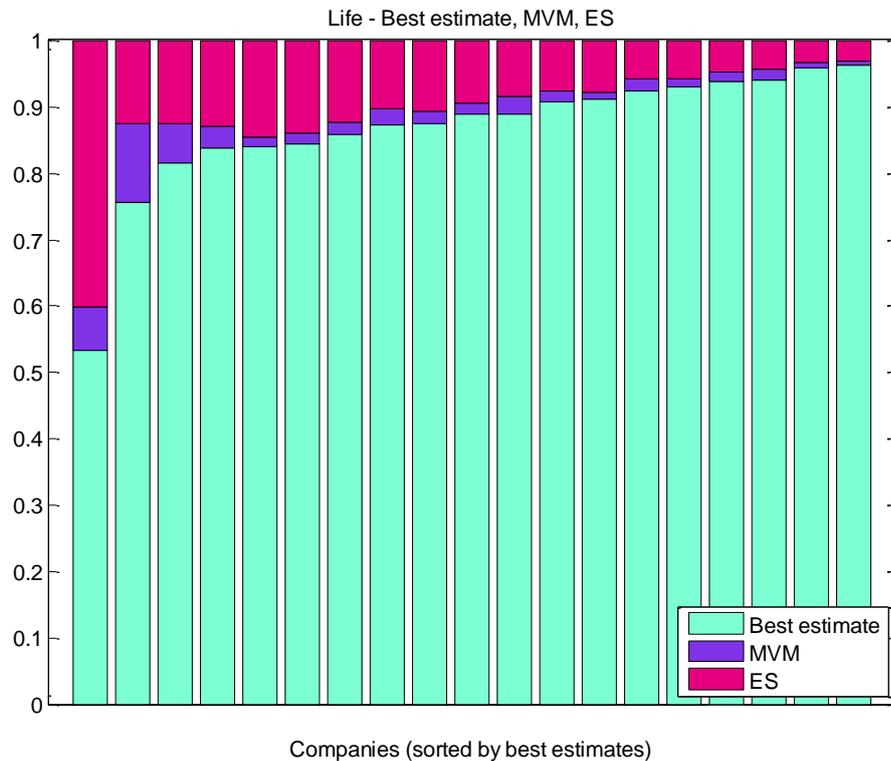


Figure 1: Best estimate of the liability (BEL) and the target capital TC (= MVM + ES).

Comments:

- Each column in the figure represents the sum of the best estimate of the liability (BEL) plus the market value margin (MVM) plus the one-year capital requirement (ES = solvency capital required, SCR), after normalization.

- The columns are ordered by increasing size of the BEL.
- The median and mean value of the MVM relative to the BEL amount to 4.2% and 1.7%, respectively.

3.1.2 Best estimate of the liability and the target capital in relation to the total assets

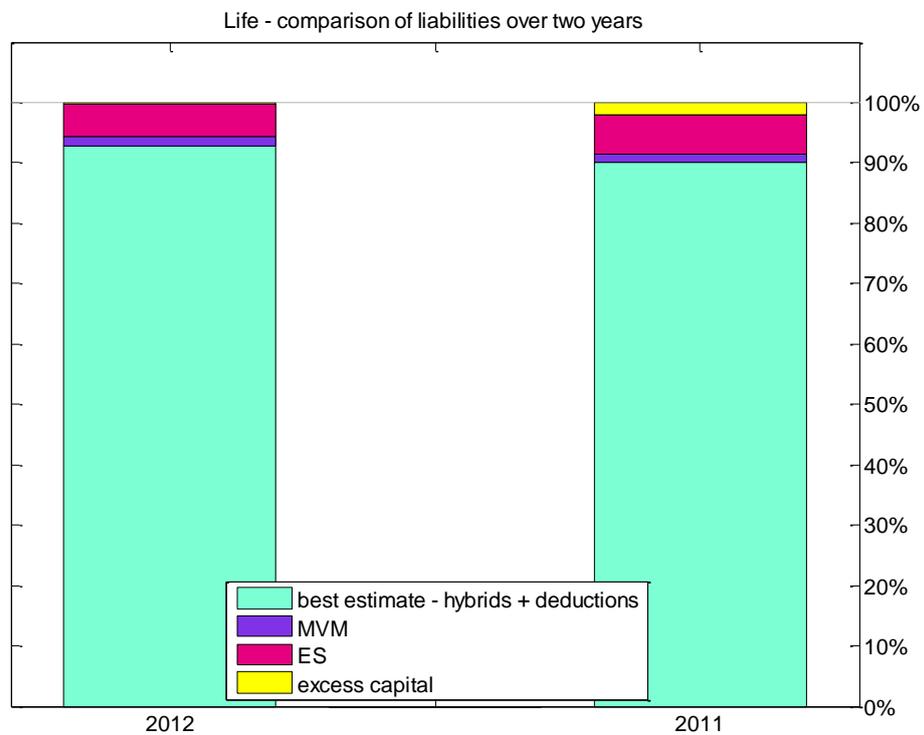


Figure 2: BEL^* , TC (= MVM + ES) and excess capital (EC = RBC – TC) in percentage of the total assets. Weighted average of all life companies.

Since the total assets are composed of the core capital (CC) and the BEL (and not of the RBC plus BEL), the best estimate of the liability BEL needs to be adjusted. We define BEL^* as the BEL minus hybrids plus deductions:

$$\begin{aligned}
 \text{Total assets} &= \text{CC} + \text{BEL} \\
 &= (\text{RBC} - \text{hybrid} + \text{deductions}) + \text{BEL} \\
 &= (\text{EC} + \text{TC} - \text{hybrid} + \text{deductions}) + \text{BEL} \\
 &= \text{EC} + (\text{MVM} + \text{ES}) + (\text{BEL} - \text{hybrid} + \text{deductions})
 \end{aligned}$$

Note that the graph and the numbers in the table below show a weighted average (the weight of company k equals: $\text{Total Assets}_k / \sum_{m=1}^{19} \text{Total Assets}_m$)

in % of Assets	BEL*	MVM	ES	EC
SST 2012	92.7%	1.6%	5.4%	0.3%
SST 2011	88.9%	1.3%	6.4%	3.4%

Table 3: BEL*, TC and EC in percentage of the total assets.

3.1.3 Target capital decomposition

3.1.3.1 Decomposition of the target capital components – waterfall charts

The following graphs show the target capital decompositions. Observe that for life insurance companies neither the expected insurance result nor the expected financial result contribute to the target capital. The companies of the categories 2 and 3 (Figure 3b) as well as the companies of the categories 4 and 5 are shown pooled (Figure 3c).

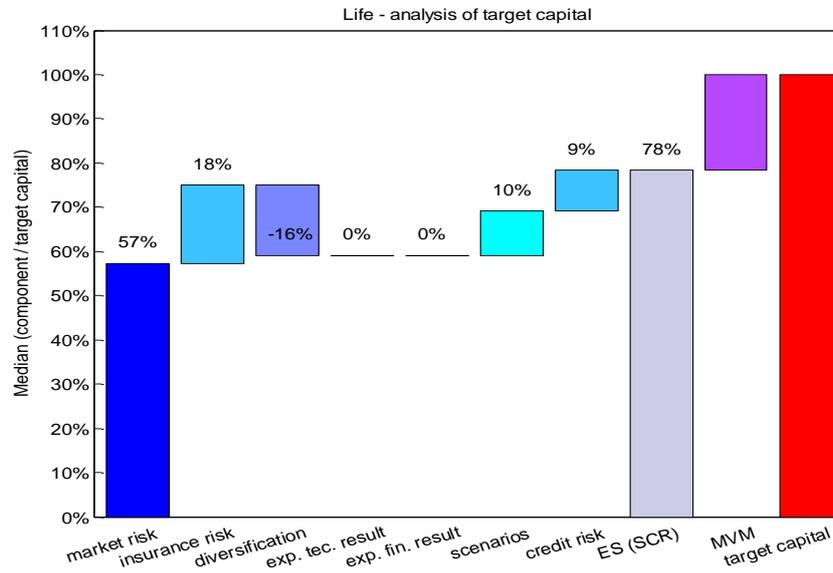


Figure 3a: Average target capital decomposition; all companies (median values of relative risk contribution).

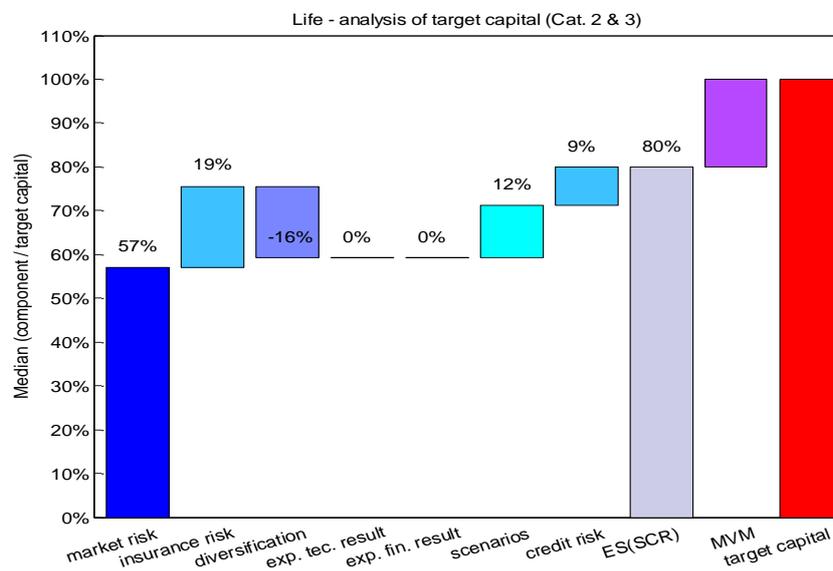


Figure 3b: Average target capital decomposition; companies of category 2 and 3 (median values of relative risk contribution).

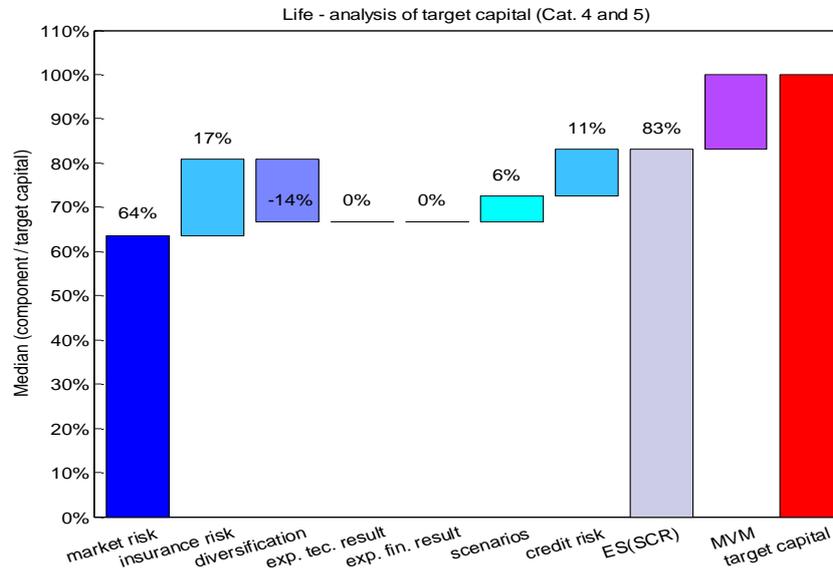


Figure 3c: Average target capital decomposition; companies of category 4 and 5 (median values of relative risk contribution).

3.1.3.2 Distribution of target capital components – box plots

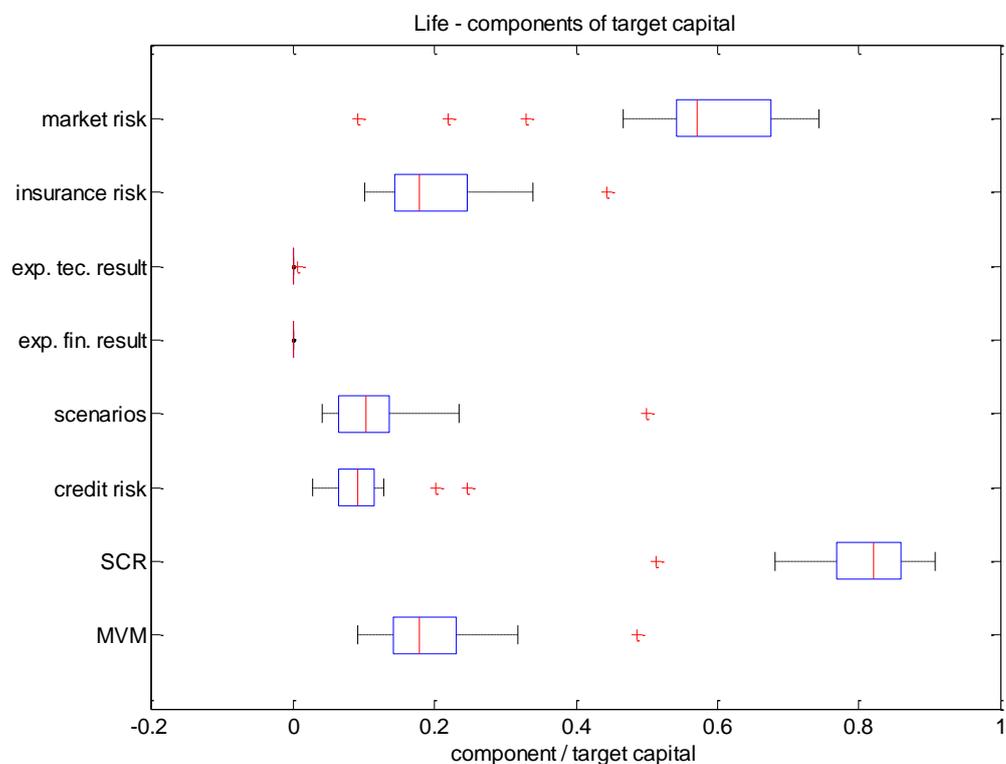


Figure 4: Distributions of target capital components, shown as box plots; all companies. For each box plot, the central mark is the median, the edges of the box are the 25th and the 75th percentiles, respectively, and the whiskers extend to the most extreme data points not considered outliers, and outliers are plotted individually (red crosses).

3.1.4 Market risk analysis

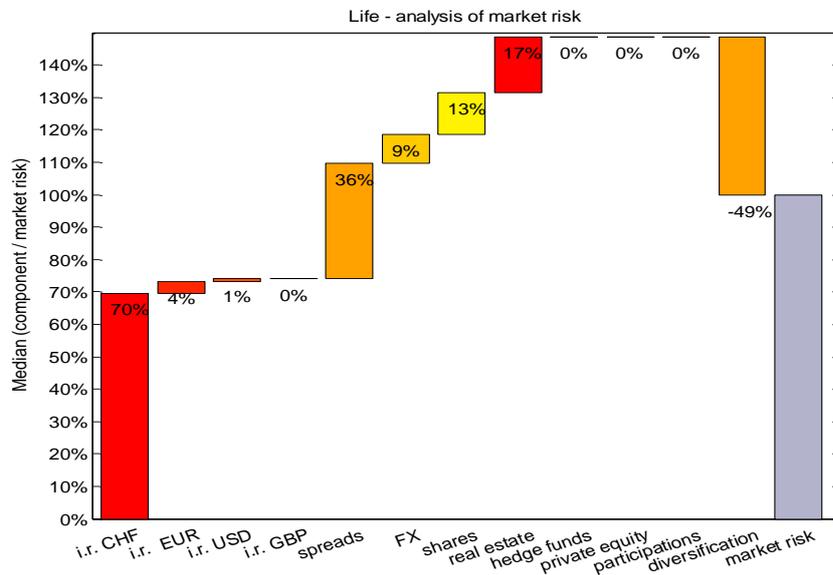


Figure 5a: Decomposition of the market risk into its components; all companies (median values of relative risk contribution). Here i. r. CNY denotes the interest rate risk of currency CNY.

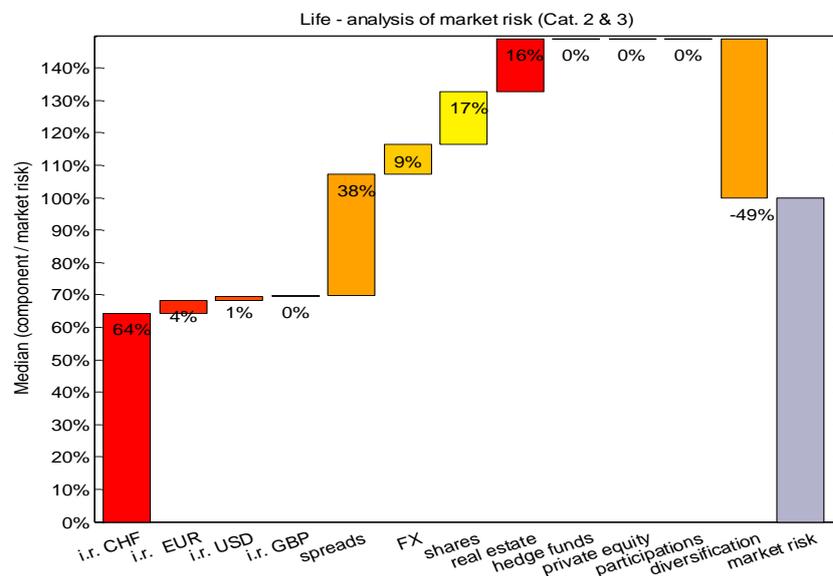


Figure 5b: Decomposition of the market risk into its components; companies of category 2 and 3 (median values of relative risk contribution).

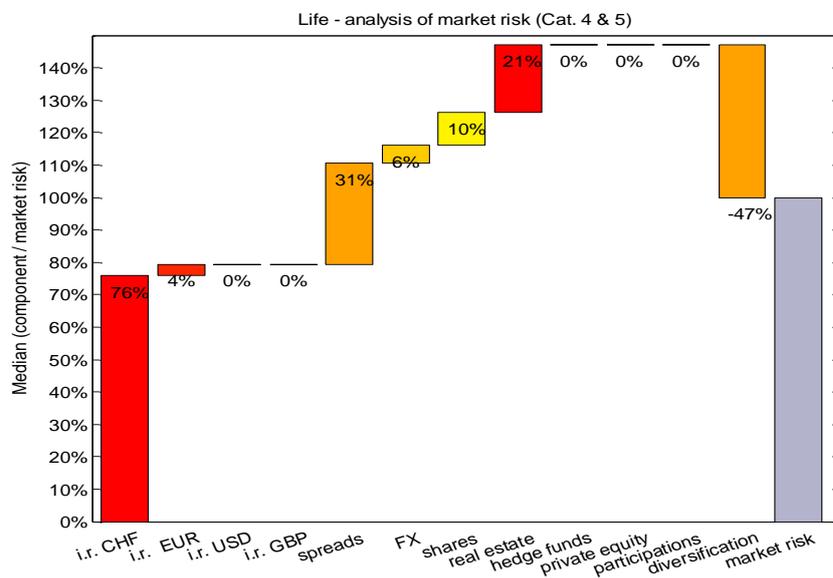


Figure 5c: Decomposition of the market risk into its components; companies of category 4 and 5 (median values of the relative risk contribution).

3.1.4.1 Distribution of market risk components – box plots

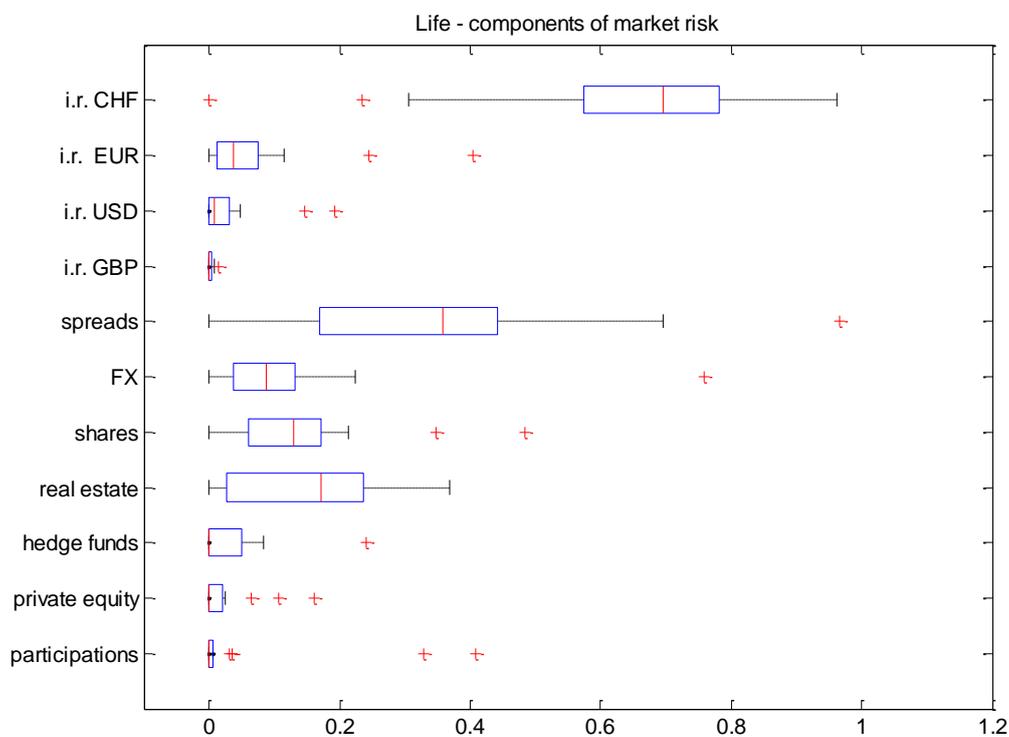


Figure 6: Distributions of market risk components, shown as box plots; all companies. For each box plot, the central mark is the median, the edges of the box are the 25th and the 75th percentiles, respectively, and the whiskers extend to the most extreme data points not considered outliers, and outliers are plotted individually (red crosses).

3.1.5 Scenarios

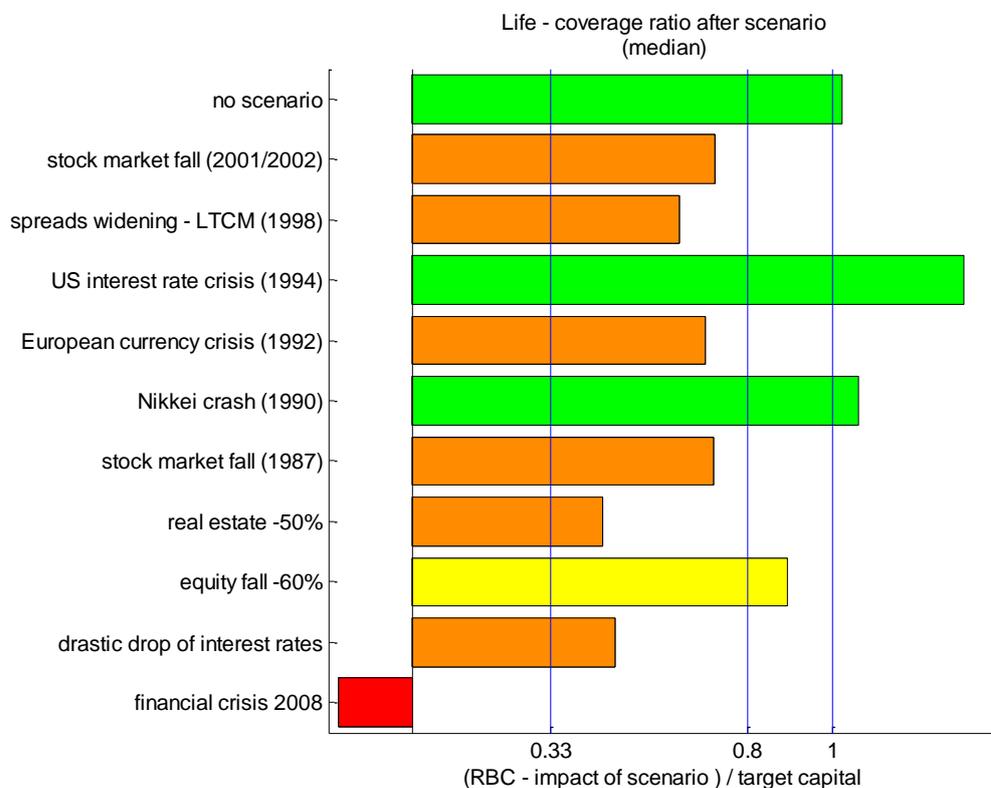


Figure 7: Impact of scenarios on the RBC. Intervention levels are at 100%, 80% and 33%. The figure shows the median values of all companies.

3.2 Non-Life insurers

3.2.1 Best estimate of the liability, the market value margin and the expected shortfall

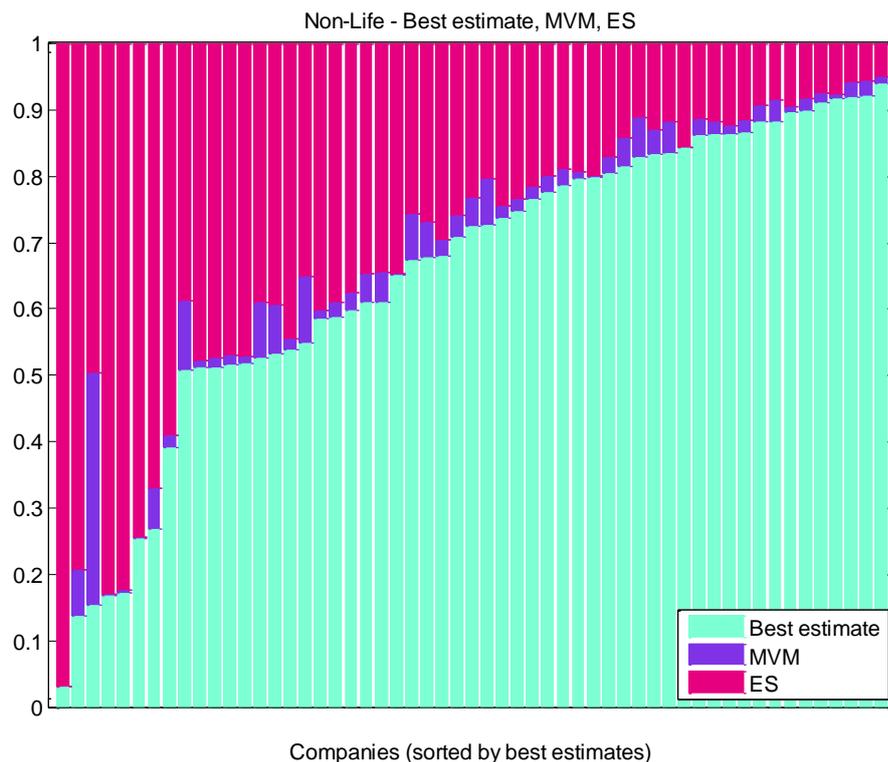


Figure 8: Best estimate of the liability BEL and the target capital TC (= MVM + ES).

Comments:

- Each column in the figure represents the sum of the best estimate of the liability (BEL) plus the market value margin (MVM) plus the one-year capital requirement (ES), after normalization.
- The columns are ordered by increasing size of the BEL.
- The median and mean value of the MVM relative to the BEL amount to 4.5% and 1.3%, respectively.
- Some companies report a very small MVM (close or equal to zero). This can be explained by a fast claim settlement.

3.2.2 Best estimate of the liability and the target capital in relation to the total assets

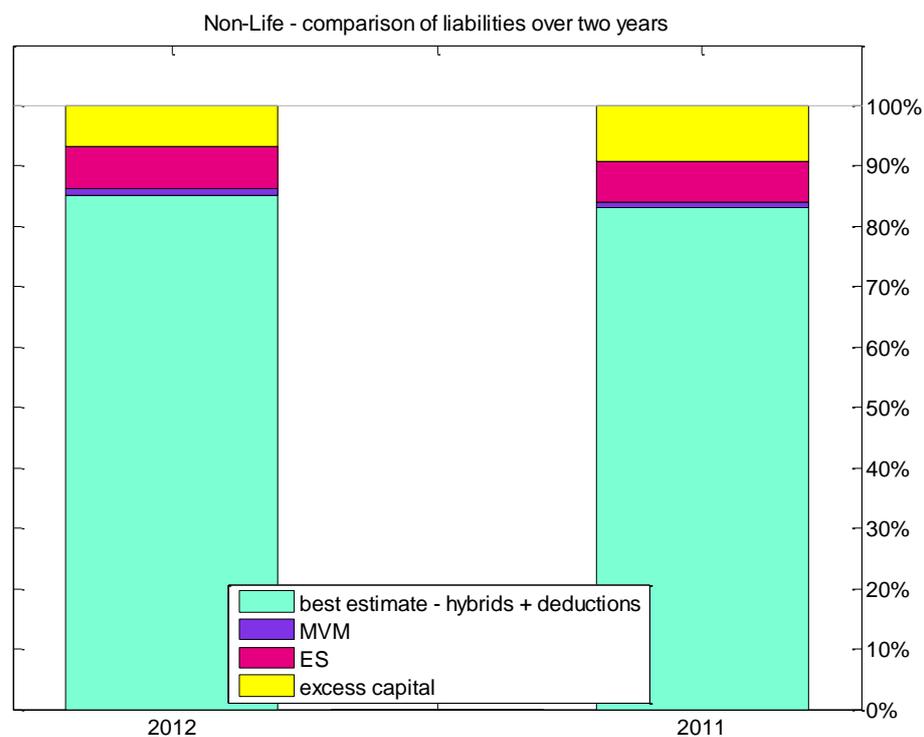


Figure 9: BEL^{*}, TC (= MVM + ES) and the excess capital (EC = RBC – TC) in percentage of the total assets. Weighted average over all non-life companies.

For the definition of BEL^{*}, see section 3.1.2.

in % of Assets	BEL [*]	MVM	ES	EC
SST 2012	85.2%	1.1%	7.0%	6.6%
SST 2011	83.2%	0.9%	6.7%	9.2%

Table 4: BEL^{*}, TC and EC in percentage of total assets.

3.2.3 Target capital decomposition

3.2.3.1 Decomposition of target capital components – waterfall charts

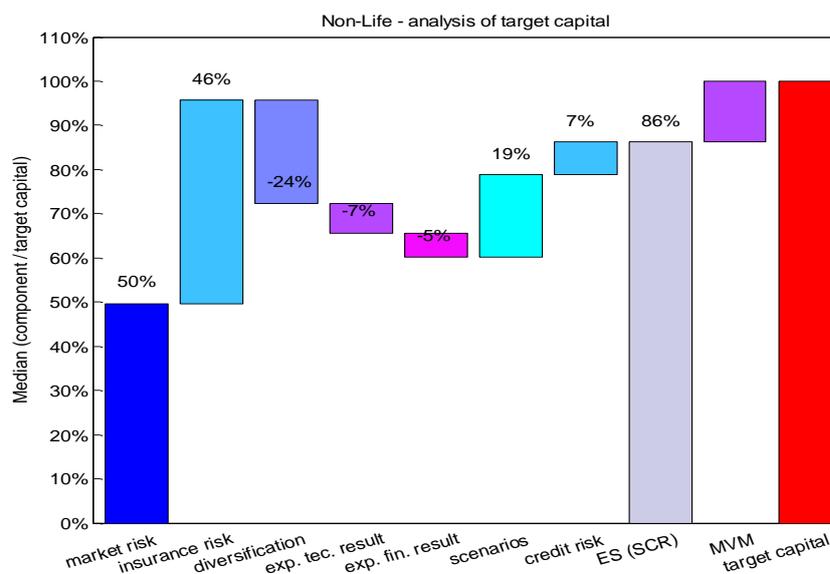


Figure 10a: Average target capital decomposition; all companies (median values of relative risk contribution).

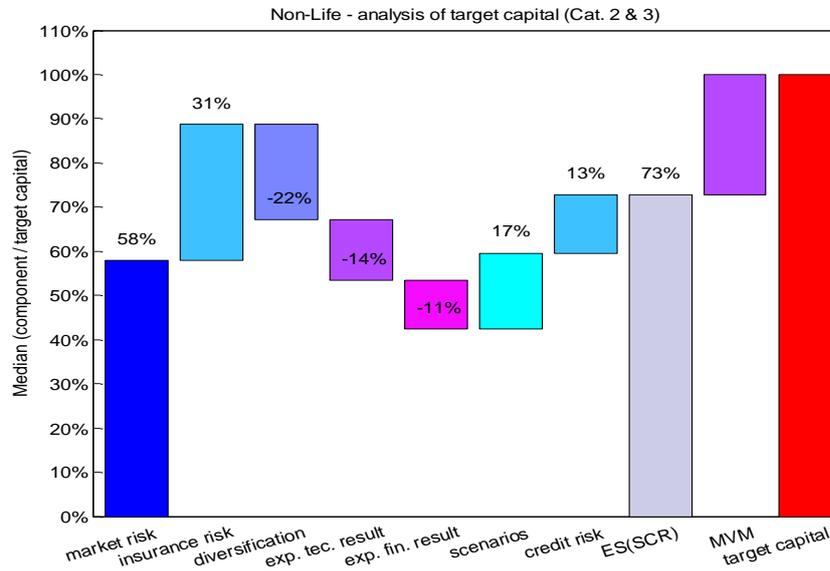


Figure 10b: Average target capital decomposition; companies of category 2 and 3 (median values of relative risk contribution).

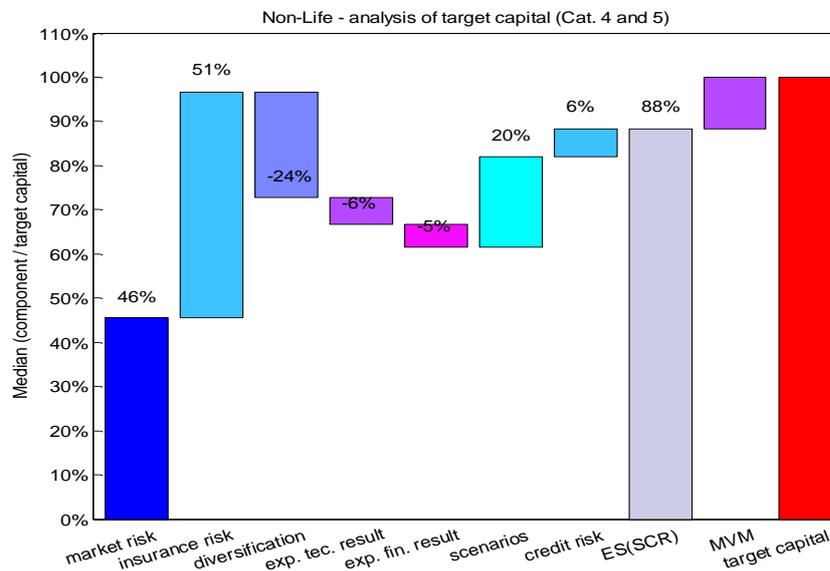


Figure 10c: Average target capital decomposition; companies of category 4 and 5 (median values of relative risk contribution).

3.2.3.2 Distribution of target capital components – box plots

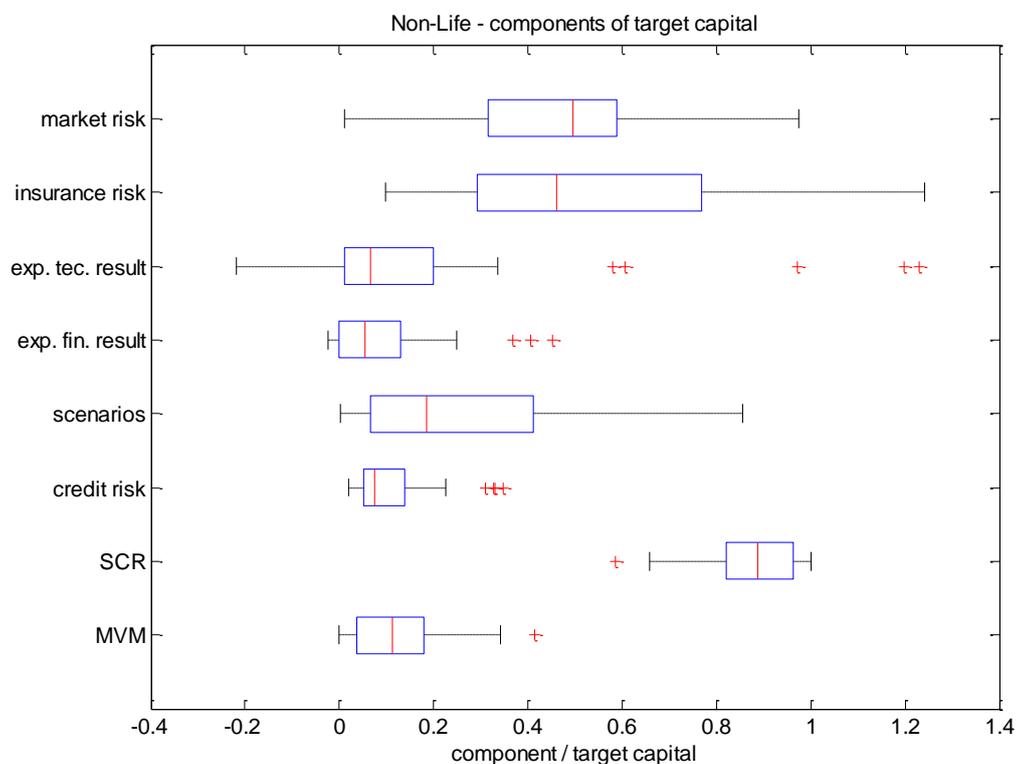


Figure 11: Distributions of target capital components, shown as box plots; all companies. For each box plot, the central mark is the median, the edges of the box are the 25th and the 75th percentiles, respectively, and the whiskers extend to the most extreme data points not considered outliers, and outliers are plotted individually (red crosses).

3.2.4 Market risk analysis

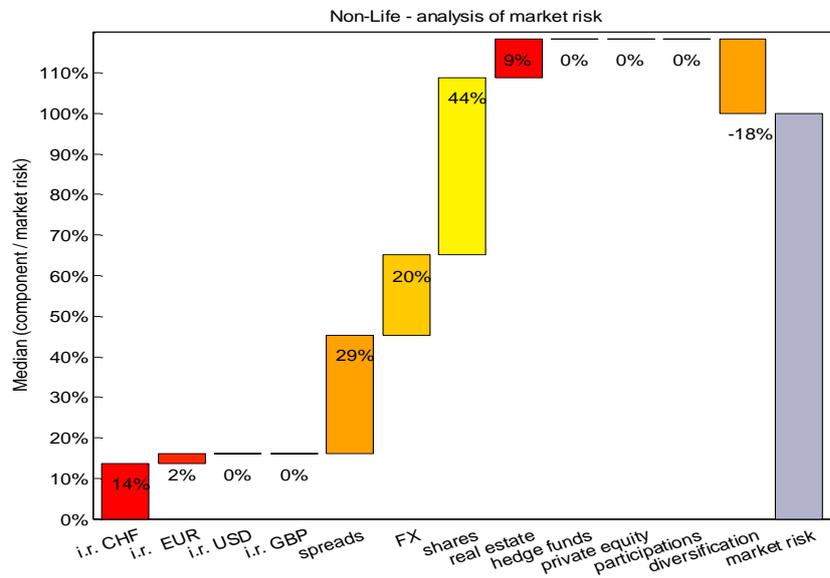


Figure 12a: Decomposition of the market risk into its components; all companies (median values of relative risk contribution).

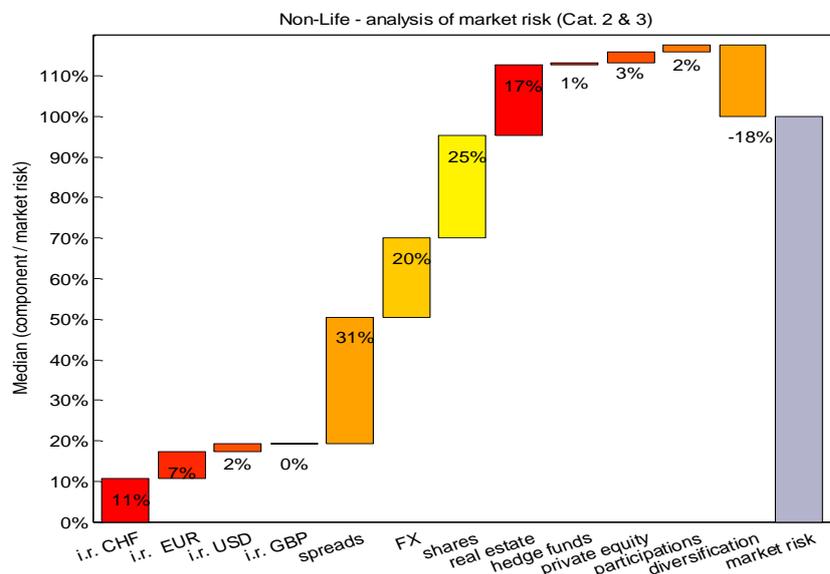


Figure 12b: Decomposition of the market risk into its components; companies of category 2 and 3 (median values of relative risk contribution).

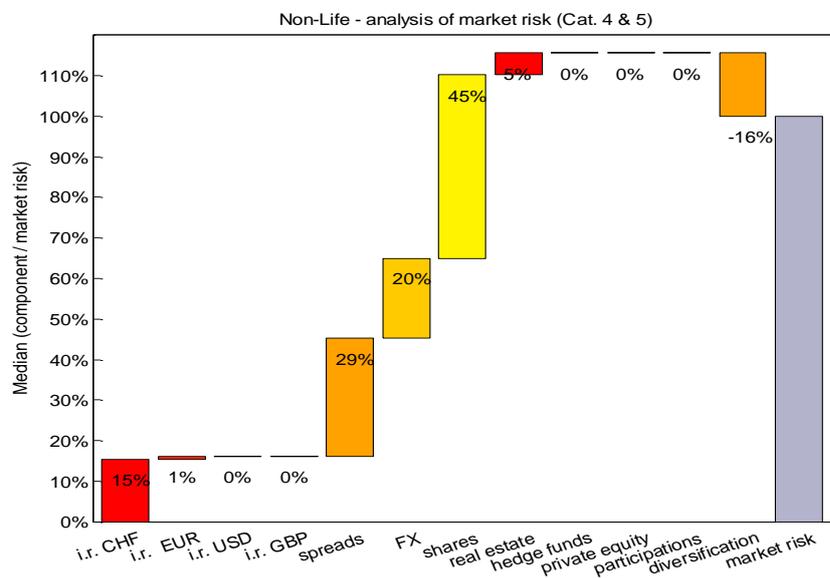


Figure 12c: Decomposition of the market risk into its components; companies of category 4 and 5 (median values of relative risk contribution).

3.2.4.1 Distribution of market risk components – box plots

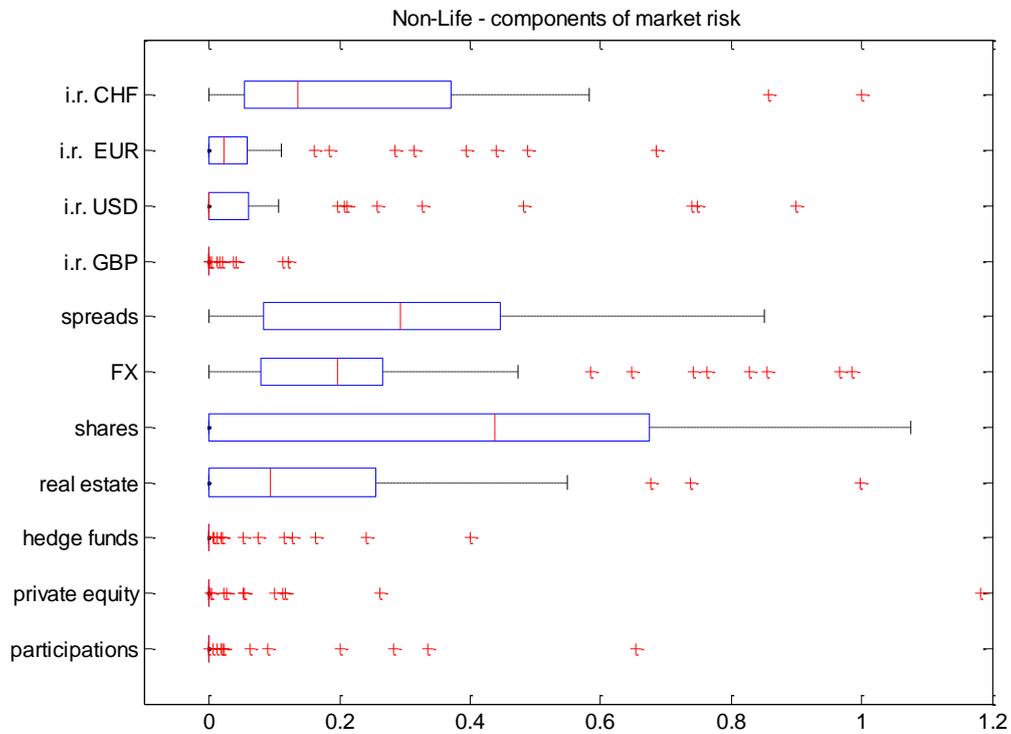


Figure 13: Distributions of market risk components, shown as box plots; all companies. For each box plot, the central mark is the median, the edges of the box are the 25th and the 75th percentiles, respectively, and the whiskers extend to the most extreme data points not considered outliers, and outliers are plotted individually (red crosses).

3.2.5 Scenarios

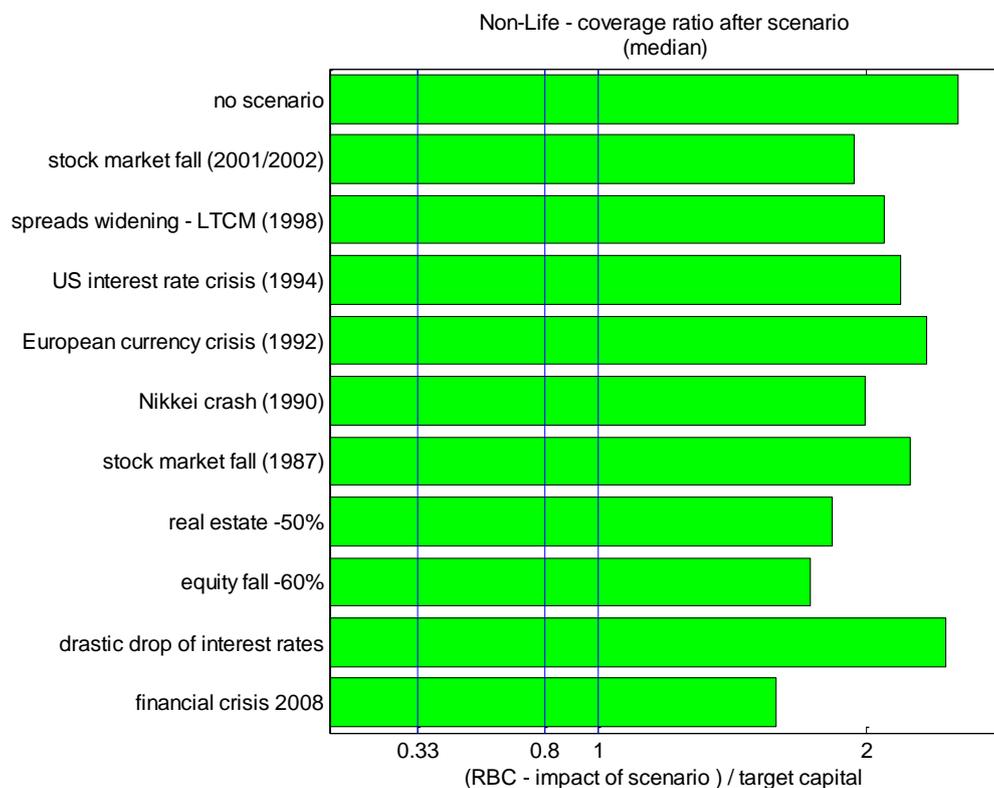


Figure 14: Impact of scenarios on the RBC. Intervention levels are at 100%, 80% and 33%. The figure shows the median values of all companies.

3.3 Health insurers

3.3.1 Best estimate of the liability, the market value margin and the expected shortfall

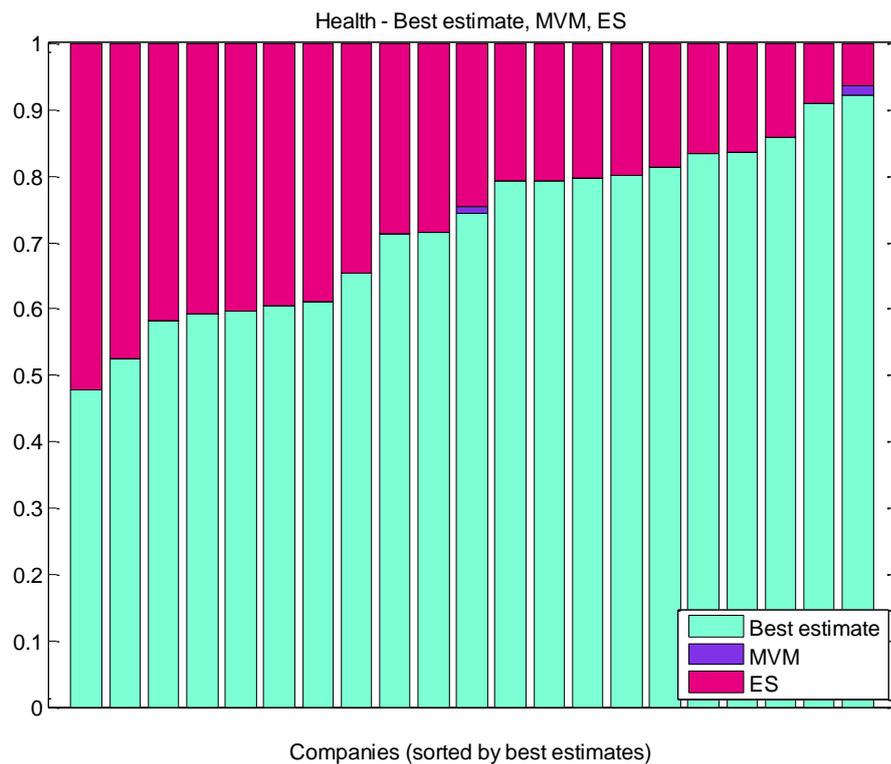


Figure 15: Best estimates of the liability (BEL) and the target capital (= MVM + ES).

Comments:

- Each column in the figure represents the sum of the best estimate of the liability (BEL) plus the market value margin (MVM) plus the one-year capital requirement (ES), after normalization.
- The columns are ordered by increasing size of the BEL.
- The median and mean value of the MVM relative to the BEL amount to 0.1% and 0%, respectively.
- Note that the MVM generally vanishes for health insurance companies due to their short-term business. The MVM for health companies that also write non-life business, however, is positive.

3.3.2 Best estimate of the liability and the target capital in relation to the total assets

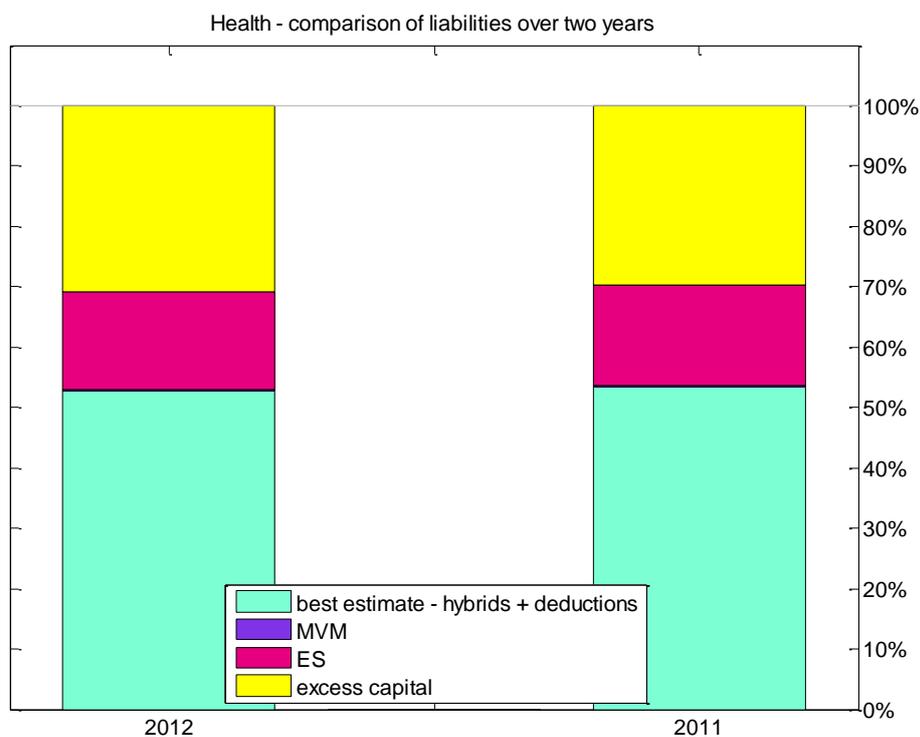


Figure 16: BEL^{*}, TC (= MVM + ES) and excess capital (EC = RBC – TC) in percentage of the total assets. Weighted average over all health companies.

For the definition of BEL^{*}, see section 3.1.2.

in % of Assets	BEL [*]	MVM	ES	EC
SST 2012	52.8%	0.1%	16.4%	30.7%
SST 2011	53.5%	0.0%	16.8%	29.7%

Table 5: BEL^{*}, TC and EC in percentage of the total assets; all companies.

3.3.3 Target capital decomposition

3.3.3.1 Decomposition of target capital components – waterfall charts

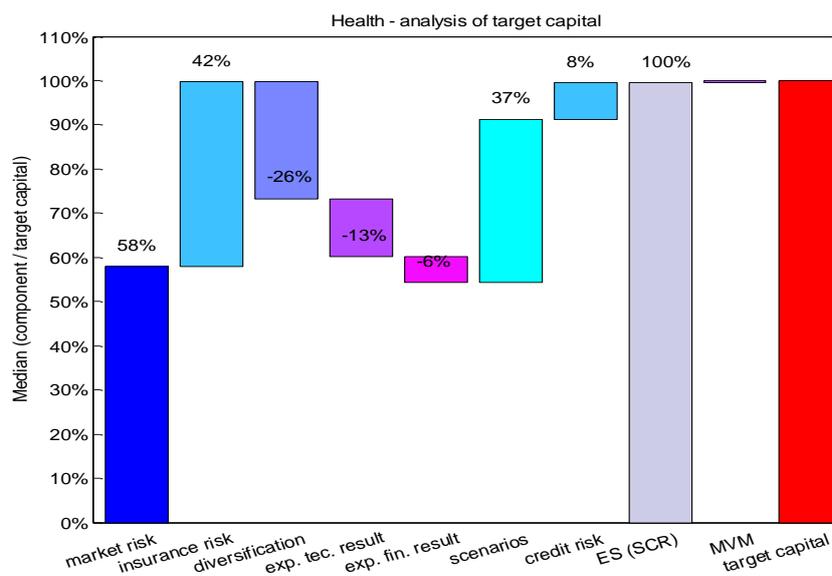


Figure 17a: Average target capital decomposition; all companies (median values of relative risk contribution).

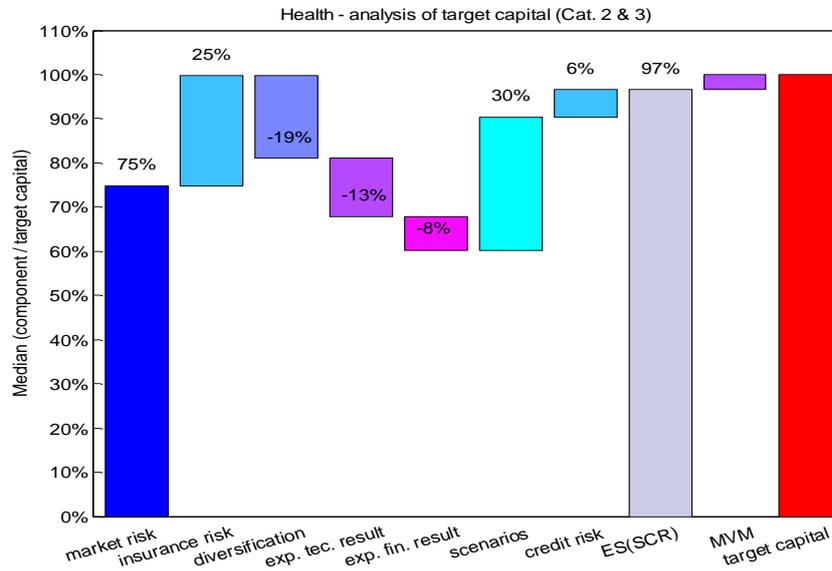


Figure 17b: Average target capital decomposition; companies of category 2 and 3 (median values of relative risk contribution).

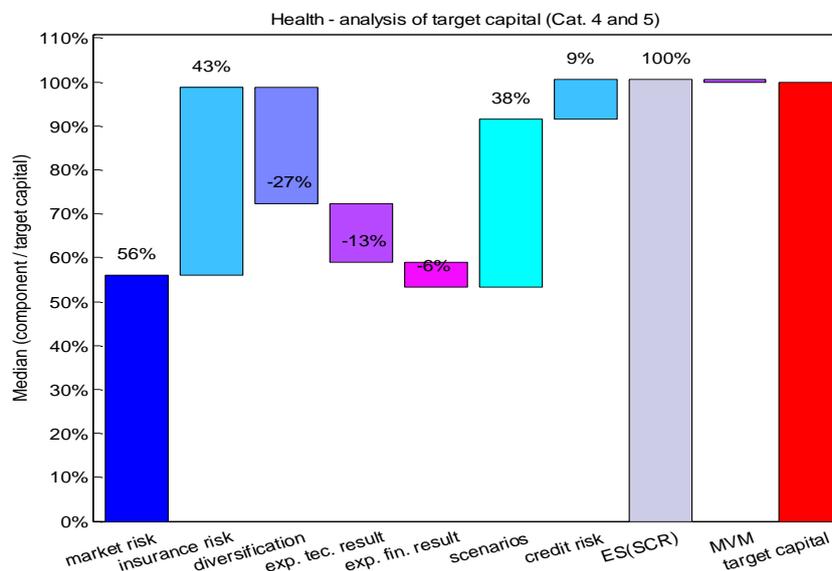


Figure 17c: Average target capital decomposition; companies of category 4 and 5 (median values of relative risk contribution).

Comments to figures 19a to 19c:

- A simplified model for health insurers, which takes into account the short-tail characteristic of their business and therefore does not contain a MVM, is simplified. Exception: Health insurers with more than 10% of non-life business in their portfolio.

3.3.3.2 Distribution of target capital components – box plots

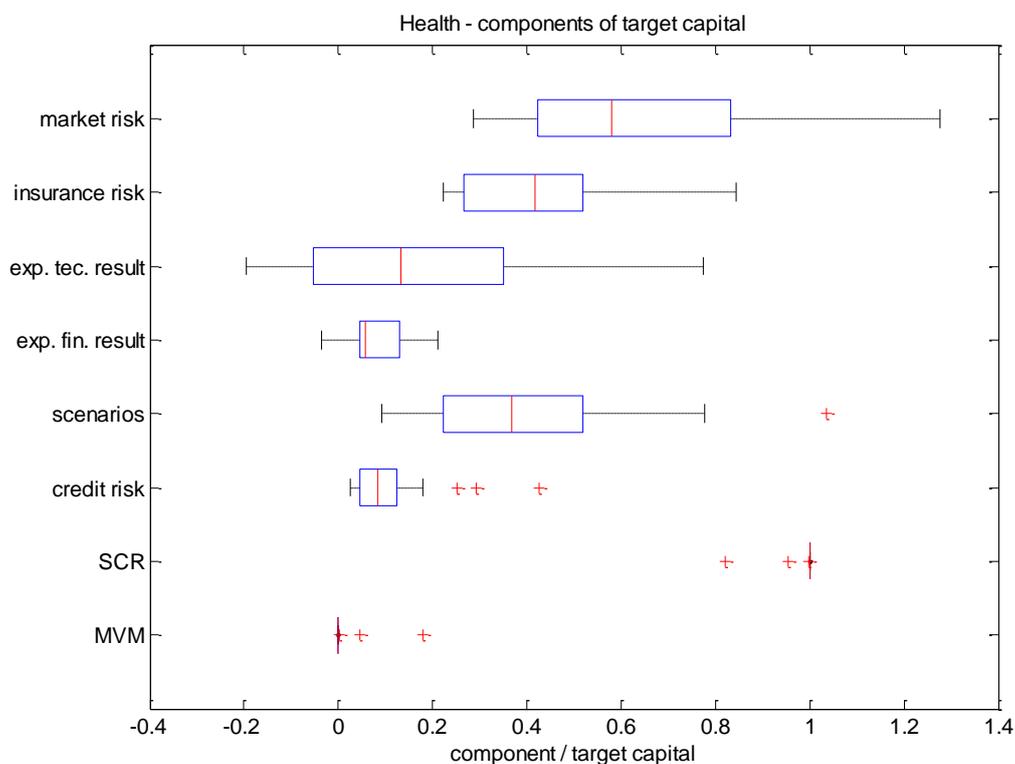


Figure 18: Distributions of target capital components, shown as box plots; all companies. For each box plot, the central mark is the median, the edges of the box are the 25th and the 75th percentiles, respectively, and the whiskers extend to the most extreme data points not considered outliers, and outliers are plotted individually (red crosses).

3.3.4 Market risk analysis

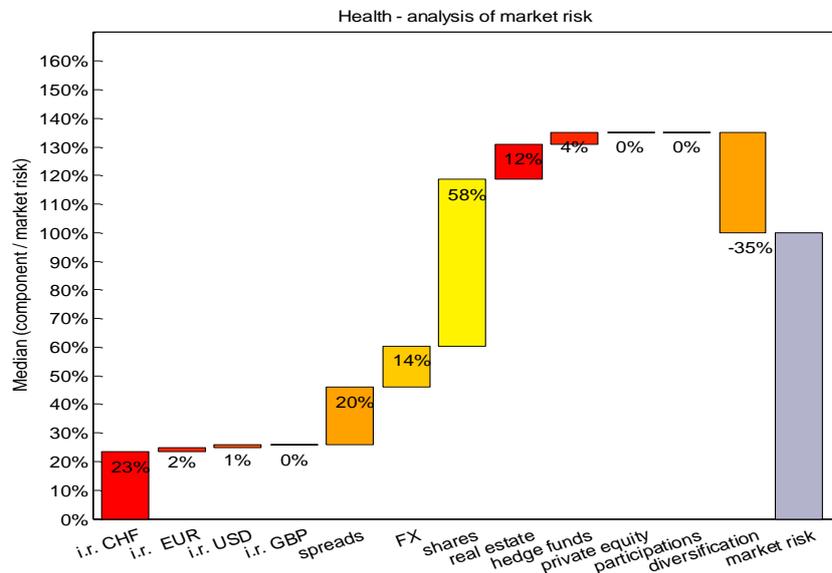


Figure 19a: Decomposition of the market risk into its components; all companies (median values of relative risk contribution).

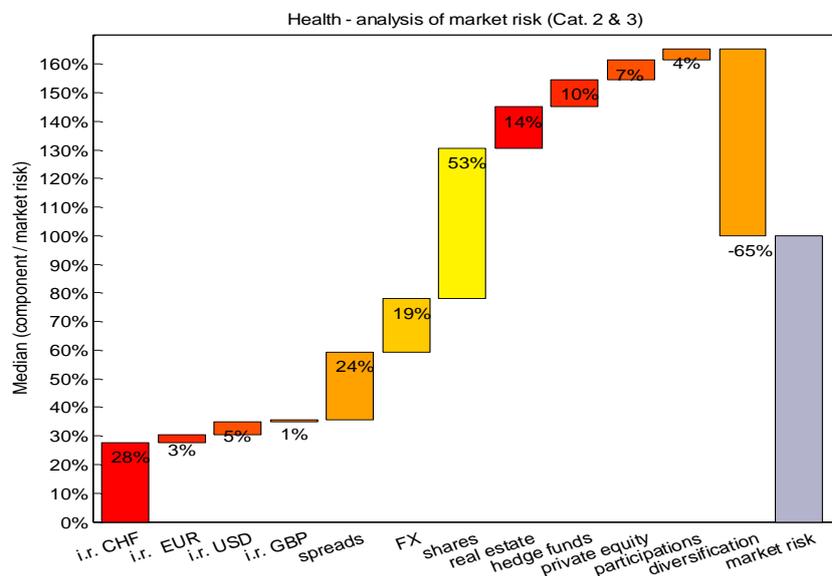


Figure 19b: Decomposition of the market risk into its components; companies of category 2 and 3 (median values of relative risk contribution).

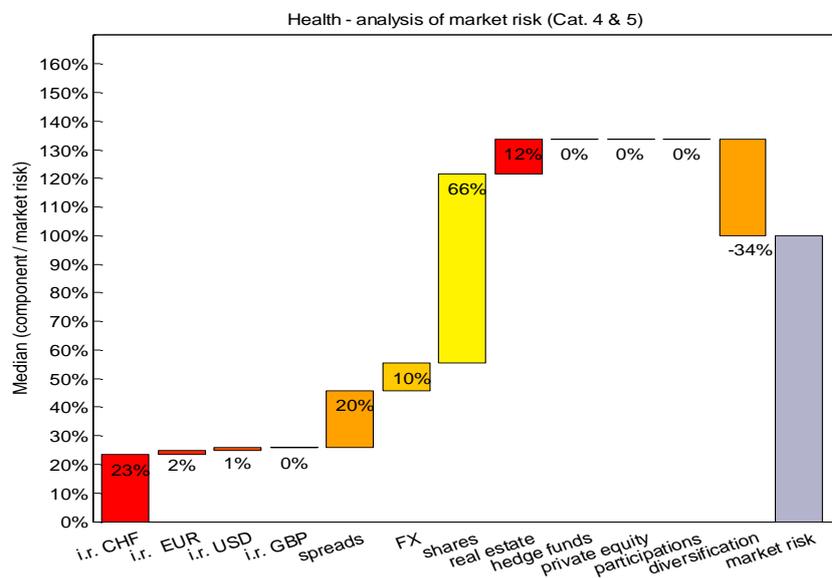


Figure 19c: Decomposition of the market risk into its components; companies of category 4 and 5 (median values of relative risk contribution).

3.3.4.1 Distribution of market risk components – box plots

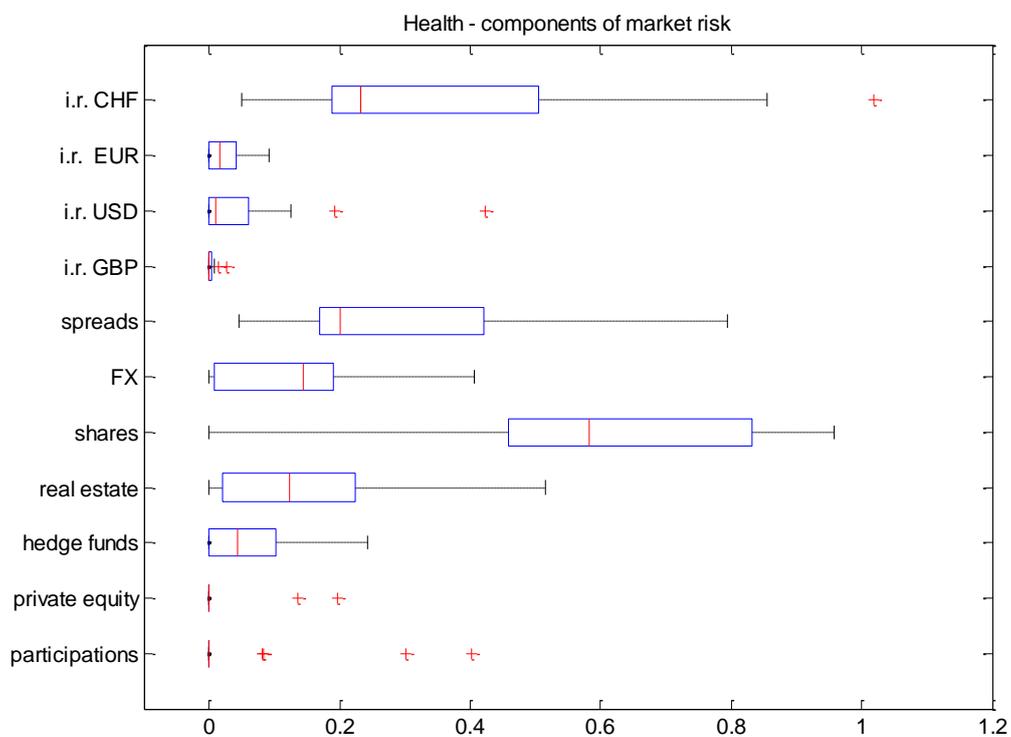


Figure 20: Distributions of market risk components, shown as box plots; all companies. For each box plot, the central mark is the median, the edges of the box are the 25th and the 75th percentiles, respectively, and the whiskers extend to the most extreme data points not considered outliers, and outliers are plotted individually (red crosses).

3.3.5 Scenarios

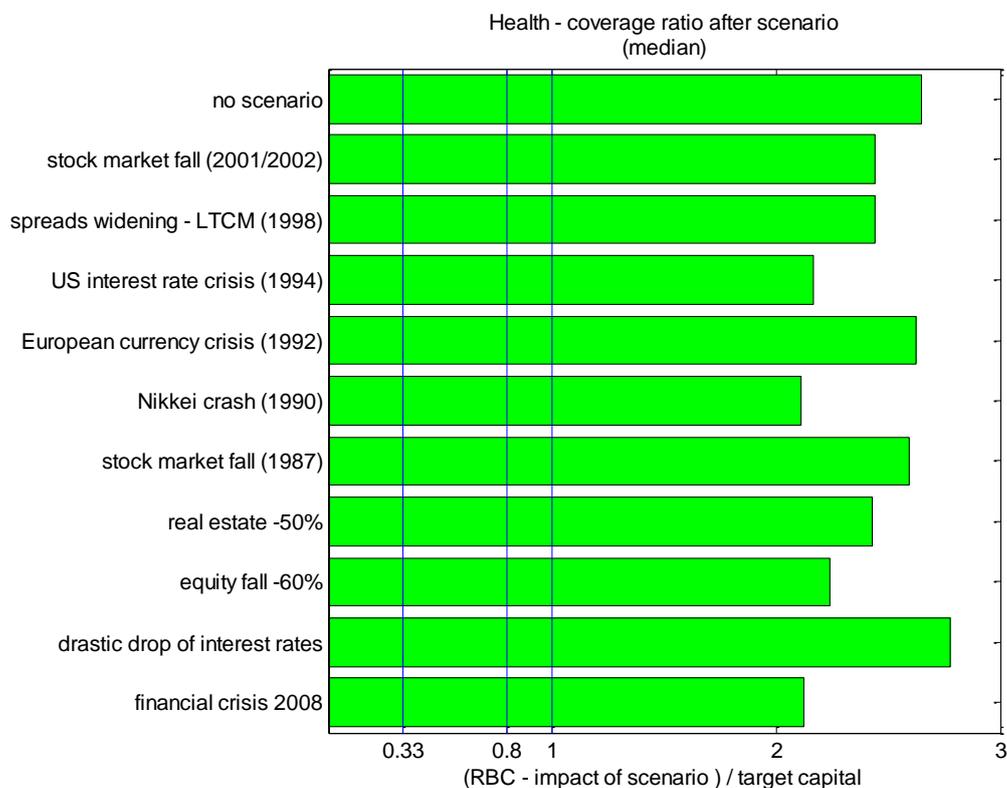


Figure 21: Impact of scenarios on the RBC. Intervention levels are at 100%, 80% and 33%. This figure shows the median values of all companies.

3.4 Reinsurers

3.4.1 Best estimate of the liability, the market value margin and the expected shortfall

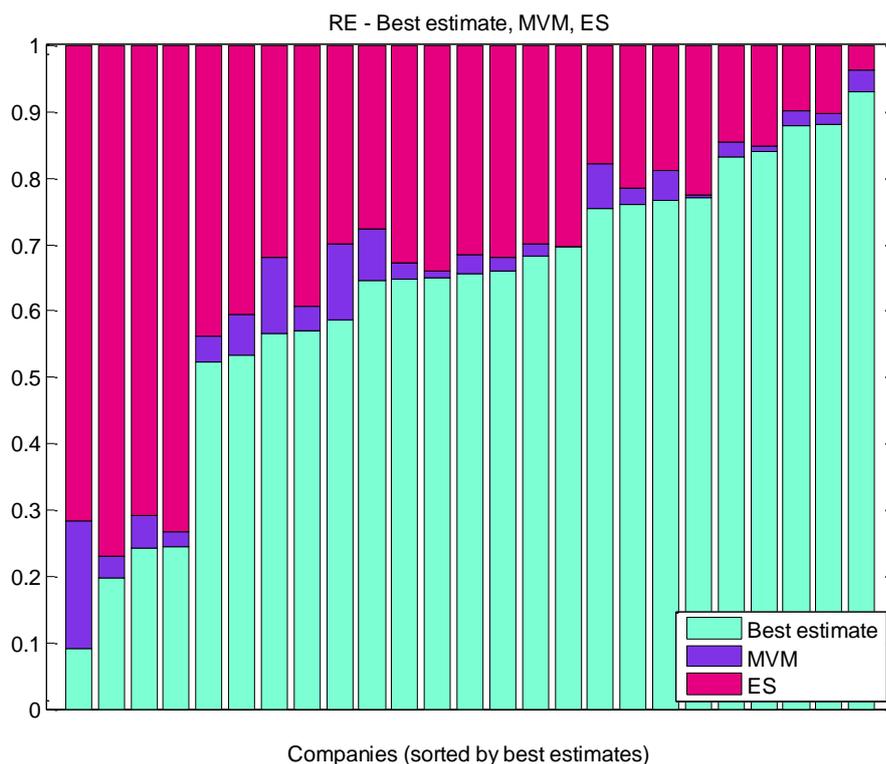


Figure 22: Best estimate of the liability (BEL) and the target capital TC (= MVM + ES).

Comments:

- Each column in the figure represents the sum of the best estimate of the liability (BEL) plus the market value margin (MVM) plus the one-year capital requirement (ES), after normalization.
- The columns are ordered by increasing size of the BEL.
- The median and mean value of the MVM relative to the BEL amount to 4.2% and 3%, respectively.

3.4.2 Best estimate of the liability and the target capital in relation to the total assets

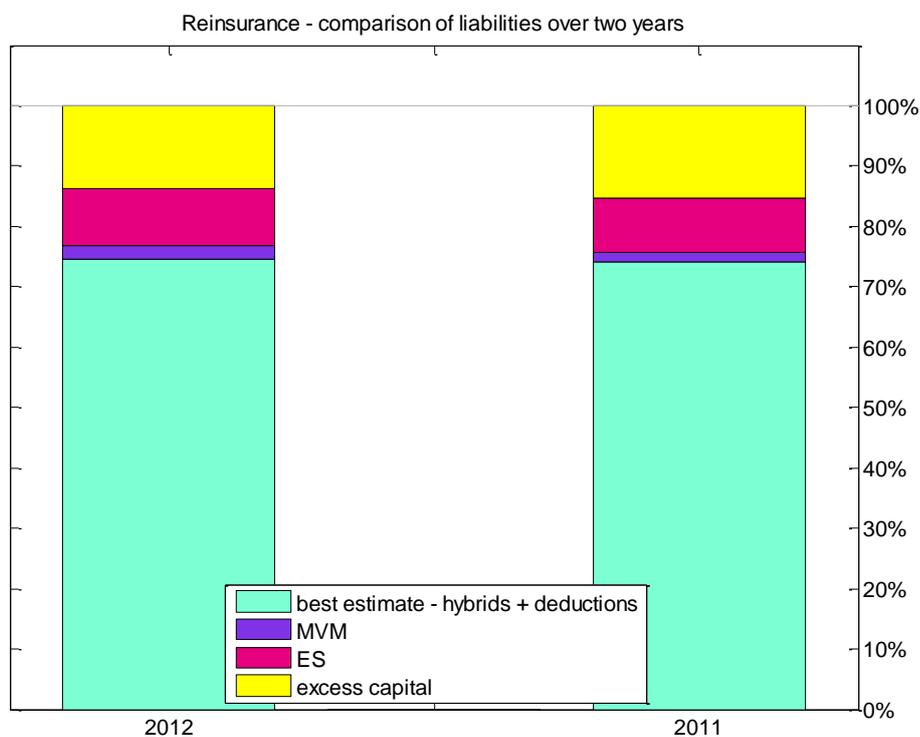


Figure 23: BEL^{*}, TC (= MVM + ES) and excess capital (EC = RBC – TC) in percentage of the total assets. Weighted average over all reinsurance companies.

For the definition of BEL^{*}, see Section 3.1.2.

in % of Assets	BEL [*]	MVM	ES	EC
SST 2012	74.6%	2.3%	9.3%	13.8%
SST 2011	74.1%	1.6%	9.1%	15.2%

Table 6: BEL^{*}, TC and EC in percentage of the total assets.

3.4.3 Target capital decomposition

3.4.3.1 Decomposition of target capital components – waterfall charts

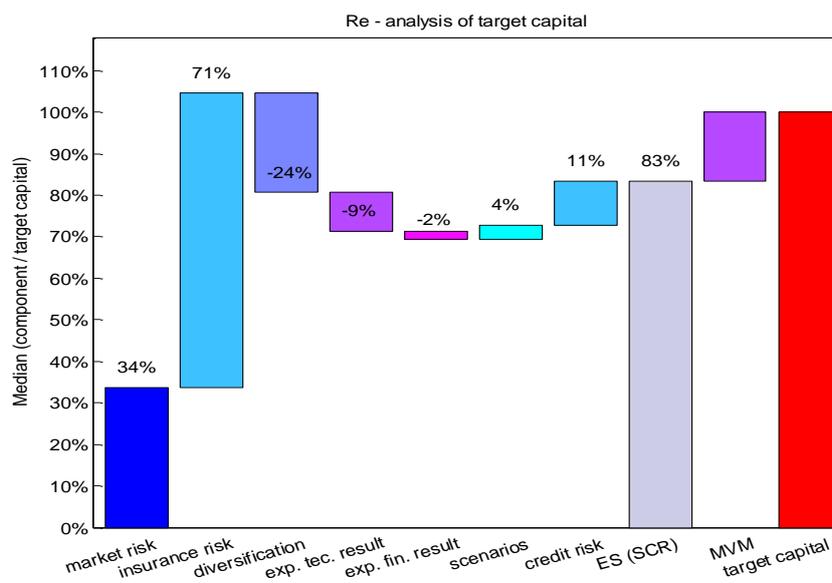


Figure 24a: Average target capital decomposition; all companies (median values of relative risk contribution).

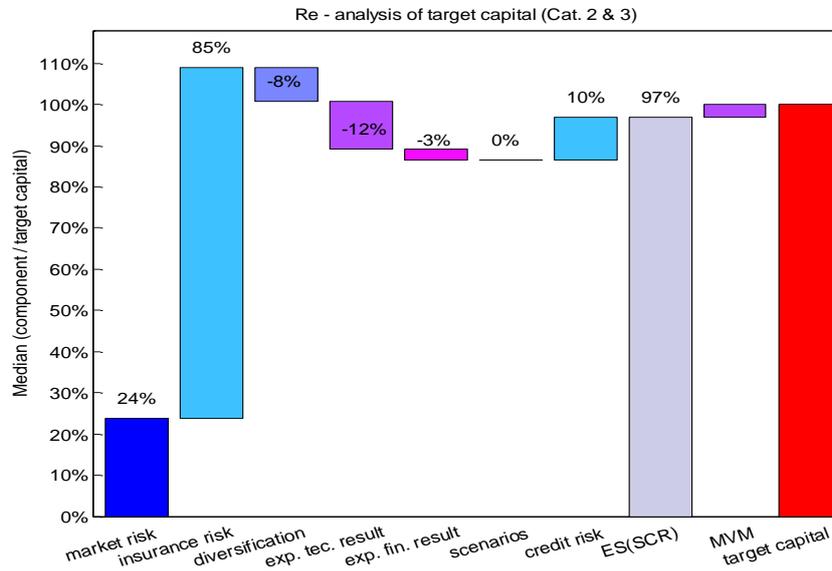


Figure 24b: Average target capital decomposition; companies of category 2 and 3 (median values of relative risk contribution).

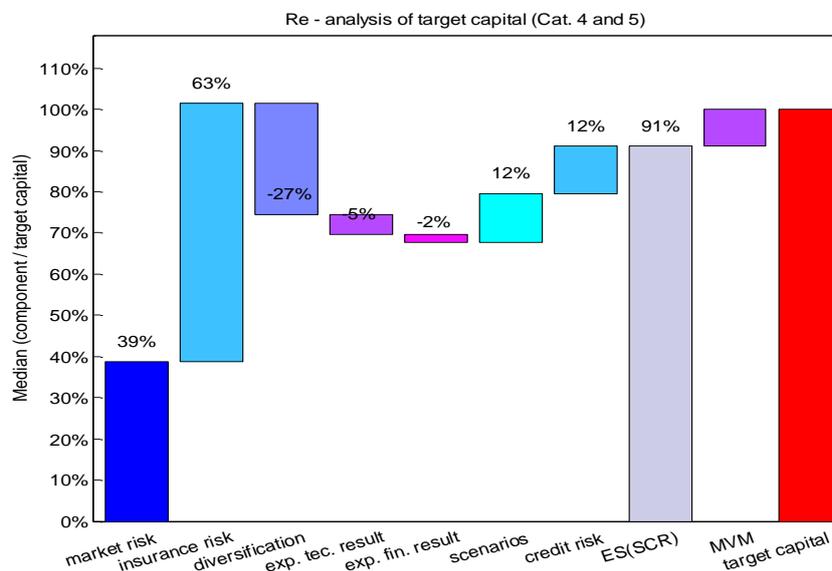


Figure 24c: Average target capital decomposition; companies of category 4 and 5 (median values of relative risk contribution).

3.4.3.2 Distribution of target capital components – box plots

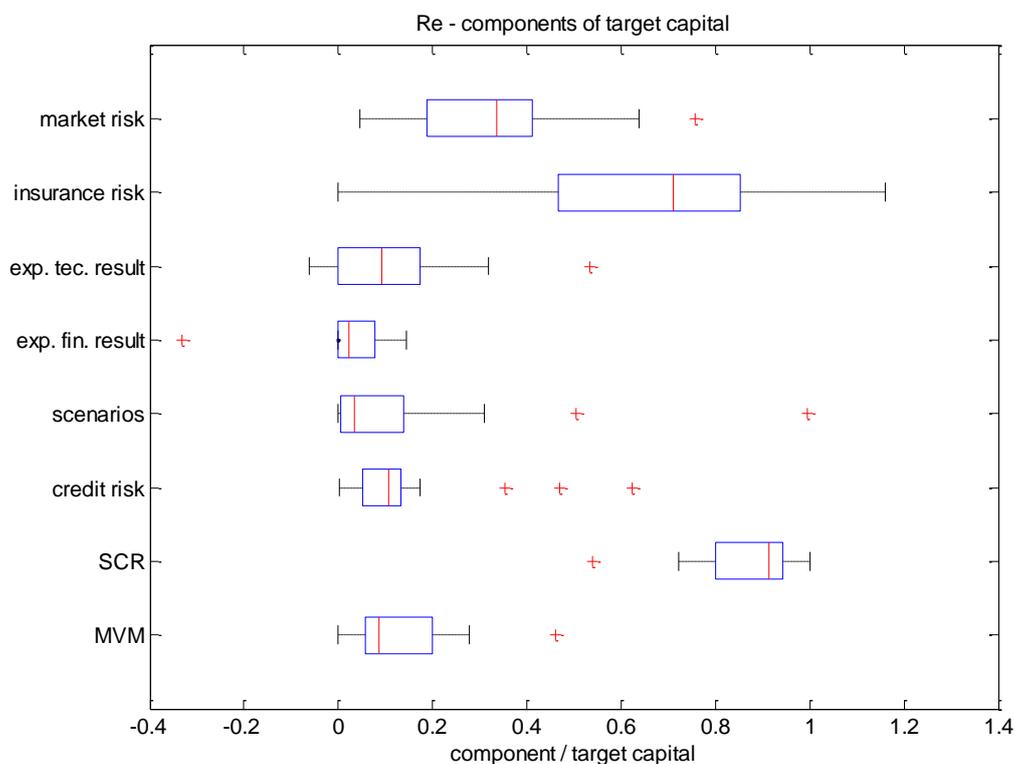


Figure 25: Distributions of target capital components, shown as box plots; all companies. For each box plot, the central mark is the median, the edges of the box are the 25th and the 75th percentiles, respectively, and the whiskers extend to the most extreme data points not considered outliers, and outliers are plotted individually (red crosses).

3.4.4 Market risk analysis

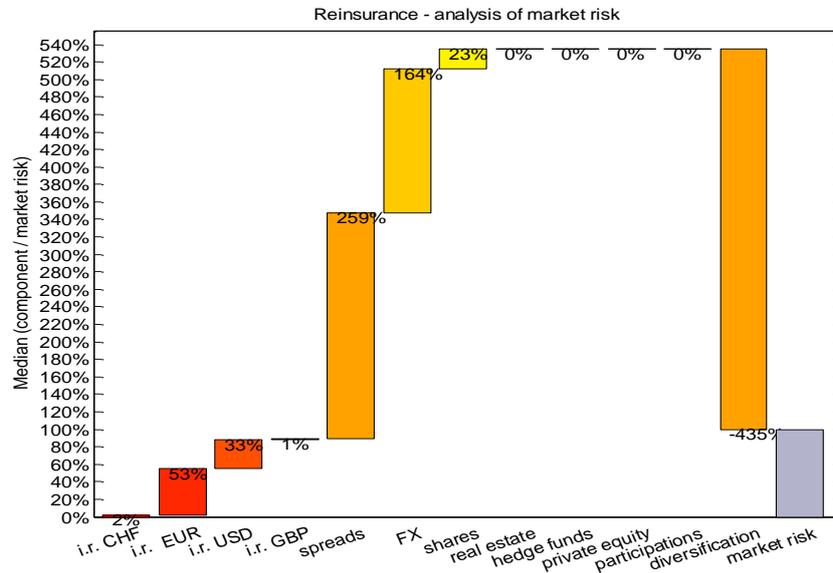


Figure 26a: Decomposition of the market risk into its components; all companies (median values of relative risk contribution). Here i. r. CNY denotes the interest rate risk of currency CNY.

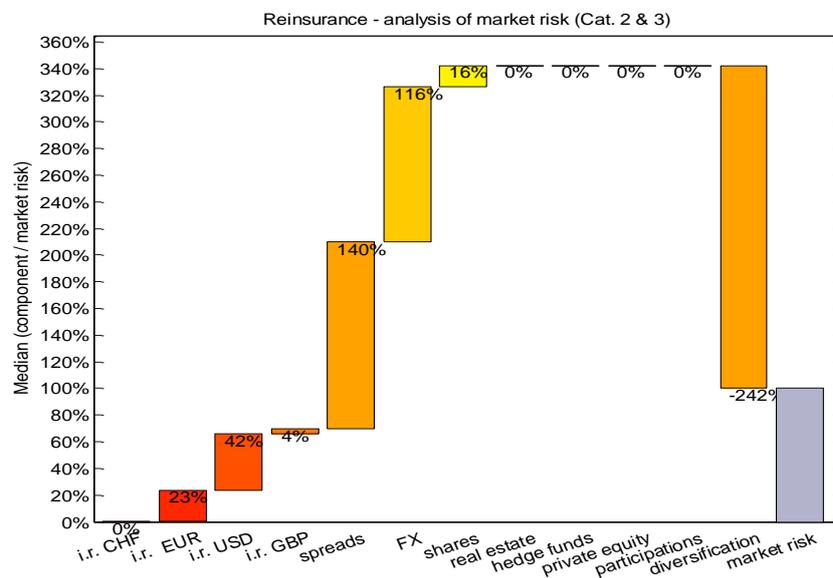


Figure 26b: Decomposition of the market risk into its components; companies of category 2 and 3 (median values of relative risk contribution).

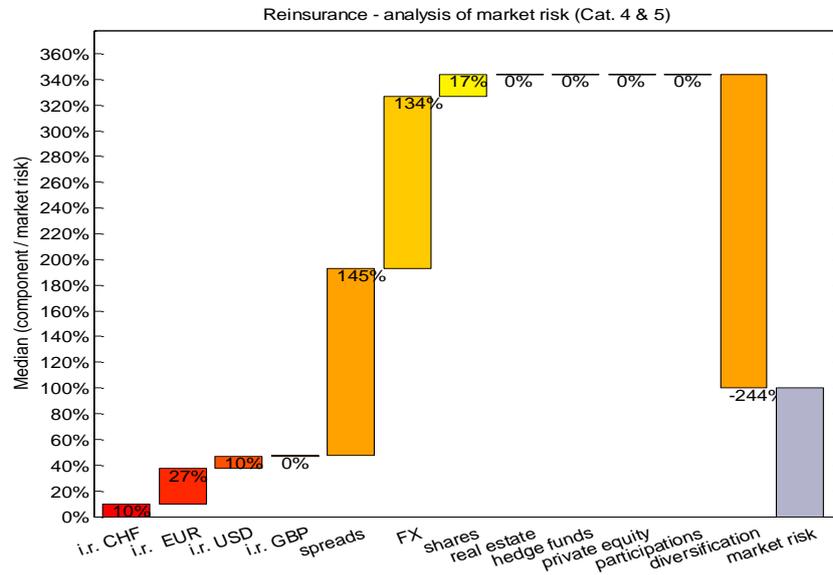


Figure 26c: Decomposition of the market risk into its components; companies of category 4 and 5 (median values of relative risk contribution).

Comments:

- Compared to last year, the quality of the data improved significantly.
- The preceding figures show a material exposure to *spreads* and *FX*, but also large *diversification effects* contribute significantly to the total market risk. This impact is even more accentuated by a correction of the code producing these figures on the decomposition of the market risks.

3.4.4.1 Distribution of market risk components – box plots

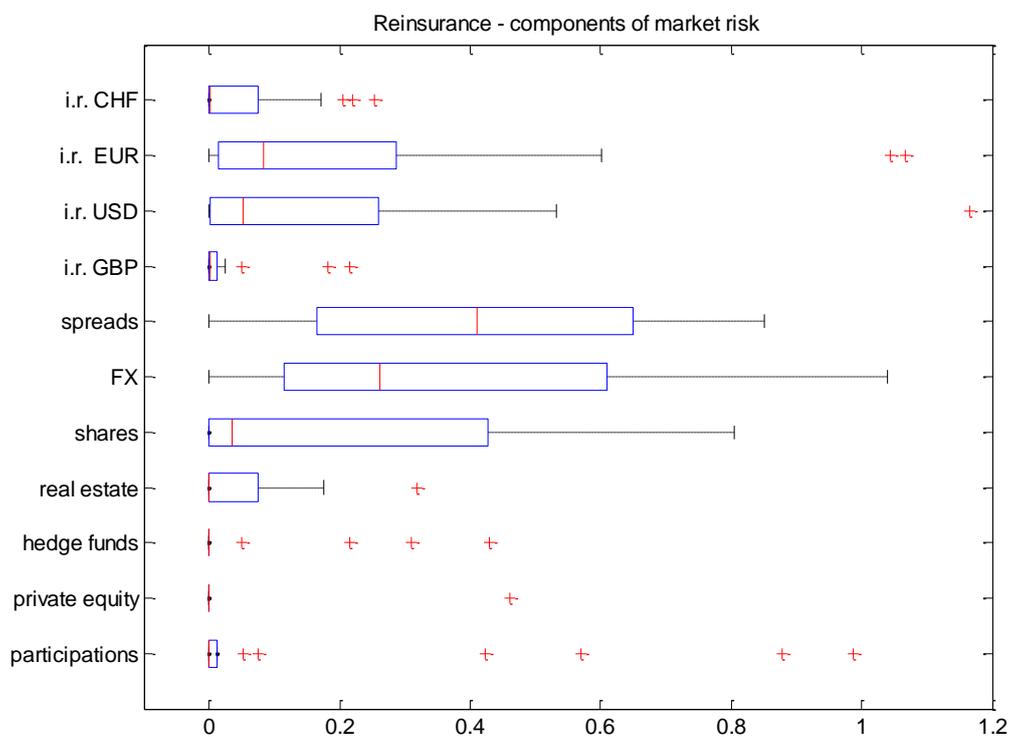


Figure 27: Distributions of market risk components, shown as box plots; all companies. For each box plot, the central mark is the median, the edges of the box are the 25th and the 75th percentiles, respectively, and the whiskers extend to the most extreme data points not considered outliers, and outliers are plotted individually (red crosses).

3.4.5 Scenarios

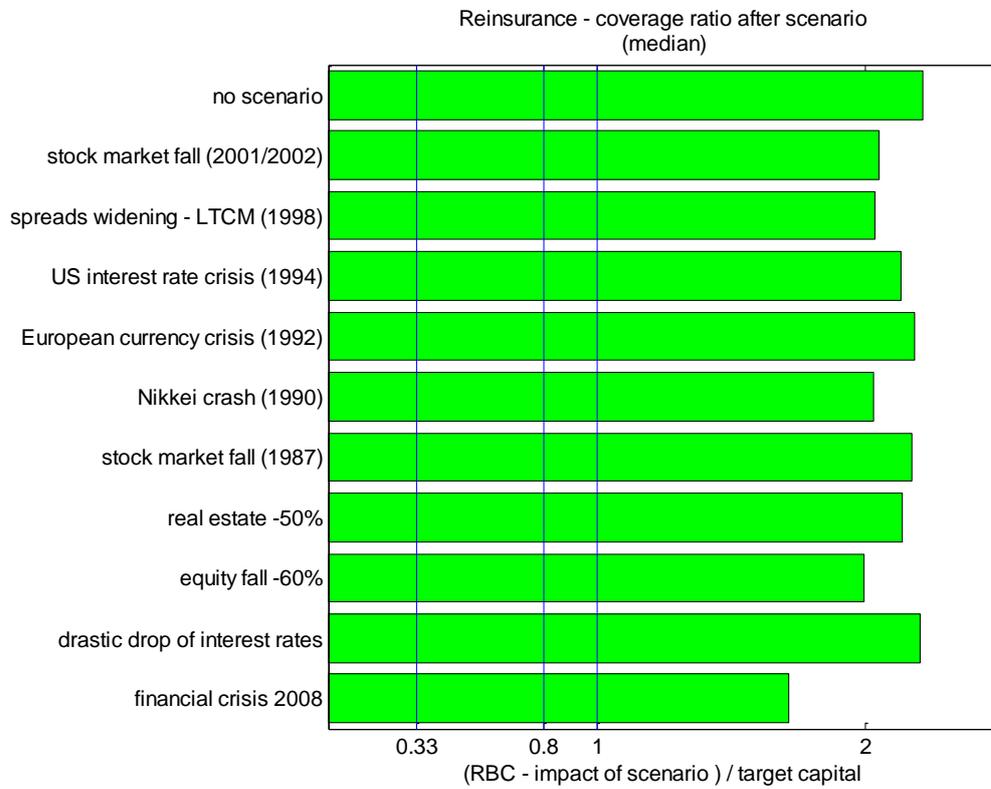


Figure 28: Impact of scenarios on the RBC. Intervention levels are at 100%, 80% and 33%. This figure shows the median values of all companies.

4 Glossary

Best estimate of the liability	<p>The expected value (i.e. the probability weighted average) of the present value of future cash-flows for current obligations, projected over the contract's run-off period, taking into account all up-to-date financial market and actuarial information</p> <p>Abbreviation: BEL</p>
Core capital	<p>Total assets minus best estimate of liabilities</p> <p>Abbreviation: CC</p>
Cost of capital charge	<p>Cost rate used for the determination of the costs expected for all future one-year capital requirements until run-off.</p> <p>Abbreviation: CoC</p>
Deductions	<p>Deductions include balance sheet items that need to be deducted from the risk bearing capital (e.g. own shares, intangible assets) or anticipated dividend payments or repayments of capital.</p>
Excess capital	<p>That part of the risk bearing capital that is held by an insurer in excess of the target capital, i.e. risk bearing capital minus target capital.</p> <p>Abbreviation: EC</p>
Expected shortfall	<p>A coherent risk measure. For a given confidence level of $1-\alpha$, it measures the average losses over the threshold defined (typically set as the Value-at-Risk for a percentile given), i.e. the conditioned mean value, given that the loss exceeds the $1-\alpha$ percentile.</p> <p>Abbreviation: ES</p> <p>Related term: Value-at-Risk</p>
Fundamental data sheet	<p>Form including the most relevant numbers in the context of the annual SST reporting process. It needs to be filled in by the insurance undertakings, regardless whether they use an internal model or the SST standard model.</p> <p>Abbreviation: FDS</p>
Hybrid	<p>Debt with equity character: eligible supplementary risk bearing capital.</p>
Market value margin	<p>Expected cost of having to hold solvency capital for non-hedgeable risks during the lifetime of the insurance liabilities.</p> <p>Abbreviation: MVM</p> <p>Synonym: Risk margin (RM)</p> <p>Related terms: Target capital, one-year capital requirement</p>

One-year capital requirement	<p>Target capital minus market value margin</p> <p>Related terms: Target capital, Market value margin</p>
Risk bearing capital	<p>Capital which may be taken into account when determining the insurer's capital available for SST purposes. Risk bearing capital is defined as the sum of core capital plus hybrid instruments minus deductions</p> <p>Abbreviation: RBC</p> <p>Related terms: Core capital</p>
Risk category	<p>The insurance market is split into categories 2 to 5 and the companies are assigned to a certain category due to their size and complexity (see: FINMA circular no 19 of 14 January 2011).</p>
Risk margin	<p>see market value margin</p>
Solvency capital required	<p>The solvency capital required reflects the amount of capital that an insurer is required to hold over a period of one year such that in adverse circumstances resulting in losses, it would still be able to meet its liabilities when they fall due.</p> <p>Abbreviation: SCR</p> <p>Related terms: One-year capital requirement</p>
Target capital	<p>The amount of capital to be held by an insurer to meet the quantitative requirements under the SST. The target capital equals the sum of the one-year capital requirement plus the market value margin.</p> <p>Abbreviation: TC</p> <p>Related terms: One-year capital requirement, market value margin</p>
Value-at-Risk	<p>Value-at-Risk is a percentile of a distribution and is used as a (non-coherent) risk measure.</p> <p>Abbreviation: VaR</p> <p>Related term: Expected shortfall</p>