

# SST 2016 Survey

## FINMA Report on the Swiss Insurance Market

17 November 2016

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## 1 Introduction

This report shows the 2016 SST results and is based on the data of 122 insurers (16 life insurers, 22 health insurers, 53 general insurers and 31 reinsurers). Reinsurance captives subject to the SST for the first time in 2016 and insurance groups were not included. Unless otherwise stated, data actualisation of the 2015 and 2016 SST figures is Q3 2015 and Q3 2016 respectively.

The survey was carried out at peer-group level according to sector (life, health, general insurance, reinsurance). It shows breakdowns of various key indicators such as total assets or liabilities, or target capital. In contrast to 2015, the scenario analysis only considers the scenarios having an impact on the RBC. This avoids distortion for companies having no exposure to some scenarios. Note that scenarios are excluded from the analysis when less than five companies are concerned. Thus insurers may have to evaluate scenarios which are not displayed in their peer-group.

Quality and completeness checks were carried out for each key indicator. In case figures from a company did not meet the quality and completeness requirements, the corresponding data were excluded from the analysis. For instance, if the market risk diversification effect was positive, the insurer's market risk figures were excluded from the analysis. Therefore, approximately 5% of the datasets per graph could not be used.

Although FINMA's preliminary checks aim to exclude those datasets with obvious deficiencies, the data that passed this pre-examination test may still be erroneous. Unless otherwise stated, corrections resulting from thorough FINMA reviews were not included in this report.

The "Fundamental Data Sheet" (FDS) was the data source for this survey. The FDS contains detailed quantitative information such as the decomposition of risk-bearing capital and target capital. All supervised insurers are requested to fill in the FDS and submit it to FINMA, regardless of whether they use a standard model or an internal model.

To make the survey meaningful, companies of comparable size were grouped together. For this purpose, the supervisory categories set out in FINMA Newsletter 19 (2011) "Overhaul of FINMA's supervisory approach" were used. All supervised insurers are assigned to categories 2 to 5; categories 1 and 6 are not relevant for insurers.

## 2 Solvency overview

Table 1 shows the number of insurers whose data were used in this survey ("Considered") and the total number of insurers subject to SST reporting requirements ("Participants").

	Considered	Participants
Life	16	16
Health	22	22
General insurance	52	53
Reinsurance	31	31
<b>Total</b>	<b>121</b>	<b>122</b>

Table 1: Number of companies considered in the current analysis and total number of insurers subject to SST reporting requirements.

This report is grouped in four sectors: life, health, general insurance and reinsurance. Because the Swiss insurance market is rather heterogeneous, the categories defined in FINMA Newsletter 19 (2011) were used to prevent the high number of smaller companies outweighing the few larger ones, which could lead to a distortion of survey results. Table 2 shows the breakdown of the 122 insurers into sector and category.

	Category 2	Category 3	Category 4	Category 5	Total
Life	2	10	4	0	16
Health	0	6	11	5	22
General insurance	2	8	16	27	53
Reinsurance	1	12	13	5	31
Total	5	36	44	37	122

Table 2: Breakdown of all insurers subject to SST reporting requirements according to sector and supervisory category.

The figures presented in Table 3 show the aggregated 2016 SST results of all participants. Compared to 2015 SST results in Table 4, the overall solvency situation worsened slightly.

	RBC	TC	SST ratio
Life	59,645	40,903	146%
Health	9,493	3,704	256%
General insurance	74,759	40,995	182%
Reinsurance	55,569	27,670	201%
Total	199,465	113,272	176%

Table 3: Risk-bearing capital (RBC, in CHF million), target capital (TC, in CHF million) and SST ratios as of 1 January 2016, broken down by sector.

	RBC	TC	SST ratio
Life	50,173	33,639	149%
Health	9,297	3,484	267%
General insurance	77,014	41,749	184%
Reinsurance	60,349	27,791	217%
Total	196,833	106,663	185%

Table 4: Risk-bearing capital (RBC, in CHF million), target capital (TC, in CHF million) and SST ratios as of 1 January 2015, broken down by sector.

The 2015 and 2016 SST figures, including FINMA's corrections, are restated in Q4 and Q3 of the corresponding year in Tables 6 and 5. Any changes result from FINMA's corrections and from delayed or updated data delivery.

	RBC	TC	SST ratio
Life	59,645	41,019	145%
Health	9,493	3,704	256%
General insurance	74,756	41,003	182%
Reinsurance	55,569	27,670	201%
Total	199,462	113,396	176%

Table 5: Restated risk-bearing capital (RBC, in CHF million), target capital (TC, in CHF million) and SST ratios as of 1 January 2016, broken down by sector (including FINMA's corrections).

	RBC	TC	SST ratio
Life	50,165	34,226	147%
Health	9,297	3,484	267%
General insurance	77,014	41,883	184%
Reinsurance	60,349	27,800	217%
Total	196,825	107,393	183%

Table 6: Restated risk-bearing capital (RBC, in CHF million), target capital (TC, in CHF million) and SST ratios as of 1 January 2015, broken down by sector (including FINMA's corrections).

## 3 Life

### 3.1 Goals of the analyses

The analyses presented in this section give a deeper insight into:

- investment structure
- liability structure
- best estimate of liabilities and target capital in relation to the total assets
- split of target capital into its components, e.g. market, credit and insurance risk
- split of market risk into components, e.g. interest rate risk, equity risk, etc.
- split of interest rate risk into different currencies
- scenarios and their impact on the risk-bearing capital; indication of whether the SST capital requirements after scenario impacts are still fulfilled

Two types of graphs are shown:

- waterfall diagrams
- boxplots providing information on the dispersion of the data

To avoid conclusions that can be drawn regarding the individual risk profile of an insurer, the data are pooled by insurance sector. The graphs provide the breakdown of the indicators into their components. Any component provided of less than five insurers will not be displayed in the graph.

#### Assets

The total assets in the market consistent balance sheet are shown as the sum of the different asset types (such as bonds, real estate, shares, etc.).

#### Liabilities

The total liabilities in the market consistent balance sheet are split accordingly to the type of liability.

#### Best estimate of liabilities and target capital in relation to the balance sheet total

The market value of assets ( $MV(A)$ ) is decomposed into the following components:

- best estimate of liabilities (BEL)
- market value margin (MVM)
- one-year capital requirement (SCR), which is computed as the difference between the target capital (TC) and the market value margin. The TC, SCR and MVM are related through

$$TC = SCR + MVM \quad (1)$$

- excess capital (EC), which is defined as the difference between the risk-bearing capital (RBC) and the target capital (TC), which gives

$$RBC = TC + EC \quad (2)$$

- supplementary capital (SC)
- deductions (D)

More precisely, we have the following decomposing of assets:

$$MV(A) = BEL + MVM + SCR + EC - SC + D.$$

To show this, note that the core capital (CC) and the risk-bearing capital (RBC) are related through

$$RBC = CC + SC. \quad (3)$$

For the purpose of this analysis the temporary adjustment term, when relevant, has been included in the supplementary capital. Now CC can be expressed in the following form

$$CC = MV(A) - BEL - D,$$

from which we derive by means of (3) the relation

$$MV(A) = BEL + RBC - SC + D.$$

By means of (1) and (2) we conclude that

$$\begin{aligned} MV(A) &= BEL + EC + TC - SC + D \\ &= BEL + MVM + SCR + EC - SC + D. \end{aligned}$$

### **Target capital decomposition**

Target capital equals the sum of the one-year capital requirement (SCR) and the market value margin (MVM). In turn, the SCR key components are market risk, credit risk, insurance risk and effect of the scenarios and diversification.

### **Market risk analysis**

Market risk plays a dominant role in an economic, risk-based solvency regime. A number of risk factors such as interest rates, credit spreads, exchange rates, real estate, to name but a few, contribute to the market risk. Waterfall and boxplot diagrams are used to present the most important market risk factors.

### **Interest rate risk analysis**

Insurers with assets and liabilities denominated in different currencies are exposed to currency risk and generally also to interest rate risk. In such a case, the total interest rate risk consists of the interest rate risk of each currency. We have shown the decomposition of the total interest rate risk into the four currencies CHF, EUR, USD and GBP, including the effect of diversification.

## Scenarios

For each scenario, we have computed the impact ratio, which is defined as the sum of the risk-bearing capital (RBC) and the scenario impact ( $c$ ), divided by the RBC:

$$\text{Impact ratio} = \frac{\text{RBC} + c}{\text{RBC}}.$$

Typically, a scenario impact  $c$  with a negative value is representing a loss. To concentrate only on relevant scenarios, scenarios that have no impact (i.e.  $c = 0$ ) are ignored.

Furthermore, a reference scenario called excess capital loss was introduced. The loss of this scenario equals the *excess capital* (EC), i.e.  $c = -\text{EC}$ . This loss is the maximum loss an insurer can endure while remaining solvent. It should be noted that the impact ratio of this reference scenario can be expressed with the help of the target capital (TC). We have used relation (2), that is  $\text{RBC} = \text{TC} + \text{EC}$ , to obtain the corresponding impact ratio:

$$\text{Impact ratio} = \frac{\text{RBC} - \text{EC}}{\text{RBC}} = \frac{\text{TC}}{\text{RBC}}.$$

To facilitate the comparison of scenarios with this reference scenario, the latter is shown in a different colour.

Scenarios exempted from the target capital aggregation are labelled (naS) for “non-aggregated Scenarios”.

## 3.2 Comments on results

Life insurers' risk-bearing capital increased to CHF 59,645 million (18.9%), while target capital went up to CHF 41,019 million (+19.8%), resulting in an SST solvency ratio of 147% (down three basis points). The strong increase in risk bearing capital and target capital is due to methodological changes only. Adverse effects such as risk-free interest rates were partly offset by other balance sheet positions (e.g. shares and real estate).

Capital requirements are largely influenced by market risks (54% of target capital), which are dominated by interest rates and spread risks. The financial crisis scenario demonstrates how susceptible life insurers are to market risks, as many of them would have SST solvency ratios below the threshold of 100%.

### 3.3 Assets

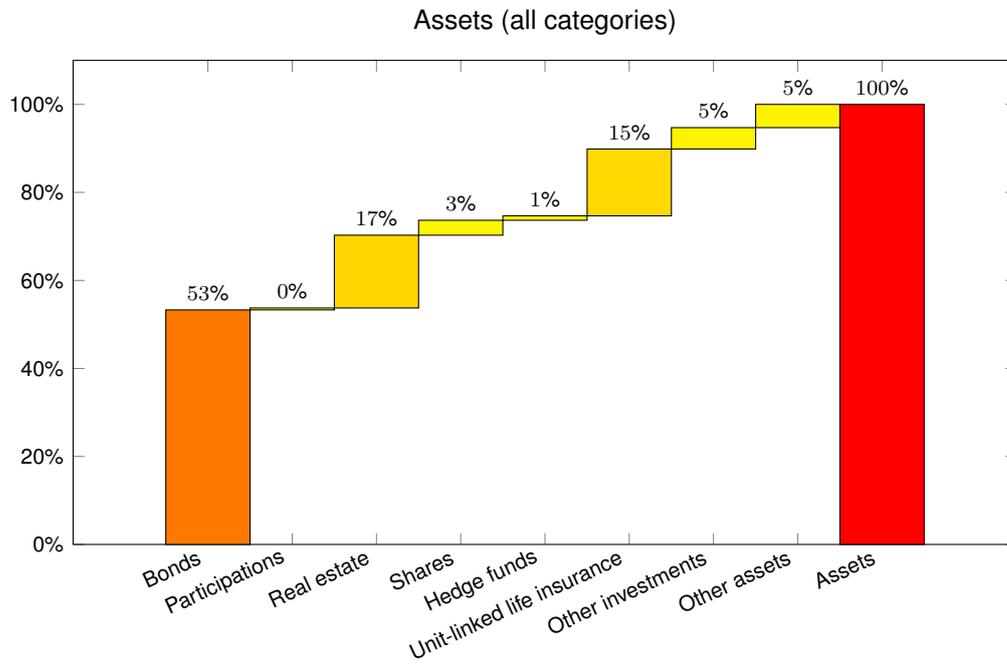


Figure 1a: Life (mean values by sector)

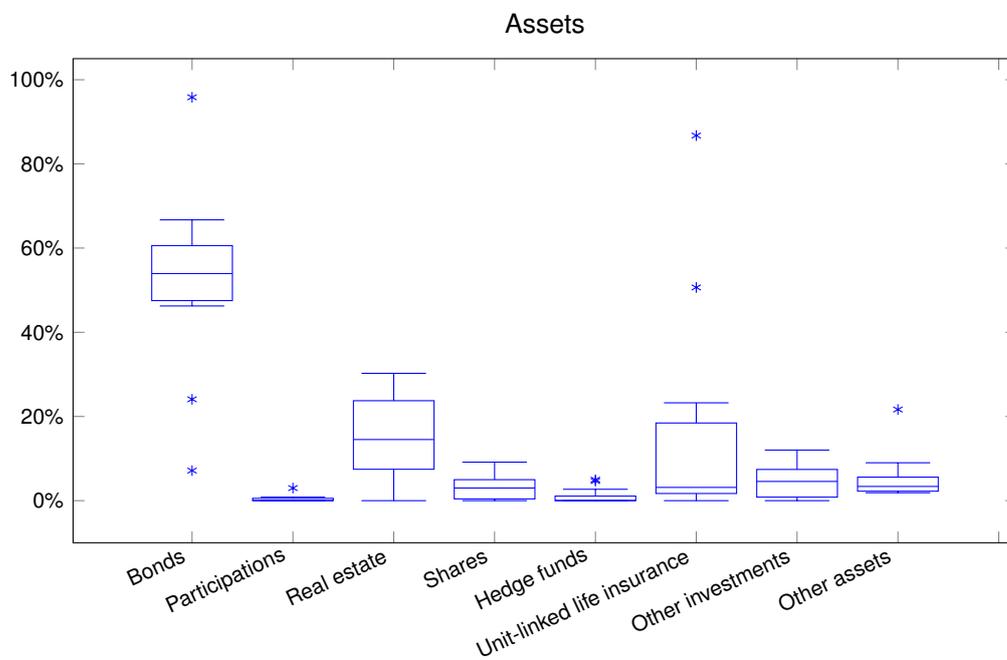


Figure 1b: Life (distribution as box-plot)

### 3.4 Liabilities

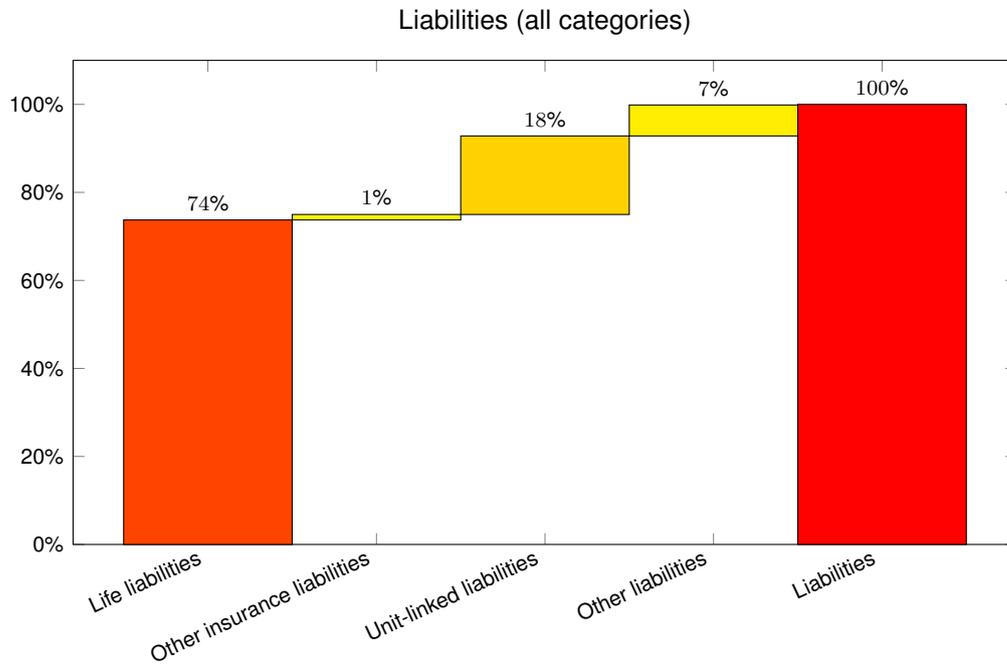


Figure 2a: Life (mean values by sector)

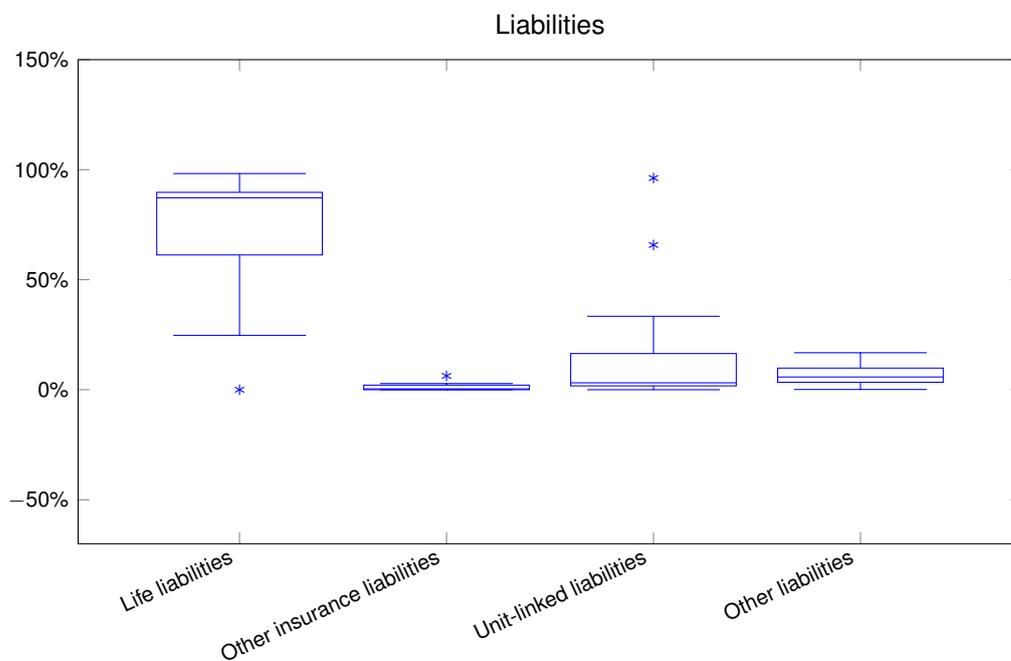


Figure 2b: Life (distribution as box-plot)

### 3.5 Best estimate of liability and target capital in relation to the balance sheet total

Best estimate of liability and target capital in relation to the balance sheet total (all categories)

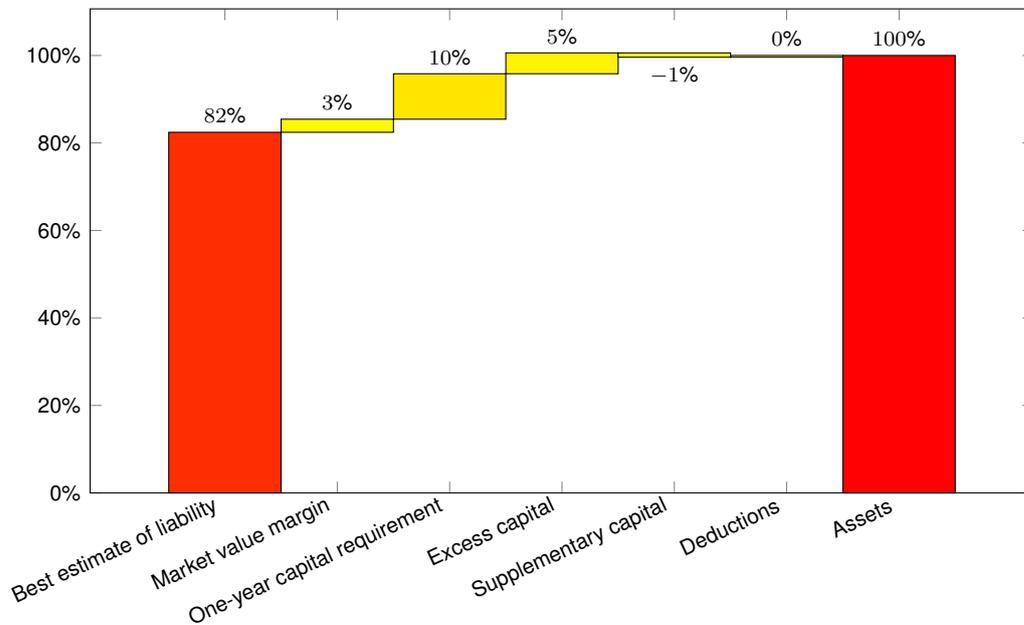


Figure 3a: Life (mean values by sector)

Best estimate of liability and target capital in relation to the balance sheet total

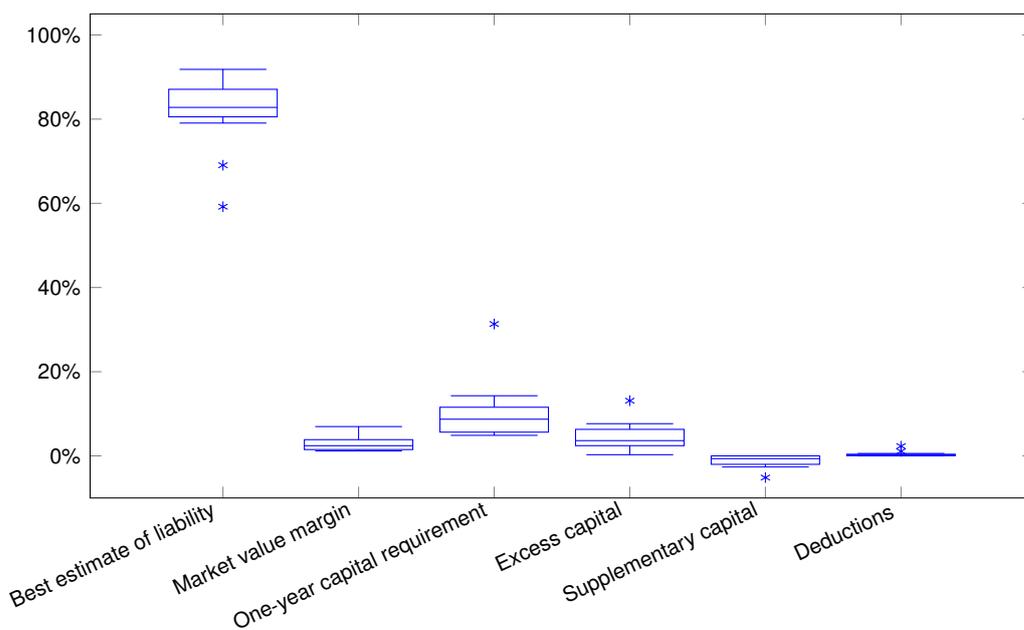


Figure 3b: Life (distribution as box-plot)

### 3.6 Target capital decomposition

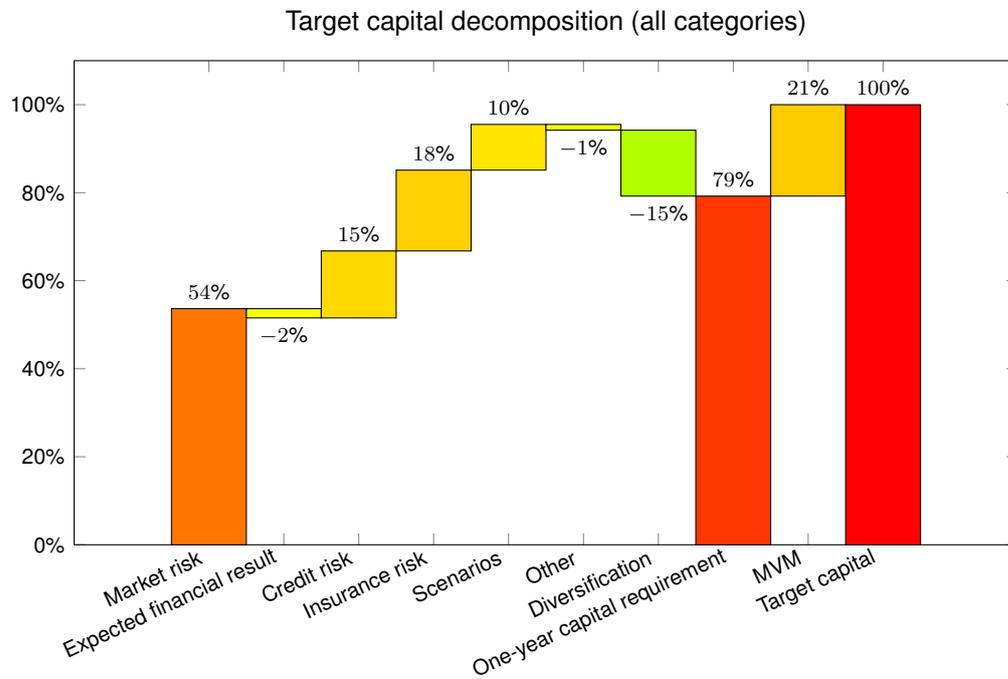


Figure 4a: Life (mean values by sector)

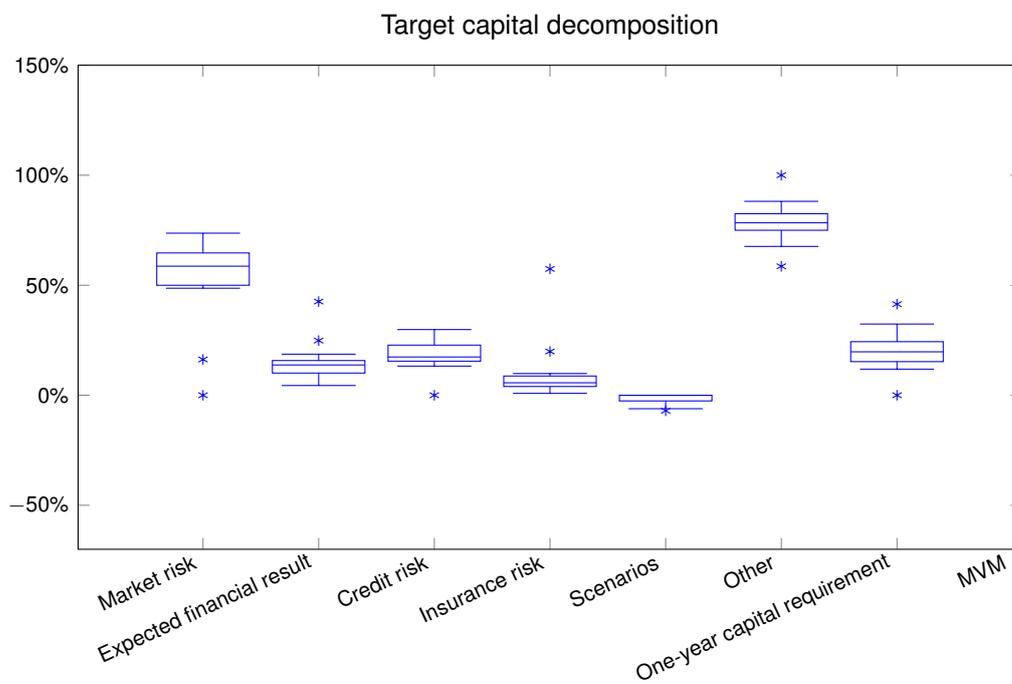


Figure 4b: Life (distribution as box-plot)

### 3.7 Market risk analysis

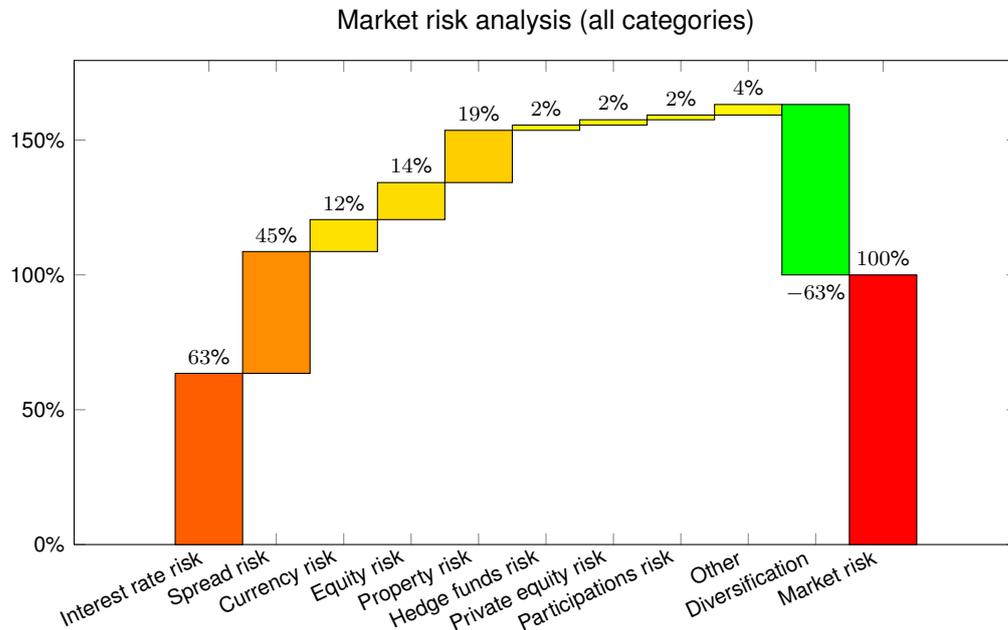


Figure 5a: Life (mean values by sector)

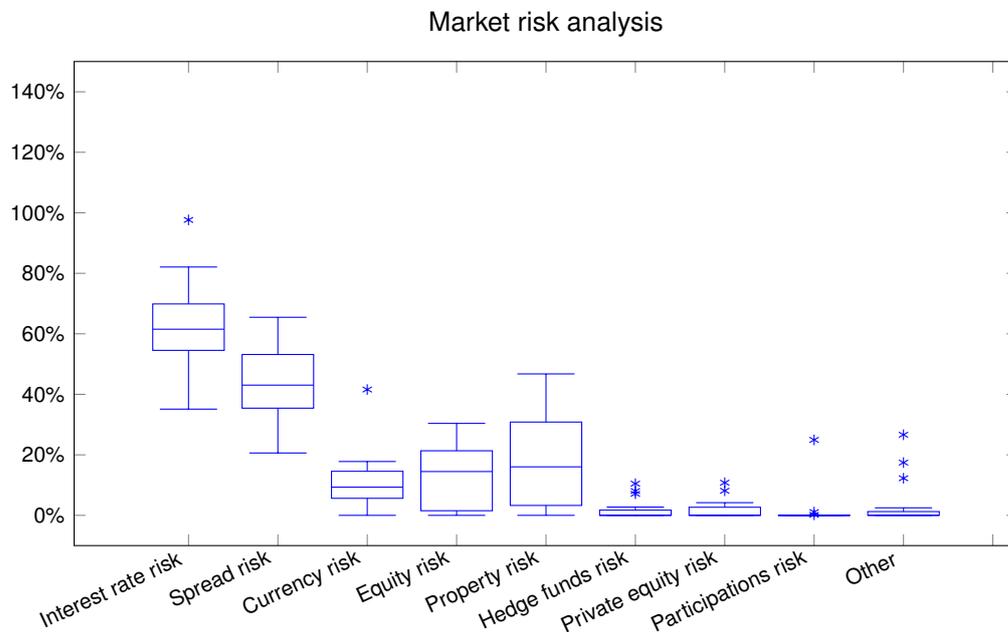


Figure 5b: Life (distribution as box-plot)

### 3.8 Interest rate analysis

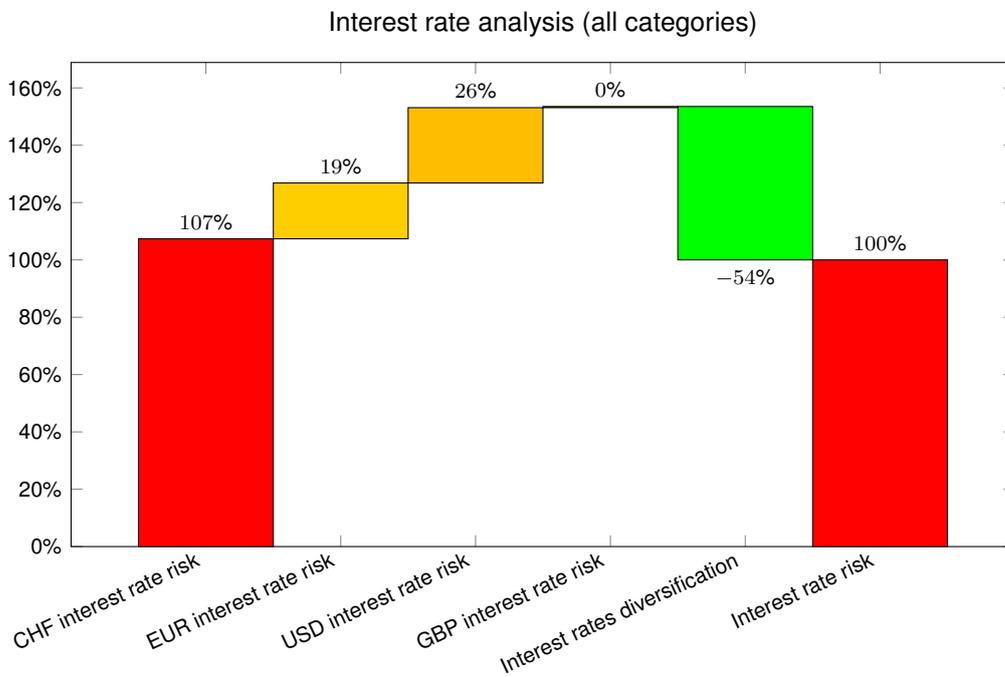


Figure 6a: Life (mean values by sector)

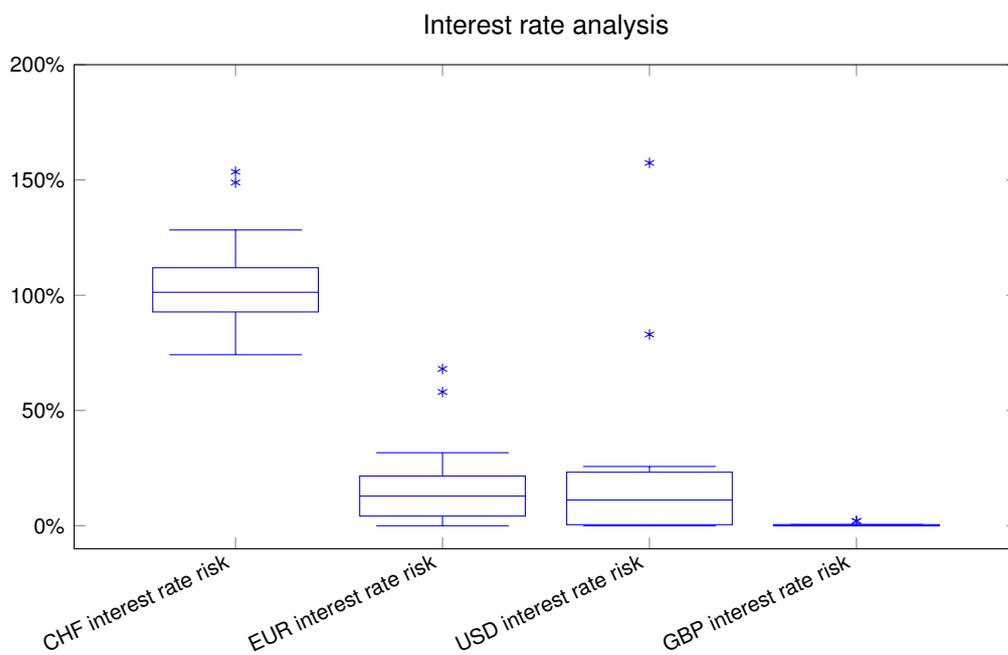


Figure 6b: Life (distribution as box-plot)

### 3.9 Market and credit risk scenarios

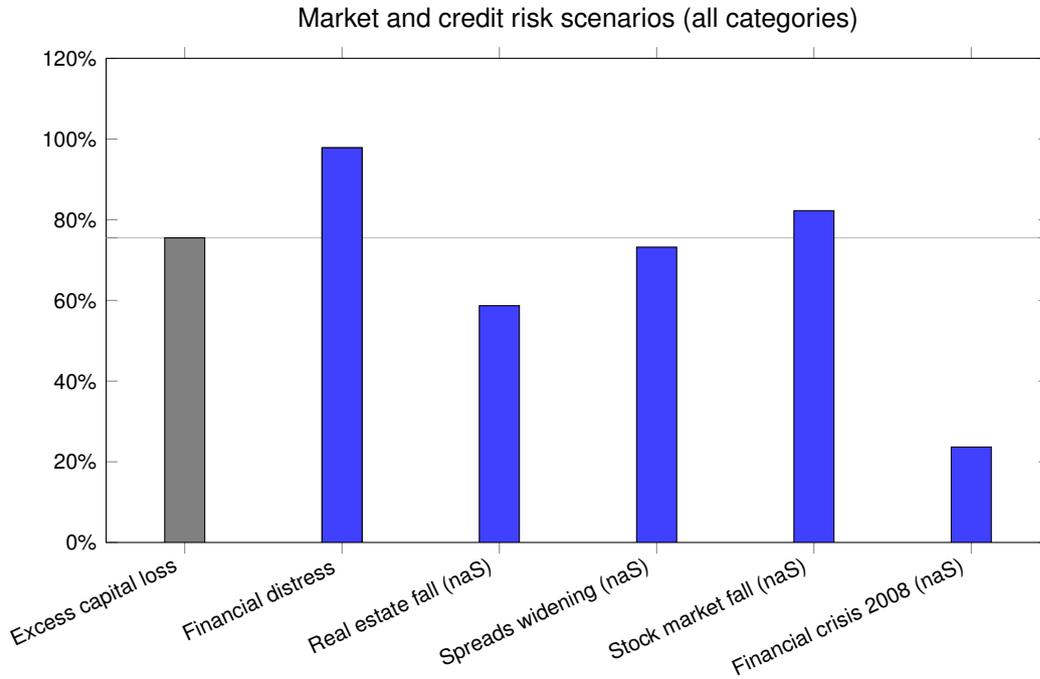


Figure 7a: Life (mean values by sector)

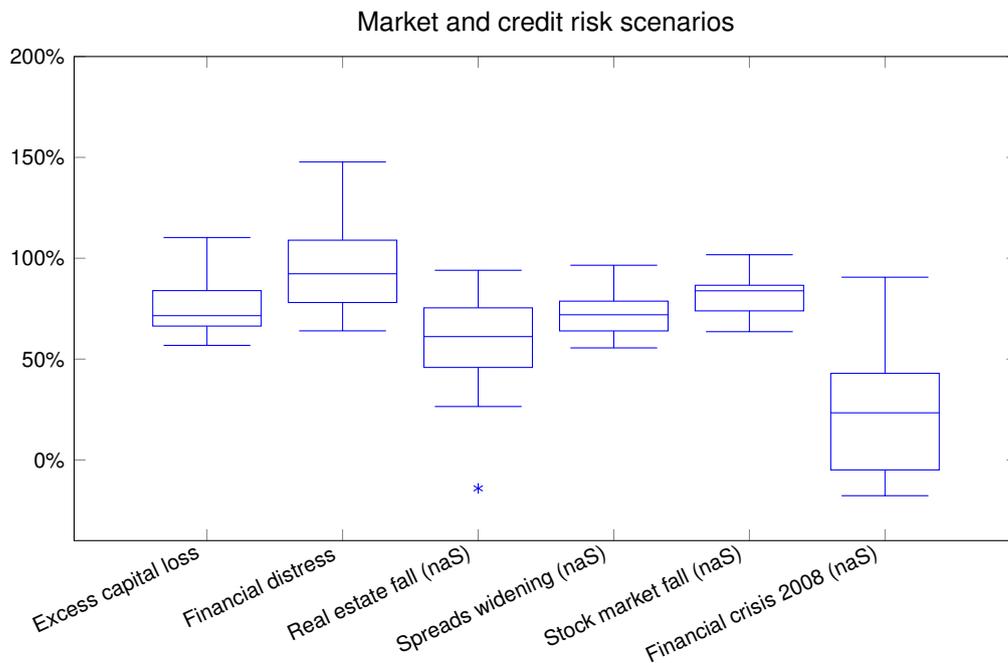


Figure 7b: Life (distribution as box-plot)

### 3.10 Insurance risk and global scenarios

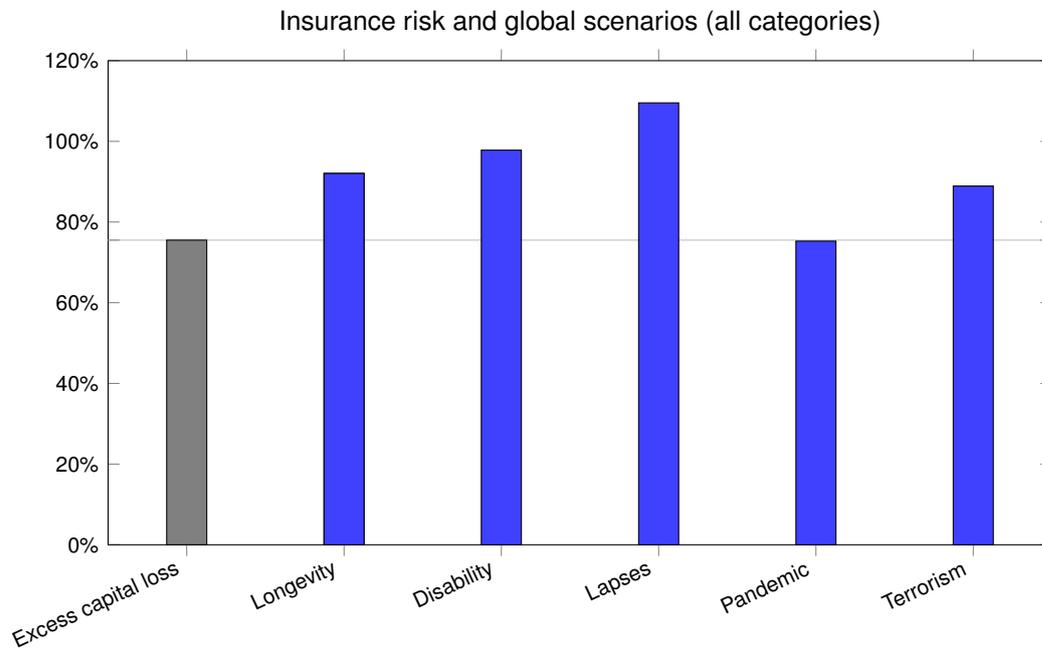


Figure 8a: Life (mean values by sector)

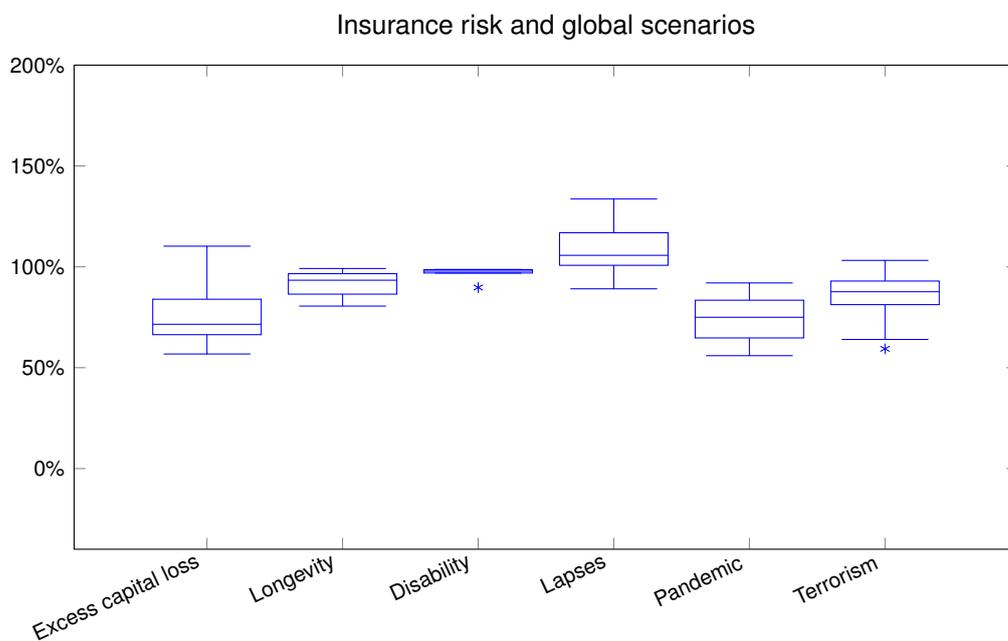


Figure 8b: Life (distribution as box-plot)

## 4 General insurance

### 4.1 Goals of the analyses

The analyses presented in this section give a deeper insight into:

- investment structure
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- best estimate of liabilities and target capital in relation to the total assets
- split of target capital into its components, e.g. market, credit and insurance risk
- split of market risk into components, e.g. interest rate risk, equity risk, etc.
- split of interest rate risk into different currencies
- scenarios and their impact on the risk-bearing capital; indication of whether the SST capital requirements after scenario impacts are still fulfilled

Two types of graphs are shown:

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$$TC = SCR + MVM \quad (1)$$

- excess capital (EC), which is defined as the difference between the risk-bearing capital (RBC) and the target capital (TC), which gives

$$RBC = TC + EC \quad (2)$$

- supplementary capital (SC)
- deductions (D)

More precisely, we have the following decomposing of assets:

$$MV(A) = BEL + MVM + SCR + EC - SC + D.$$

To show this, note that the core capital (CC) and the risk-bearing capital (RBC) are related through

$$RBC = CC + SC. \quad (3)$$

For the purpose of this analysis the temporary adjustment term, when relevant, has been included in the supplementary capital. Now CC can be expressed in the following form

$$CC = MV(A) - BEL - D,$$

from which we derive by means of (3) the relation

$$MV(A) = BEL + RBC - SC + D.$$

By means of (1) and (2) we conclude that

$$\begin{aligned} MV(A) &= BEL + EC + TC - SC + D \\ &= BEL + MVM + SCR + EC - SC + D. \end{aligned}$$

### **Target capital decomposition**

Target capital equals the sum of the one-year capital requirement (SCR) and the market value margin (MVM). In turn, the SCR key components are market risk, credit risk, insurance risk and effect of the scenarios and diversification.

### **Market risk analysis**

Market risk plays a dominant role in an economic, risk-based solvency regime. A number of risk factors such as interest rates, credit spreads, exchange rates, real estate, to name but a few, contribute to the market risk. Waterfall and boxplot diagrams are used to present the most important market risk factors.

### **Interest rate risk analysis**

Insurers with assets and liabilities denominated in different currencies are exposed to currency risk and generally also to interest rate risk. In such a case, the total interest rate risk consists of the interest rate risk of each currency. We have shown the decomposition of the total interest rate risk into the four currencies CHF, EUR, USD and GBP, including the effect of diversification.

## Scenarios

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$$\text{Impact ratio} = \frac{\text{RBC} + c}{\text{RBC}}.$$

Typically, a scenario impact  $c$  with a negative value is representing a loss. To concentrate only on relevant scenarios, scenarios that have no impact (i.e.  $c = 0$ ) are ignored.

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$$\text{Impact ratio} = \frac{\text{RBC} - \text{EC}}{\text{RBC}} = \frac{\text{TC}}{\text{RBC}}.$$

To facilitate the comparison of scenarios with this reference scenario, the latter is shown in a different colour.

Scenarios exempted from the target capital aggregation are labelled (naS) for "non-aggregated Scenarios".

## 4.2 Comments on results

Overall, general insurers reported an SST solvency ratio of 182%, almost unchanged to the previous year (2015: 184%). Both target capital (-2.1% to CHF 41,003 million) and risk-bearing capital (-2.9% to CHF 74,756 million) decreased slightly.

Target capital is dominated by insurance risk (mainly reserve risks and normal claim risks).

### 4.3 Assets

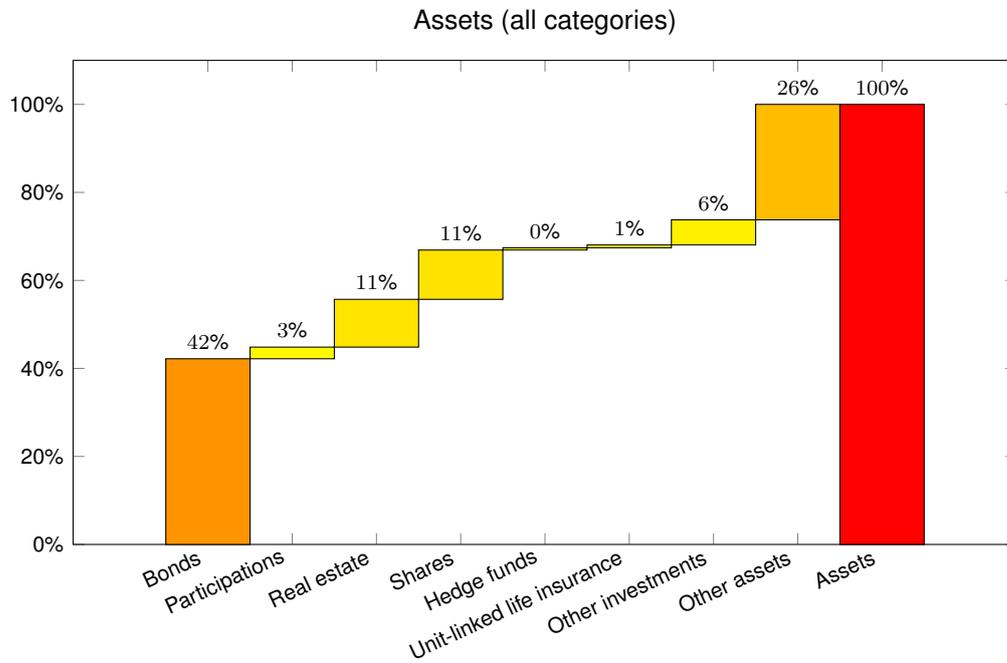


Figure 9a: General insurance (mean values by sector)

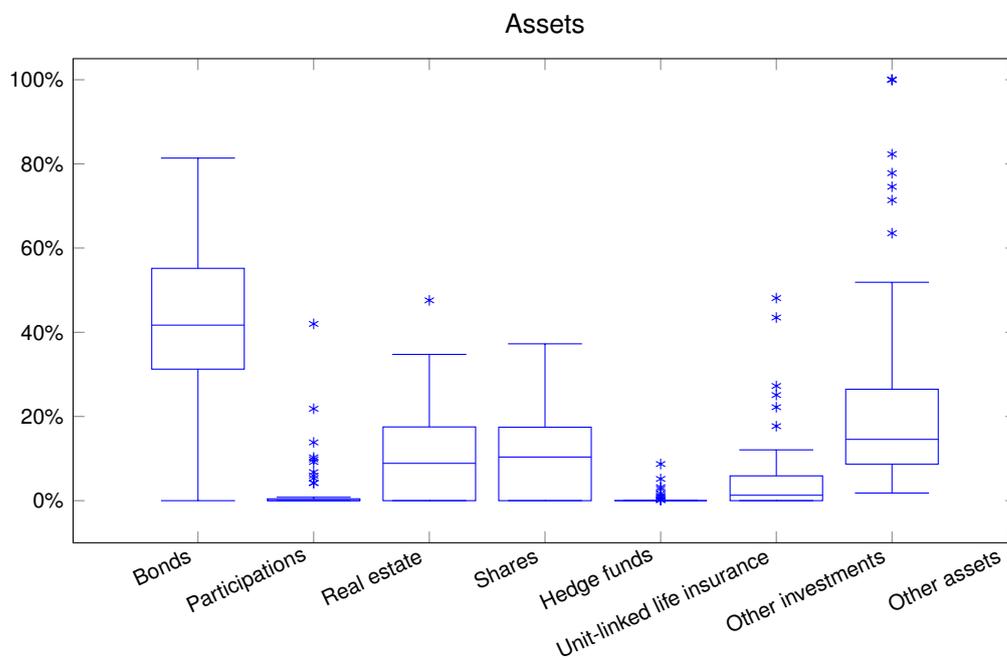


Figure 9b: General insurance (distribution as box-plot)

## 4.4 Liabilities

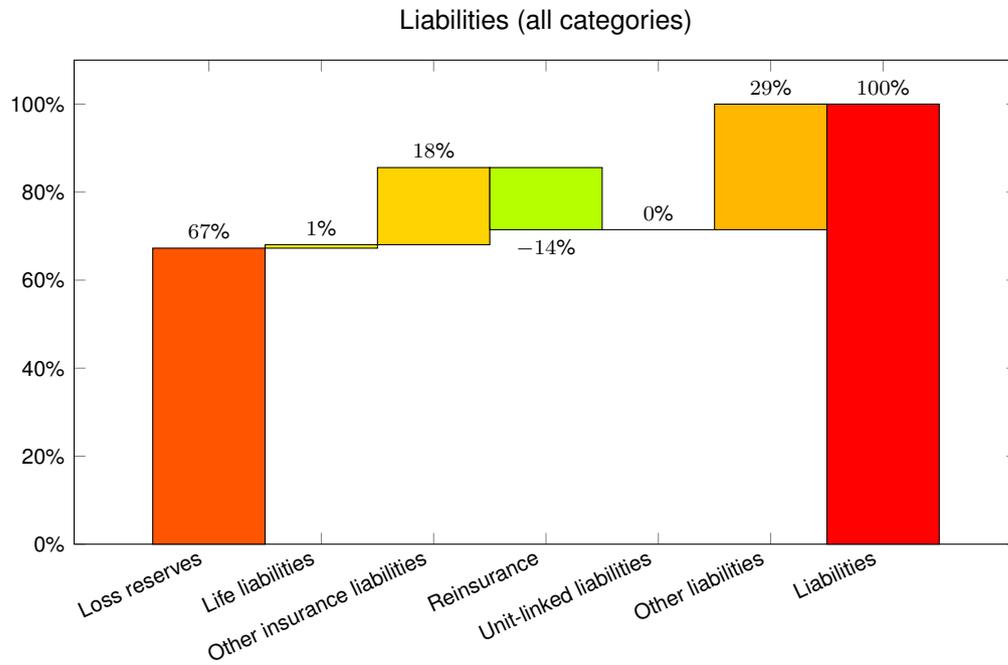


Figure 10a: General insurance (mean values by sector)

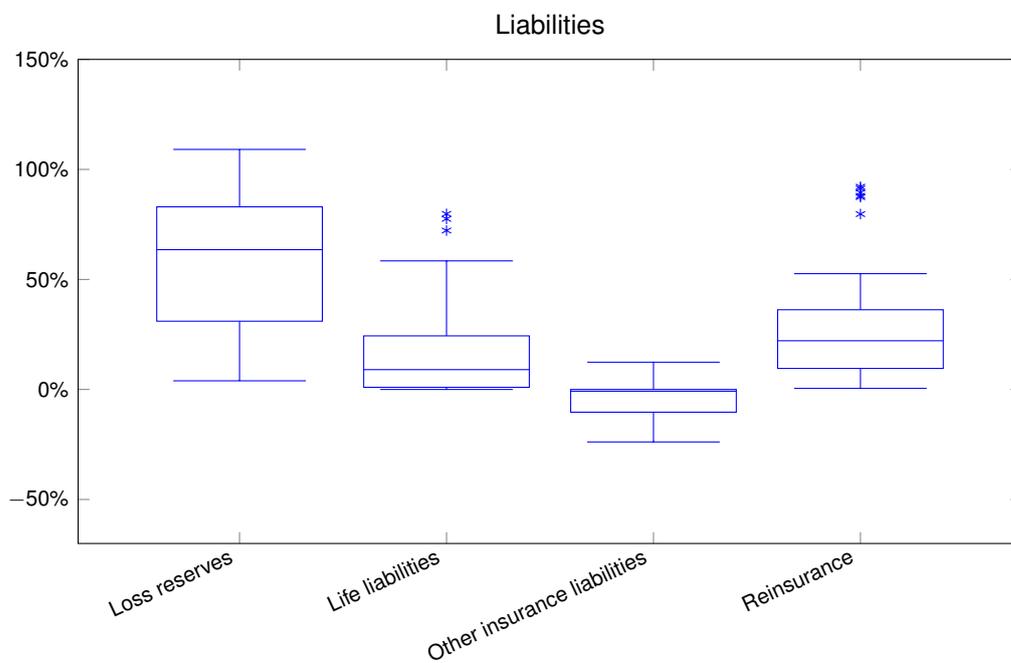


Figure 10b: General insurance (distribution as box-plot)

## 4.5 Best estimate of liability and target capital in relation to the balance sheet total

Best estimate of liability and target capital in relation to the balance sheet total (all categories)

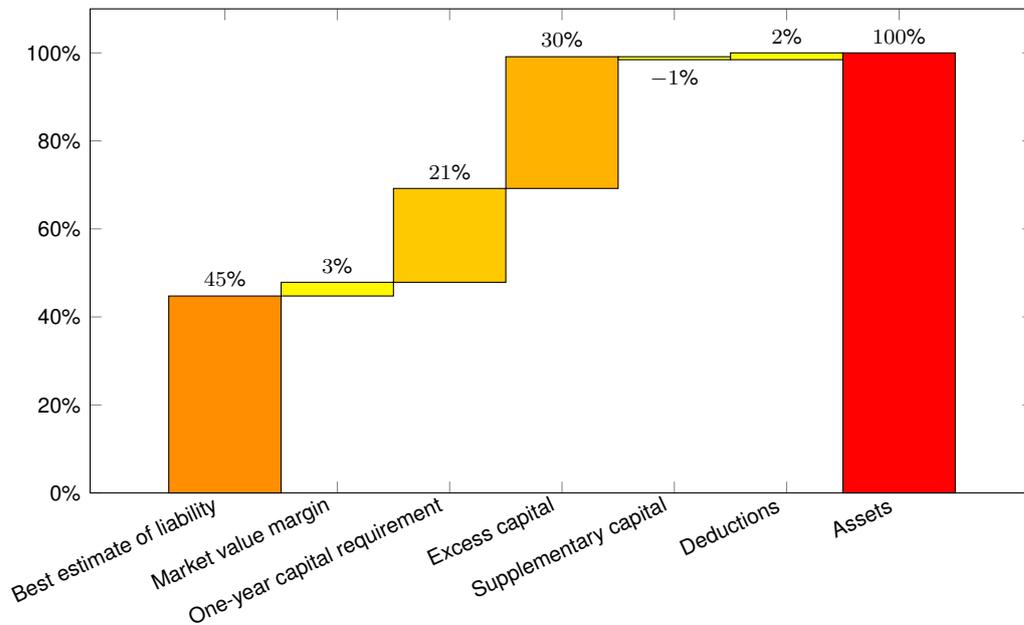


Figure 11a: General insurance (mean values by sector)

Best estimate of liability and target capital in relation to the balance sheet total

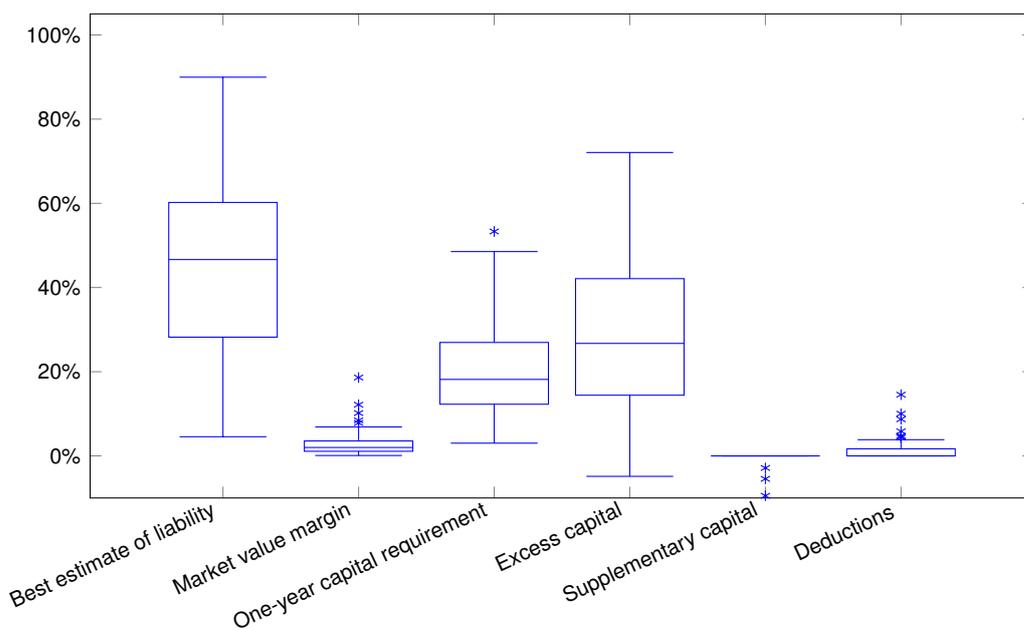


Figure 11b: General insurance (distribution as box-plot)

## 4.6 Target capital decomposition

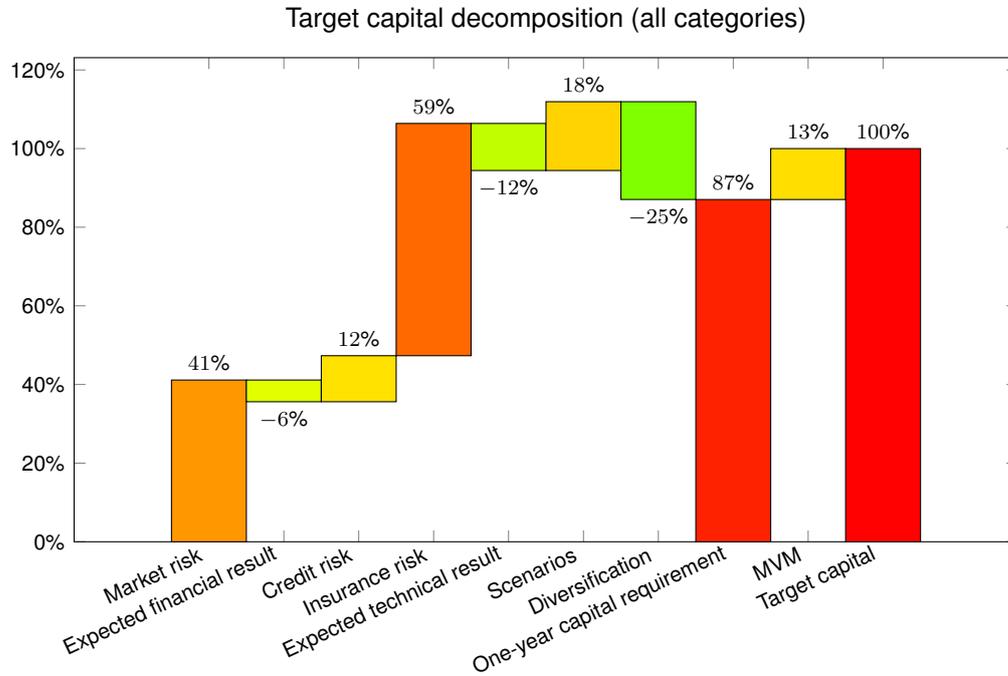


Figure 12a: General insurance (mean values by sector)

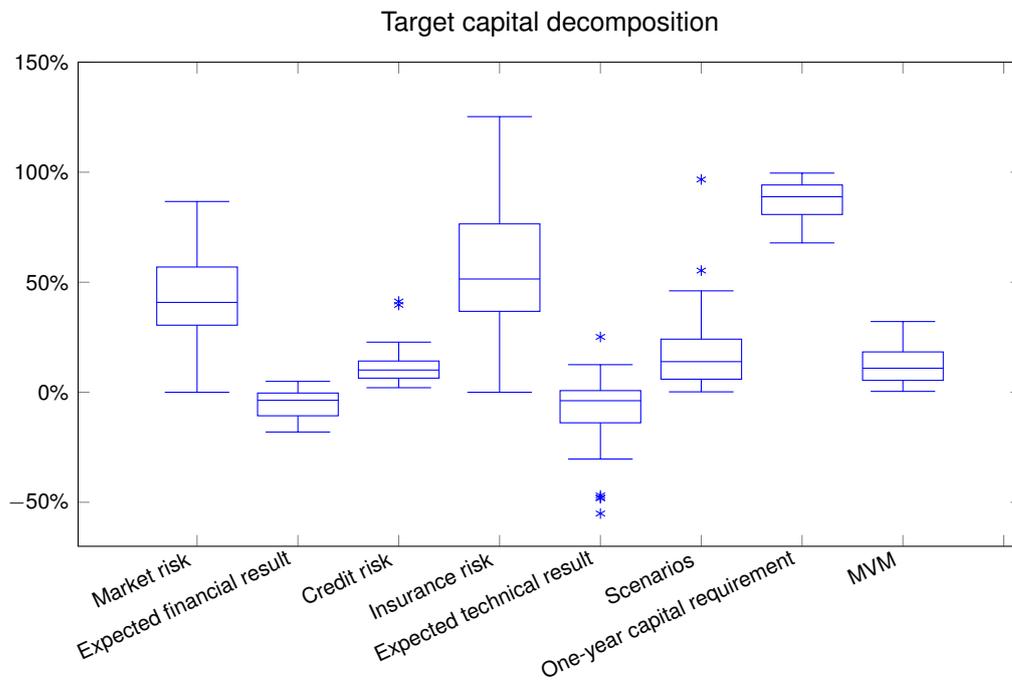


Figure 12b: General insurance (distribution as box-plot)

## 4.7 Market risk analysis

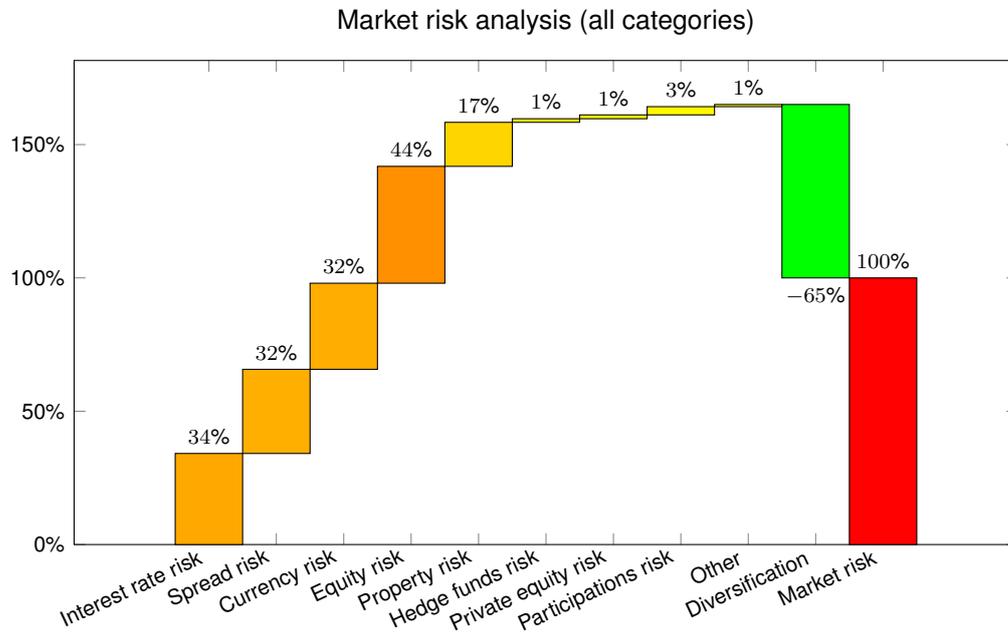


Figure 13a: General insurance (mean values by sector)

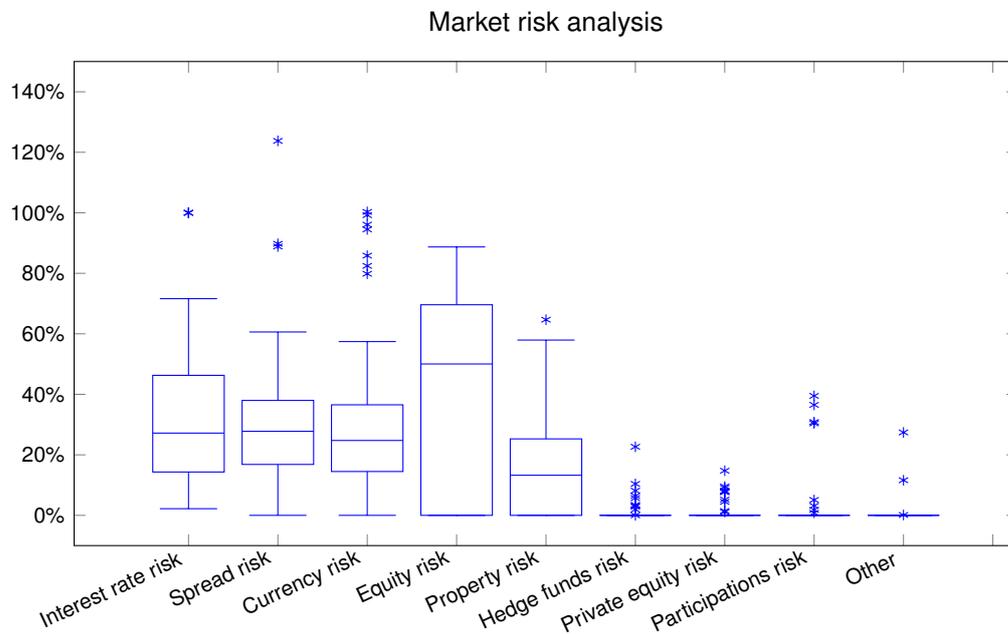


Figure 13b: General insurance (distribution as box-plot)

## 4.8 Interest rate analysis

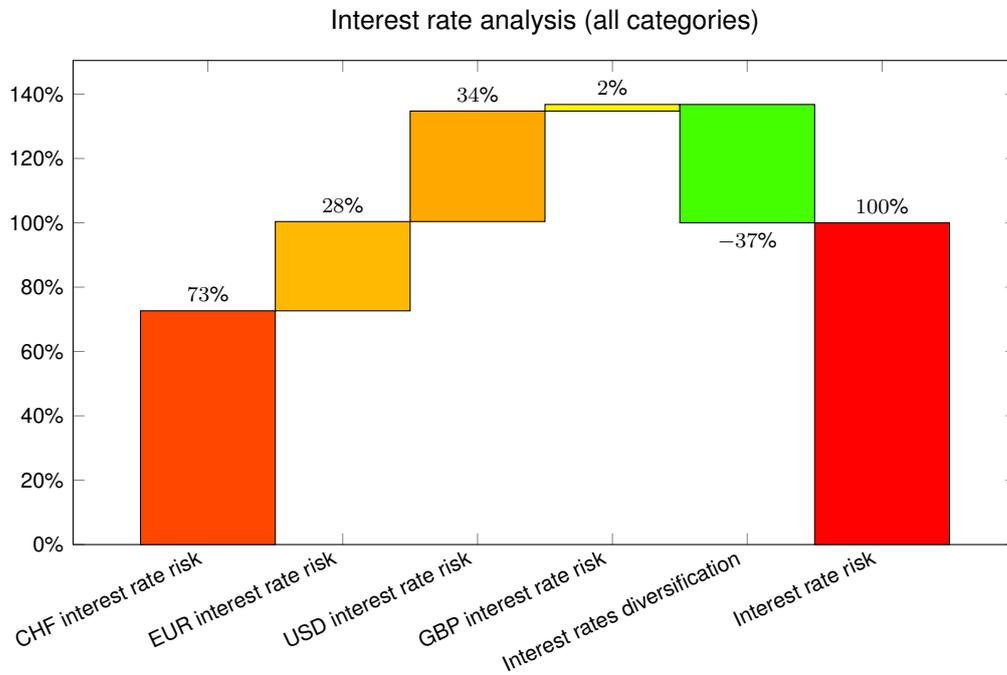


Figure 14a: General insurance (mean values by sector)

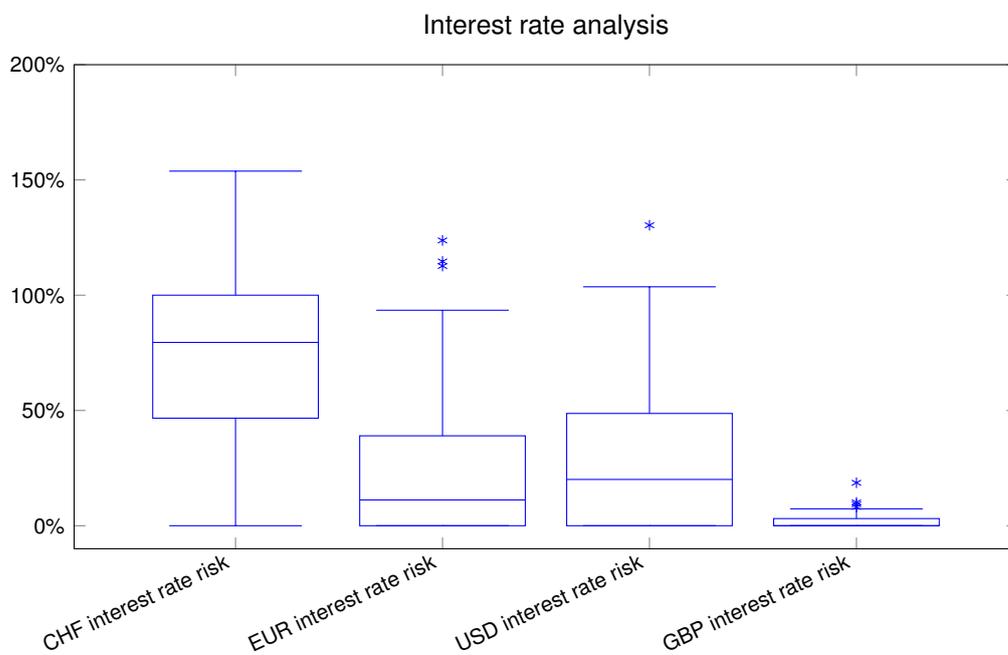


Figure 14b: General insurance (distribution as box-plot)

## 4.9 General insurance risk analysis

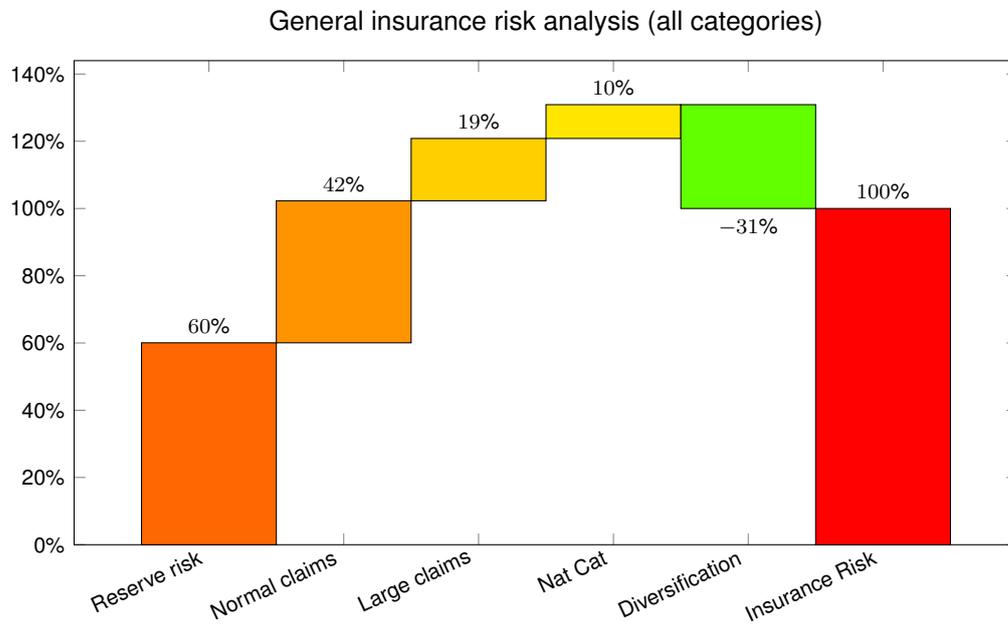


Figure 15a: General insurance (mean values by sector)

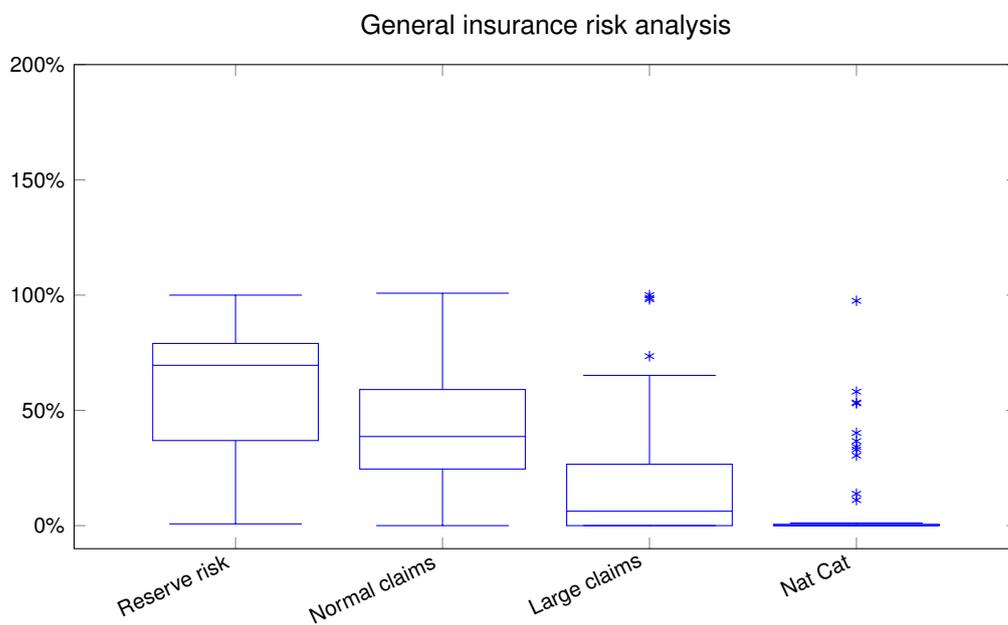


Figure 15b: General insurance (distribution as box-plot)

#### 4.10 Market and credit risk scenarios

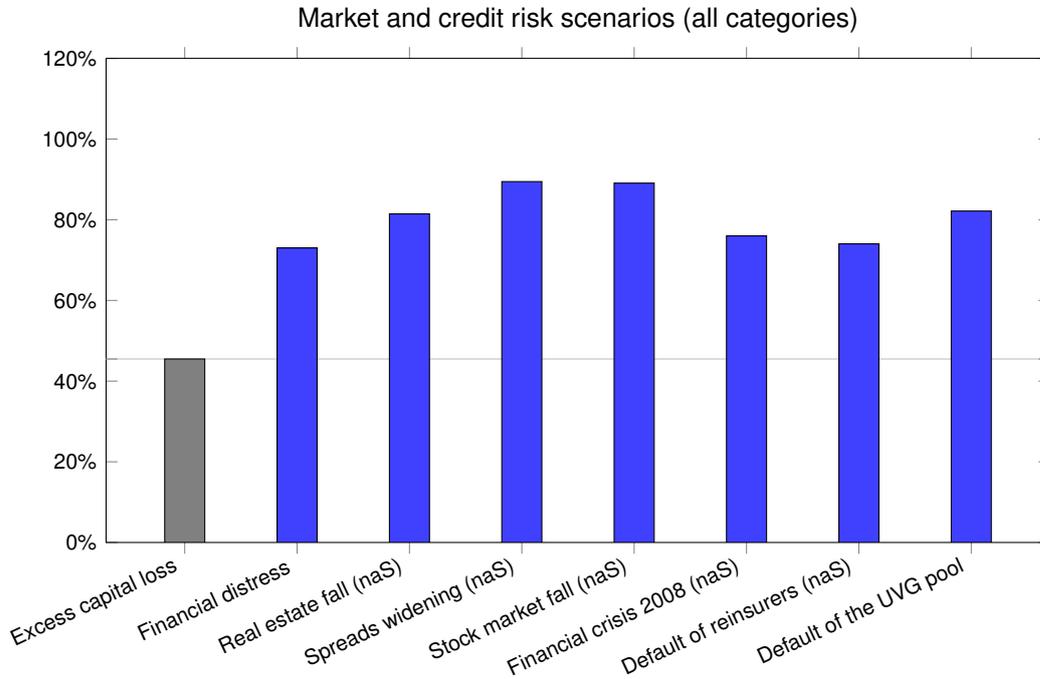


Figure 16a: General insurance (mean values by sector)

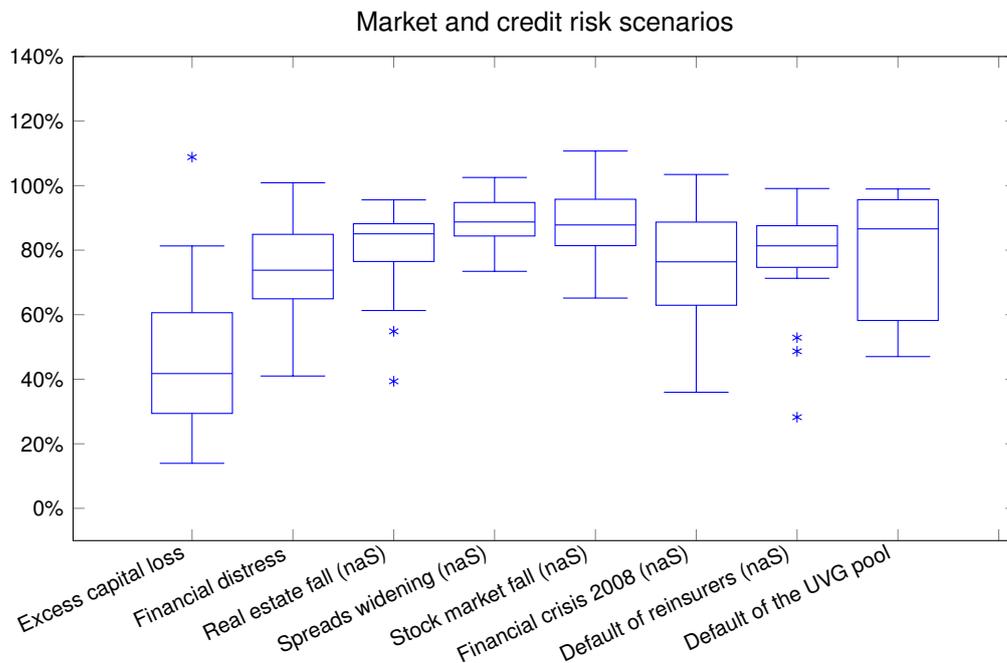


Figure 16b: General insurance (distribution as box-plot)

## 4.11 Insurance risk and global scenarios

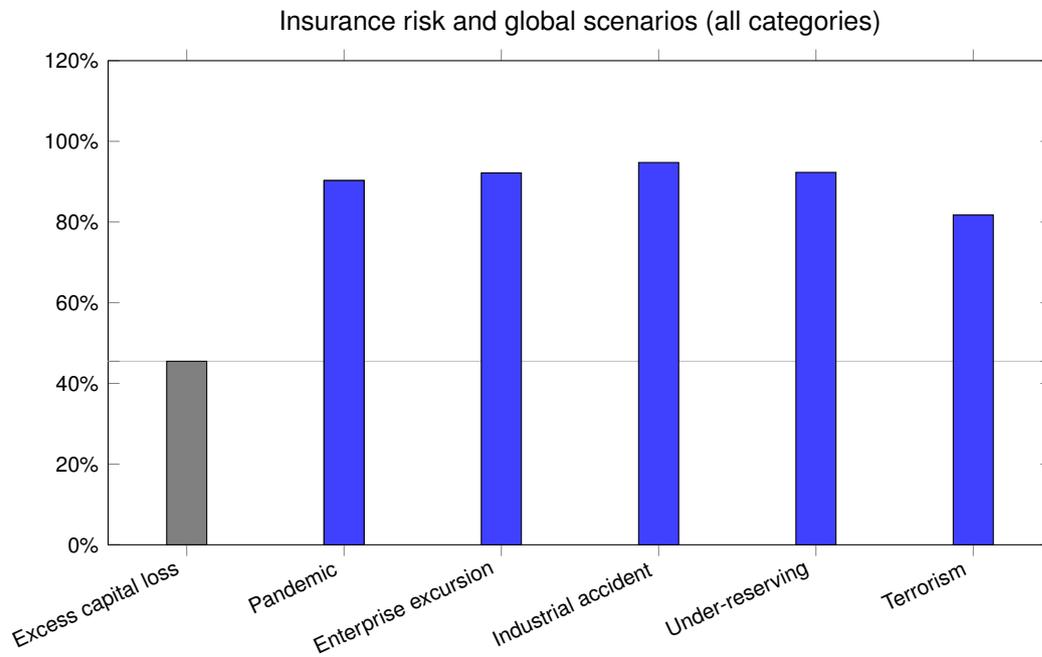


Figure 17a: General insurance (mean values by sector)

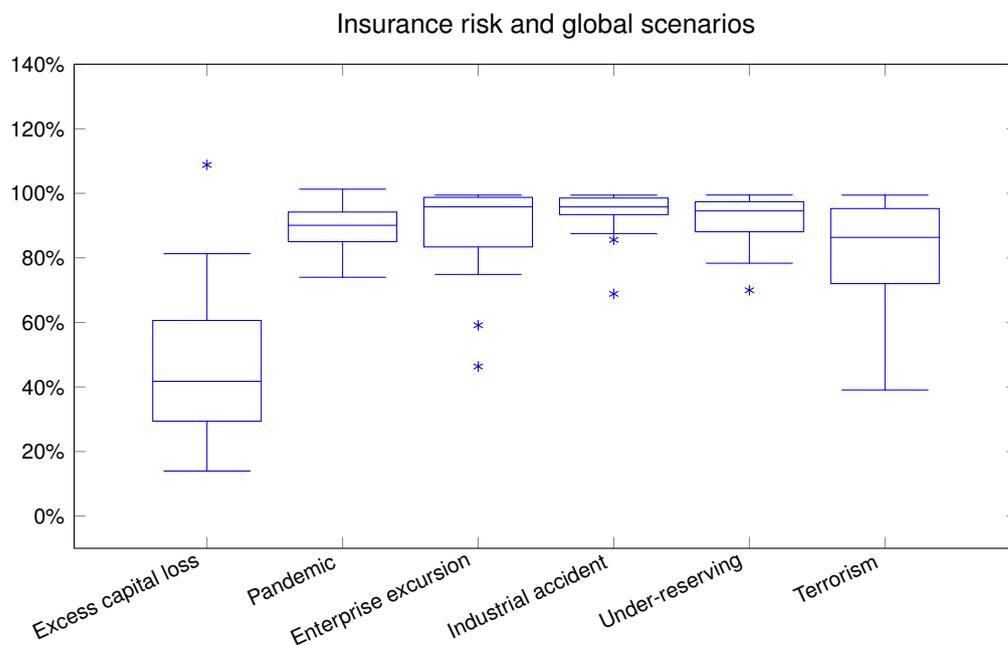


Figure 17b: General insurance (distribution as box-plot)

## 5 Health

### 5.1 Goals of the analyses

The analyses presented in this section give a deeper insight into:

- investment structure
- liability structure
- best estimate of liabilities and target capital in relation to the total assets
- split of target capital into its components, e.g. market, credit and insurance risk
- split of market risk into components, e.g. interest rate risk, equity risk, etc.
- split of interest rate risk into different currencies
- scenarios and their impact on the risk-bearing capital; indication of whether the SST capital requirements after scenario impacts are still fulfilled

Two types of graphs are shown:

- waterfall diagrams
- boxplots providing information on the dispersion of the data

To avoid conclusions that can be drawn regarding the individual risk profile of an insurer, the data are pooled by insurance sector. The graphs provide the breakdown of the indicators into their components. Any component provided of less than five insurers will not be displayed in the graph.

#### Assets

The total assets in the market consistent balance sheet are shown as the sum of the different asset types (such as bonds, real estate, shares, etc.).

#### Liabilities

The total liabilities in the market consistent balance sheet are split accordingly to the type of liability.

#### Best estimate of liabilities and target capital in relation to the balance sheet total

The market value of assets (MV(A)) is decomposed into the following components:

- best estimate of liabilities (BEL)
- market value margin (MVM)
- one-year capital requirement (SCR), which is computed as the difference between the target capital (TC) and the market value margin. The TC, SCR and MVM are related through

$$TC = SCR + MVM \quad (1)$$

- excess capital (EC), which is defined as the difference between the risk-bearing capital (RBC) and the target capital (TC), which gives

$$RBC = TC + EC \quad (2)$$

- supplementary capital (SC)
- deductions (D)

More precisely, we have the following decomposing of assets:

$$MV(A) = BEL + MVM + SCR + EC - SC + D.$$

To show this, note that the core capital (CC) and the risk-bearing capital (RBC) are related through

$$RBC = CC + SC. \quad (3)$$

For the purpose of this analysis the temporary adjustment term, when relevant, has been included in the supplementary capital. Now CC can be expressed in the following form

$$CC = MV(A) - BEL - D,$$

from which we derive by means of (3) the relation

$$MV(A) = BEL + RBC - SC + D.$$

By means of (1) and (2) we conclude that

$$\begin{aligned} MV(A) &= BEL + EC + TC - SC + D \\ &= BEL + MVM + SCR + EC - SC + D. \end{aligned}$$

### Target capital decomposition

Target capital equals the sum of the one-year capital requirement (SCR) and the market value margin (MVM). In turn, the SCR key components are market risk, credit risk, insurance risk and effect of the scenarios and diversification.

### Market risk analysis

Market risk plays a dominant role in an economic, risk-based solvency regime. A number of risk factors such as interest rates, credit spreads, exchange rates, real estate, to name but a few, contribute to the market risk. Waterfall and boxplot diagrams are used to present the most important market risk factors.

### Interest rate risk analysis

Insurers with assets and liabilities denominated in different currencies are exposed to currency risk and generally also to interest rate risk. In such a case, the total interest rate risk consists of the interest rate risk of each currency. We have shown the decomposition of the total interest rate risk into the four currencies CHF, EUR, USD and GBP, including the effect of diversification.

## Scenarios

For each scenario, we have computed the impact ratio, which is defined as the sum of the risk-bearing capital (RBC) and the scenario impact ( $c$ ), divided by the RBC:

$$\text{Impact ratio} = \frac{\text{RBC} + c}{\text{RBC}}.$$

Typically, a scenario impact  $c$  with a negative value is representing a loss. To concentrate only on relevant scenarios, scenarios that have no impact (i.e.  $c = 0$ ) are ignored.

Furthermore, a reference scenario called excess capital loss was introduced. The loss of this scenario equals the *excess capital* (EC), i.e.  $c = -\text{EC}$ . This loss is the maximum loss an insurer can endure while remaining solvent. It should be noted that the impact ratio of this reference scenario can be expressed with the help of the target capital (TC). We have used relation (2), that is  $\text{RBC} = \text{TC} + \text{EC}$ , to obtain the corresponding impact ratio:

$$\text{Impact ratio} = \frac{\text{RBC} - \text{EC}}{\text{RBC}} = \frac{\text{TC}}{\text{RBC}}.$$

To facilitate the comparison of scenarios with this reference scenario, the latter is shown in a different colour.

Scenarios exempted from the target capital aggregation are labelled (naS) for “non-aggregated Scenarios”.

## 5.2 Comments on results

Compared to the results of the SST 2015, the risk-bearing capital increased slightly by 2.1% from 9.297 million CHF to 9.493 million CHF. Also the average of the target capital rose by 6.3% from 3.484 million CHF to 3.704 million CHF. This is mainly due to lower interest rates and the resulting increase of both market risk and the impact of the scenarios aggregation. There was no material change in the composition of assets and liabilities compared to the previous year. Both the evolution of risk-bearing capital and target capital resulted in a decrease of the average SST ratio by 11 percentage points from 267% in 2015 to 256% in 2016.

### 5.3 Assets

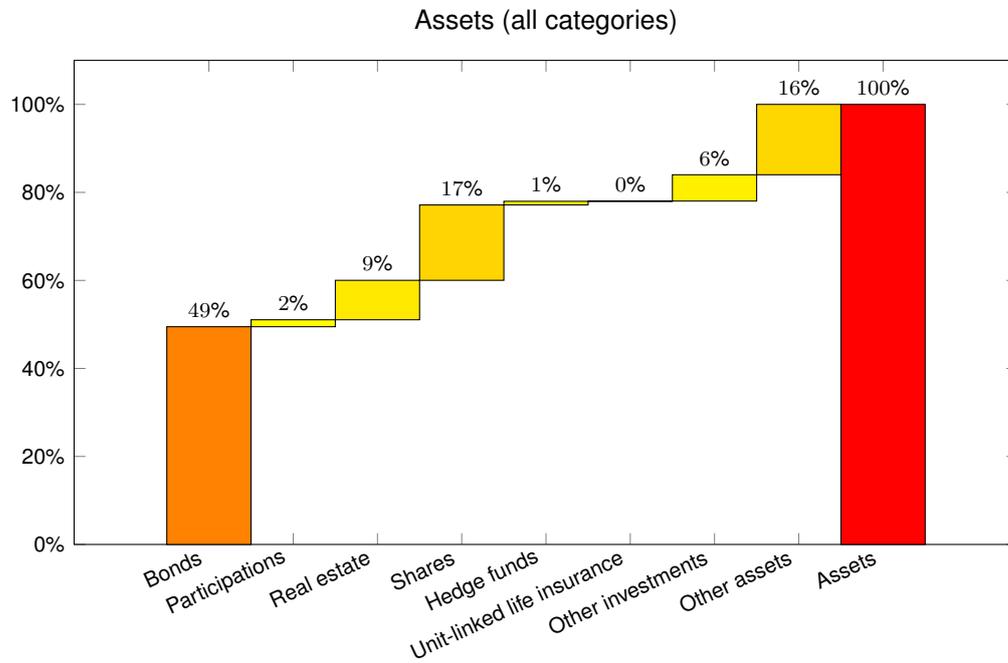


Figure 18a: Health (mean values by sector)

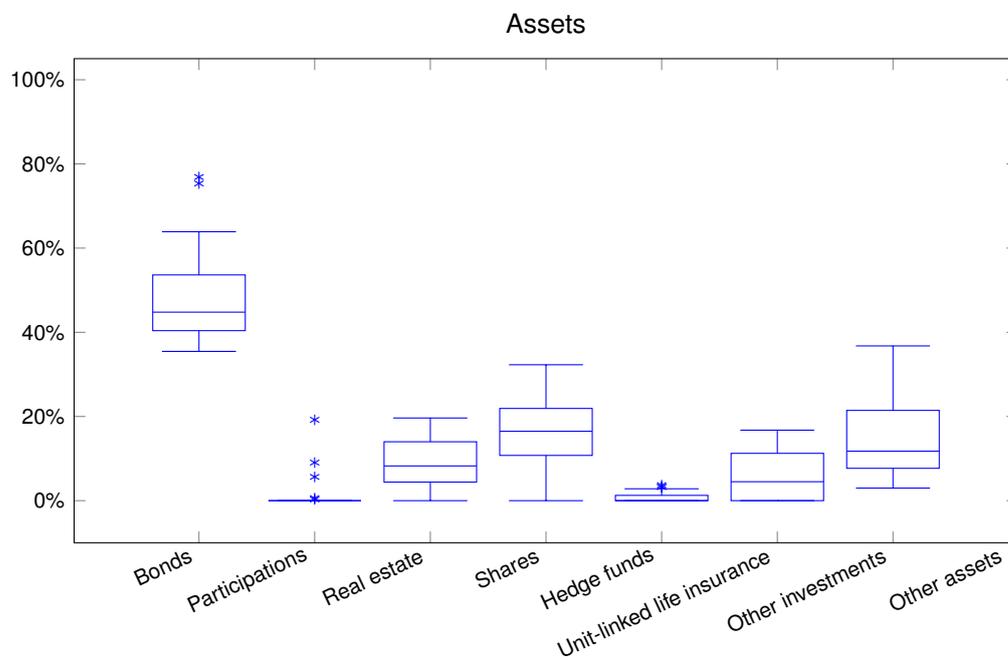


Figure 18b: Health (distribution as box-plot)

## 5.4 Liabilities

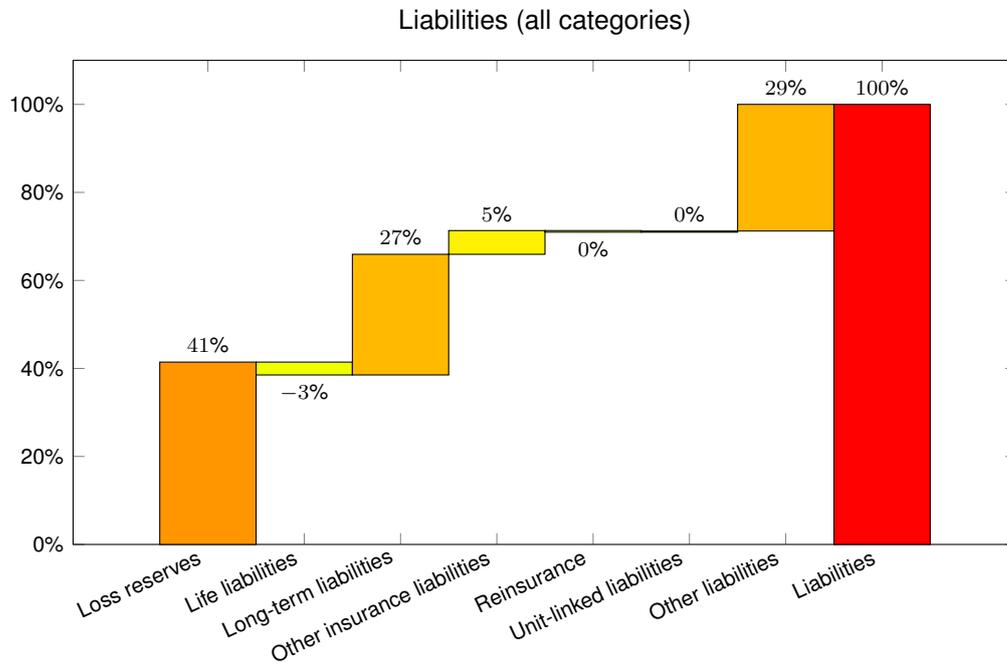


Figure 19a: Health (mean values by sector)

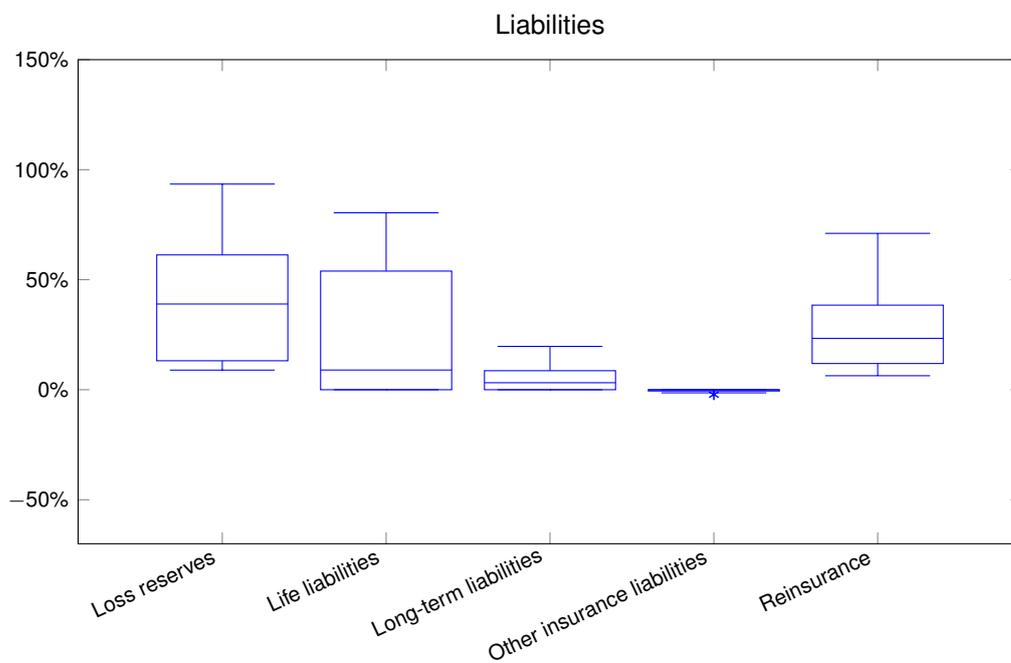


Figure 19b: Health (distribution as box-plot)

## 5.5 Best estimate of liability and target capital in relation to the balance sheet total

Best estimate of liability and target capital in relation to the balance sheet total (all categories)

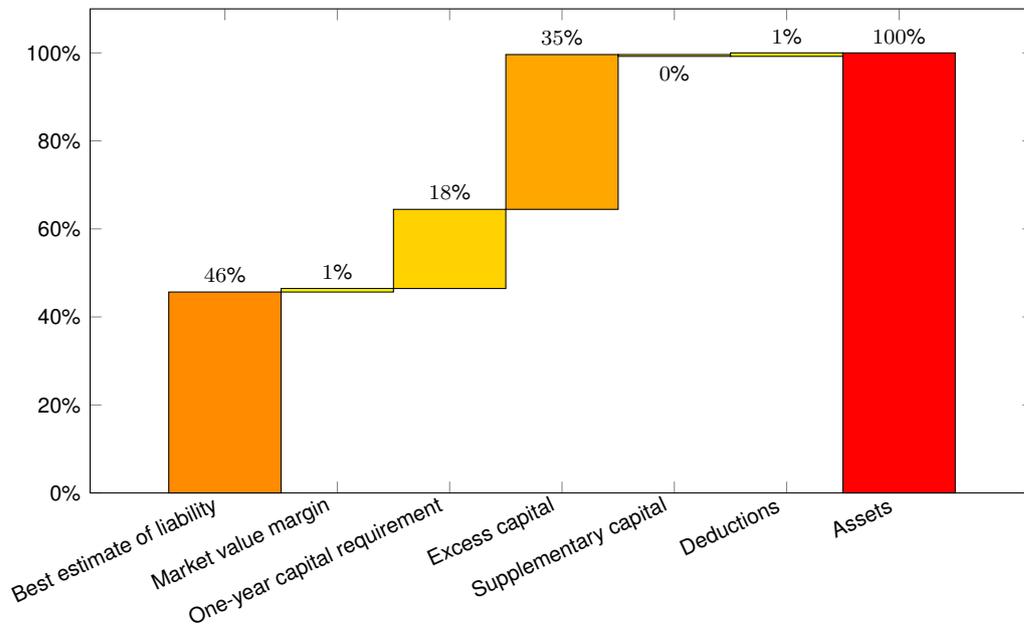


Figure 20a: Health (mean values by sector)

Best estimate of liability and target capital in relation to the balance sheet total

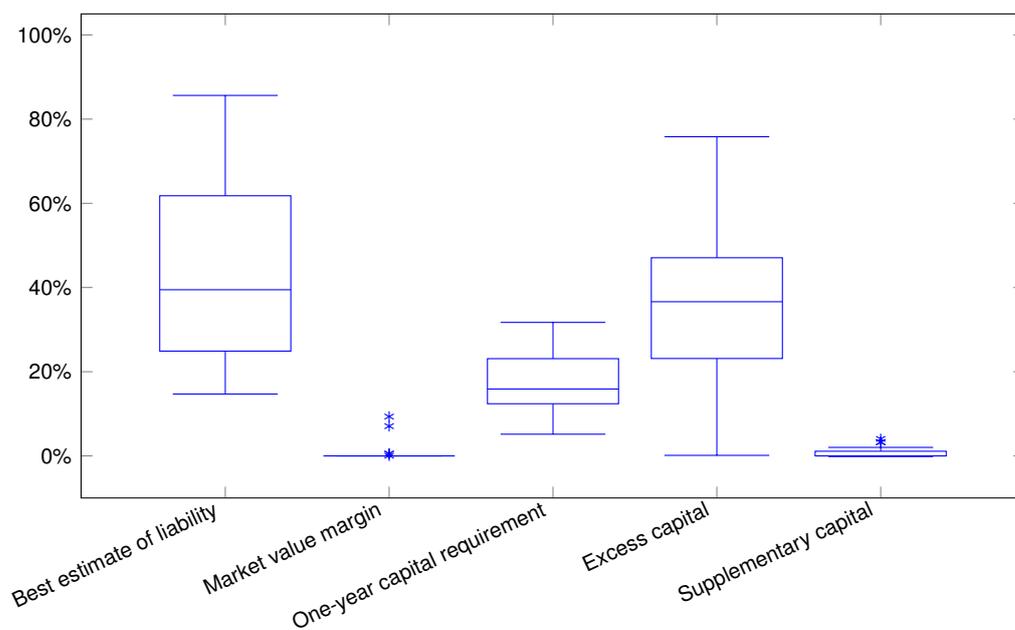


Figure 20b: Health (distribution as box-plot)

## 5.6 Target capital decomposition

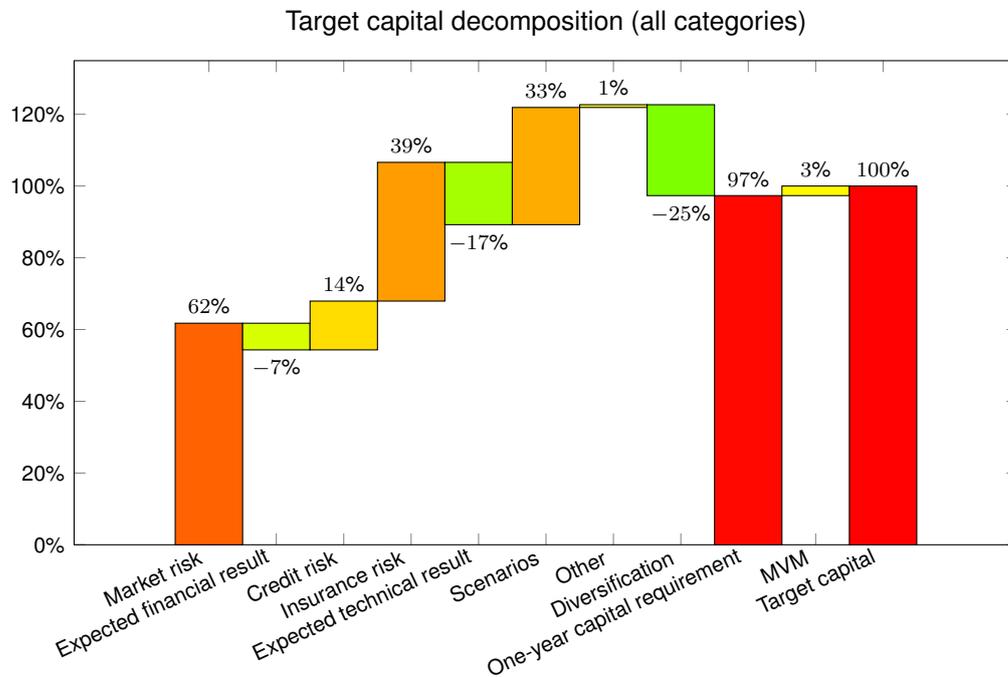


Figure 21a: Health (mean values by sector)

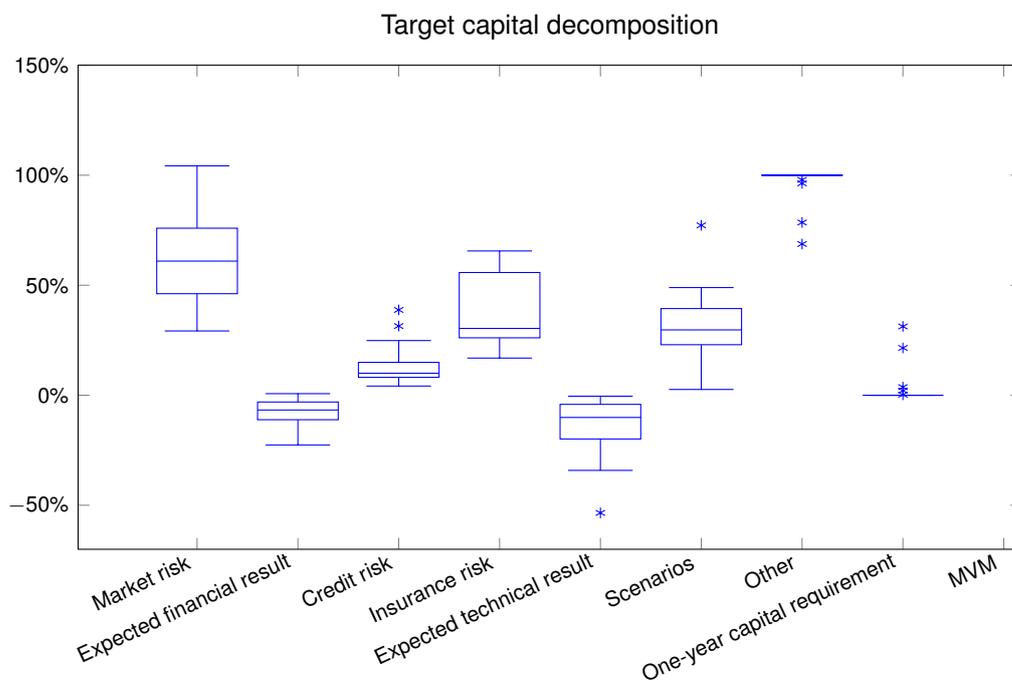


Figure 21b: Health (distribution as box-plot)

## 5.7 Market risk analysis

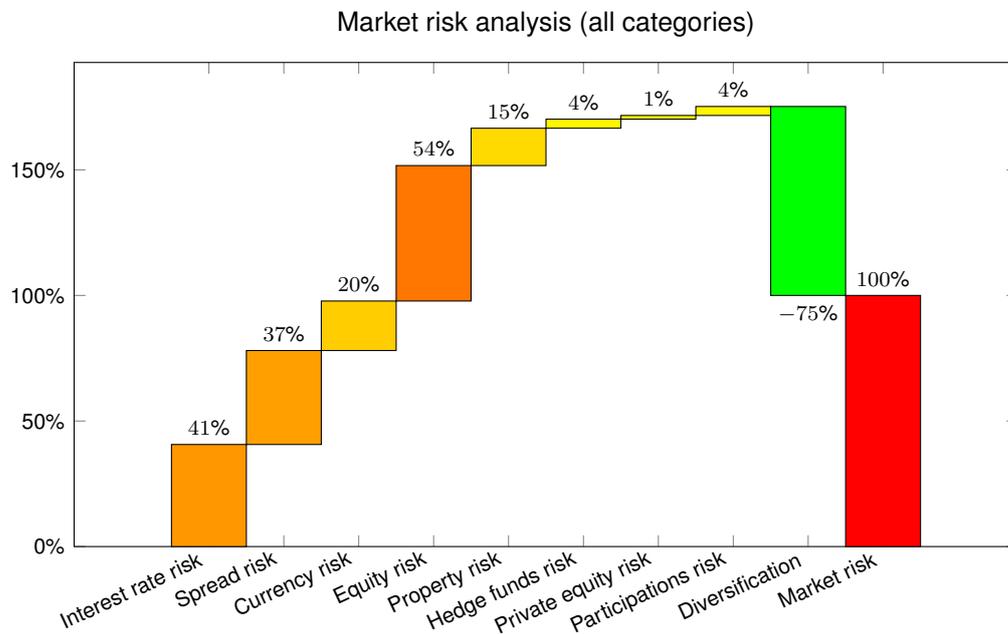


Figure 22a: Health (mean values by sector)

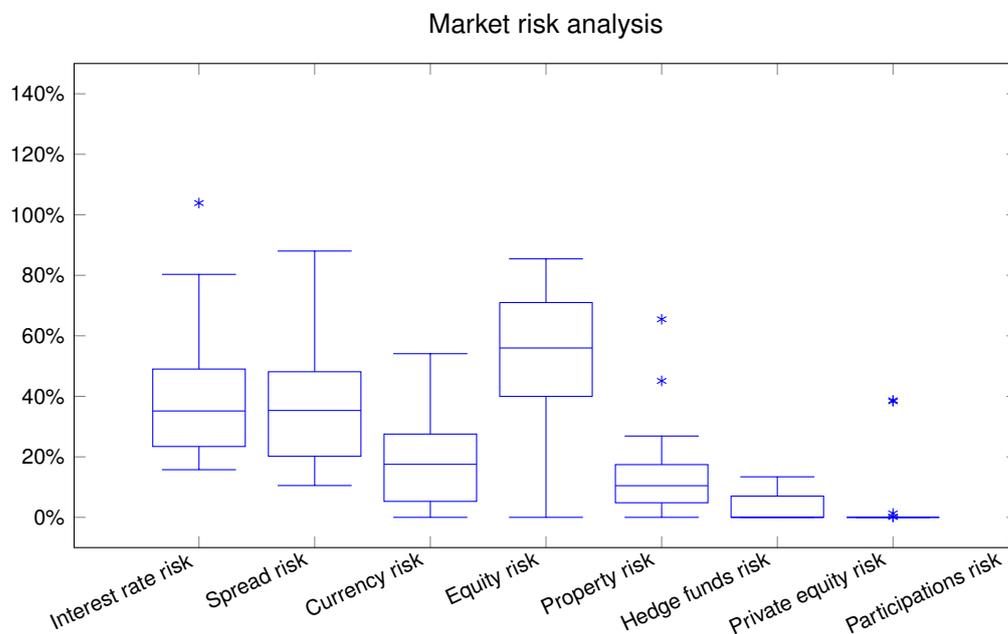


Figure 22b: Health (distribution as box-plot)

## 5.8 Interest rate analysis

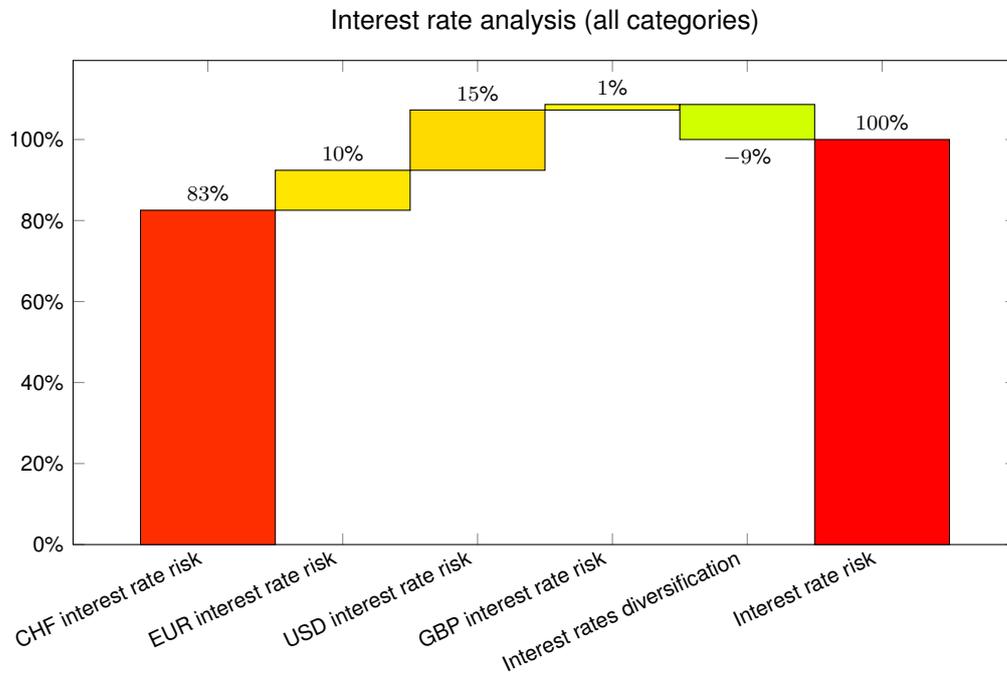


Figure 23a: Health (mean values by sector)

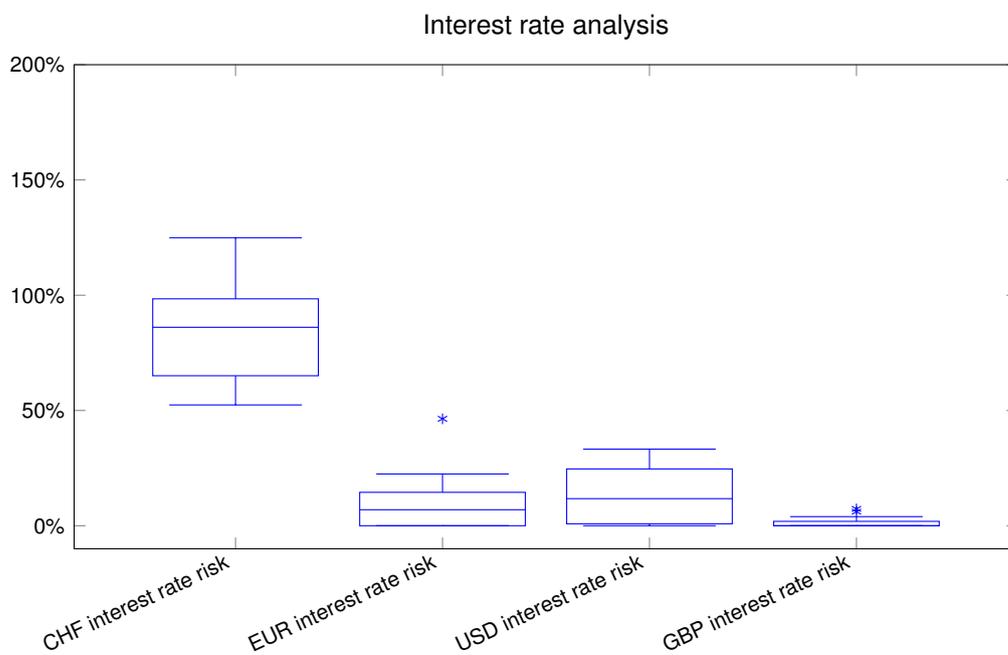


Figure 23b: Health (distribution as box-plot)

## 5.9 Market and credit risk scenarios

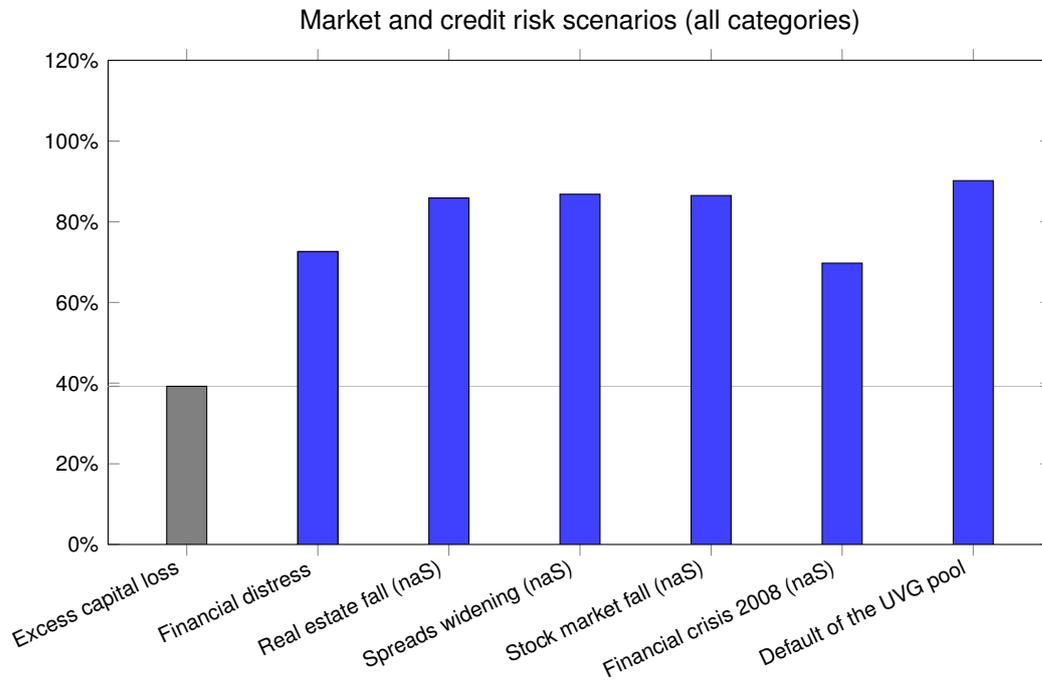


Figure 24a: Health (mean values by sector)

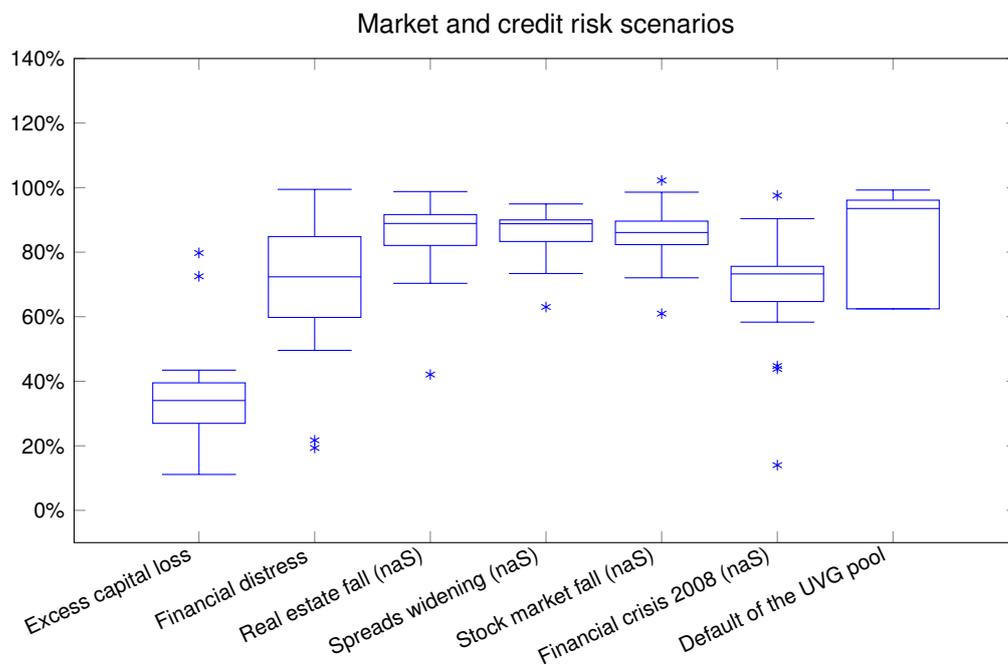


Figure 24b: Health (distribution as box-plot)

## 5.10 Insurance risk and global scenarios

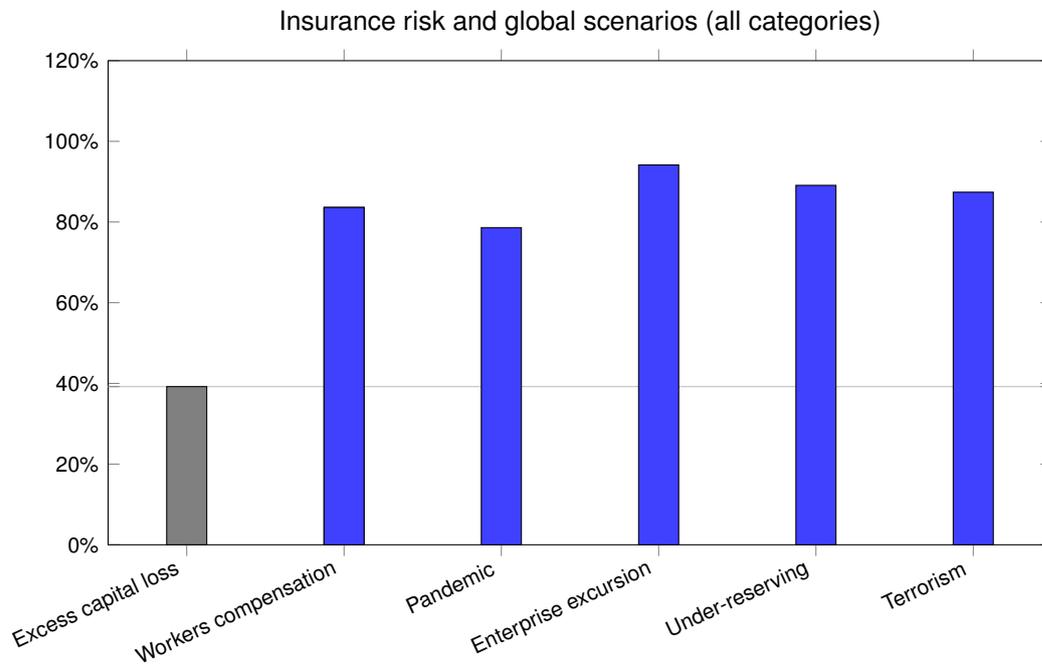


Figure 25a: Health (mean values by sector)

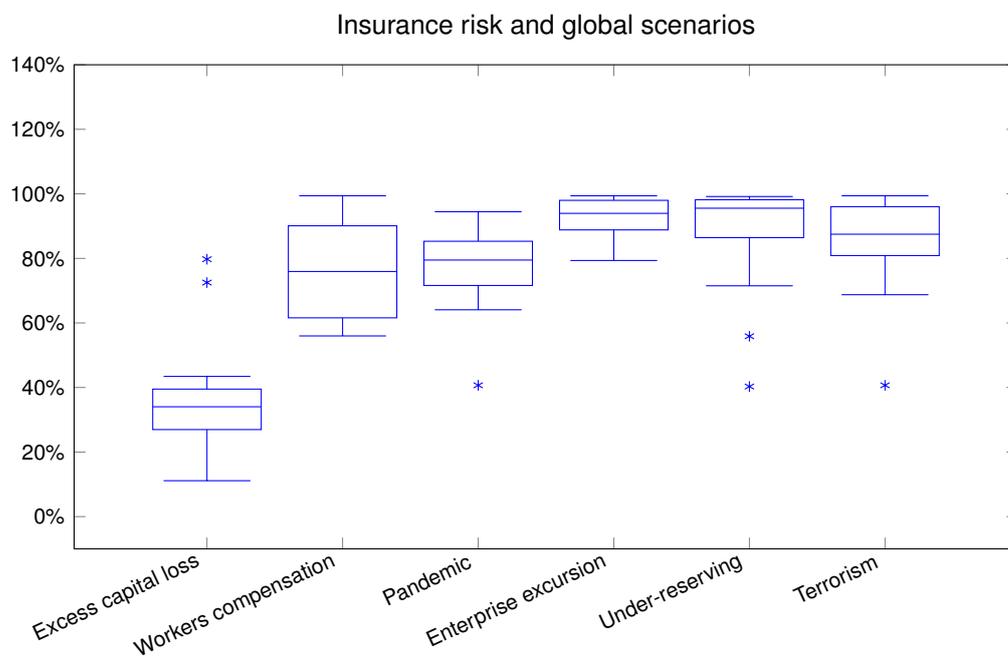


Figure 25b: Health (distribution as box-plot)

## 6 Reinsurance

### 6.1 Goals of the analyses

The analyses presented in this section give a deeper insight into:

- investment structure
- liability structure
- best estimate of liabilities and target capital in relation to the total assets
- split of target capital into its components, e.g. market, credit and insurance risk
- split of market risk into components, e.g. interest rate risk, equity risk, etc.
- split of interest rate risk into different currencies
- scenarios and their impact on the risk-bearing capital; indication of whether the SST capital requirements after scenario impacts are still fulfilled

Two types of graphs are shown:

- waterfall diagrams
- boxplots providing information on the dispersion of the data

To avoid conclusions that can be drawn regarding the individual risk profile of an insurer, the data are pooled by insurance sector. The graphs provide the breakdown of the indicators into their components. Any component provided of less than five insurers will not be displayed in the graph.

#### Assets

The total assets in the market consistent balance sheet are shown as the sum of the different asset types (such as bonds, real estate, shares, etc.).

#### Liabilities

The total liabilities in the market consistent balance sheet are split accordingly to the type of liability.

#### Best estimate of liabilities and target capital in relation to the balance sheet total

The market value of assets ( $MV(A)$ ) is decomposed into the following components:

- best estimate of liabilities (BEL)
- market value margin (MVM)
- one-year capital requirement (SCR), which is computed as the difference between the target capital (TC) and the market value margin. The TC, SCR and MVM are related through

$$TC = SCR + MVM \quad (1)$$

- excess capital (EC), which is defined as the difference between the risk-bearing capital (RBC) and the target capital (TC), which gives

$$RBC = TC + EC \quad (2)$$

- supplementary capital (SC)
- deductions (D)

More precisely, we have the following decomposing of assets:

$$MV(A) = BEL + MVM + SCR + EC - SC + D.$$

To show this, note that the core capital (CC) and the risk-bearing capital (RBC) are related through

$$RBC = CC + SC. \quad (3)$$

For the purpose of this analysis the temporary adjustment term, when relevant, has been included in the supplementary capital. Now CC can be expressed in the following form

$$CC = MV(A) - BEL - D,$$

from which we derive by means of (3) the relation

$$MV(A) = BEL + RBC - SC + D.$$

By means of (1) and (2) we conclude that

$$\begin{aligned} MV(A) &= BEL + EC + TC - SC + D \\ &= BEL + MVM + SCR + EC - SC + D. \end{aligned}$$

### Target capital decomposition

Target capital equals the sum of the one-year capital requirement (SCR) and the market value margin (MVM). In turn, the SCR key components are market risk, credit risk, insurance risk and effect of the scenarios and diversification.

### Market risk analysis

Market risk plays a dominant role in an economic, risk-based solvency regime. A number of risk factors such as interest rates, credit spreads, exchange rates, real estate, to name but a few, contribute to the market risk. Waterfall and boxplot diagrams are used to present the most important market risk factors.

### Interest rate risk analysis

Insurers with assets and liabilities denominated in different currencies are exposed to currency risk and generally also to interest rate risk. In such a case, the total interest rate risk consists of the interest rate risk of each currency. We have shown the decomposition of the total interest rate risk into the four currencies CHF, EUR, USD and GBP, including the effect of diversification.

## Scenarios

For each scenario, we have computed the impact ratio, which is defined as the sum of the risk-bearing capital (RBC) and the scenario impact ( $c$ ), divided by the RBC:

$$\text{Impact ratio} = \frac{\text{RBC} + c}{\text{RBC}}.$$

Typically, a scenario impact  $c$  with a negative value is representing a loss. To concentrate only on relevant scenarios, scenarios that have no impact (i.e.  $c = 0$ ) are ignored.

Furthermore, a reference scenario called excess capital loss was introduced. The loss of this scenario equals the *excess capital* (EC), i.e.  $c = -\text{EC}$ . This loss is the maximum loss an insurer can endure while remaining solvent. It should be noted that the impact ratio of this reference scenario can be expressed with the help of the target capital (TC). We have used relation (2), that is  $\text{RBC} = \text{TC} + \text{EC}$ , to obtain the corresponding impact ratio:

$$\text{Impact ratio} = \frac{\text{RBC} - \text{EC}}{\text{RBC}} = \frac{\text{TC}}{\text{RBC}}.$$

To facilitate the comparison of scenarios with this reference scenario, the latter is shown in a different colour.

Scenarios exempted from the target capital aggregation are labelled (naS) for "non-aggregated Scenarios".

## 6.2 Comments on results

Reinsurers experienced a decrease in their SST solvency ratio by 16 percentage points down to 201%. The decrease in the SST solvency ratio is mainly driven by a lower risk bearing capital which went down of 7.9% to CHF 55,569 million. The target capital almost did not change, in fact it decreased slightly by 0.5% to CHF 27,670 million.

Regarding the target capital decomposition the main risk driver was the insurance risk (68%) followed by the market risk (34%), the credit risk (15%) and the contribution of the scenarios (13%). The diversification effect was -26%.

### 6.3 Assets

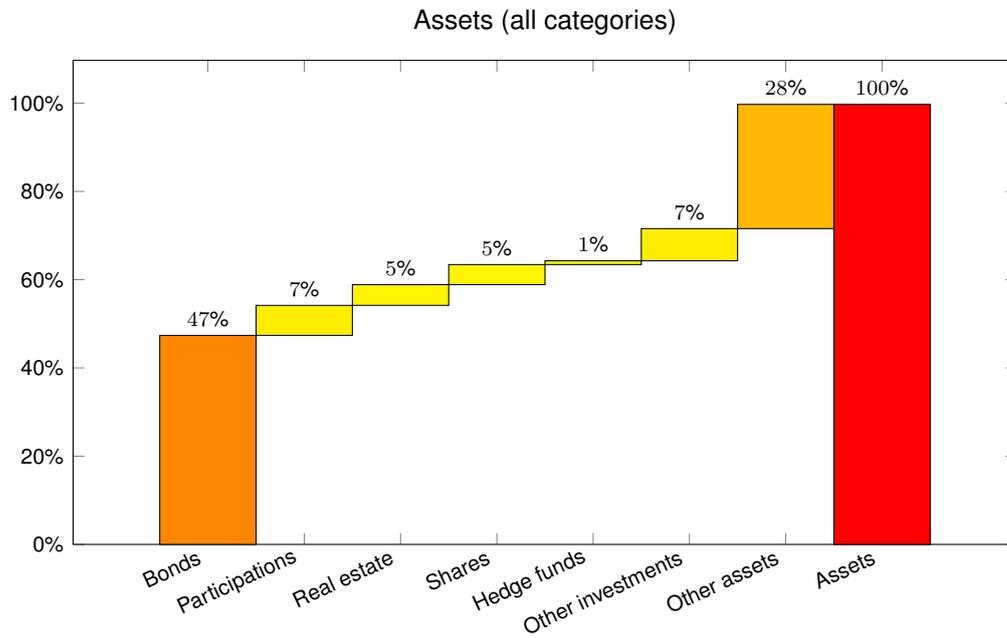


Figure 26a: Reinsurance (mean values by sector)

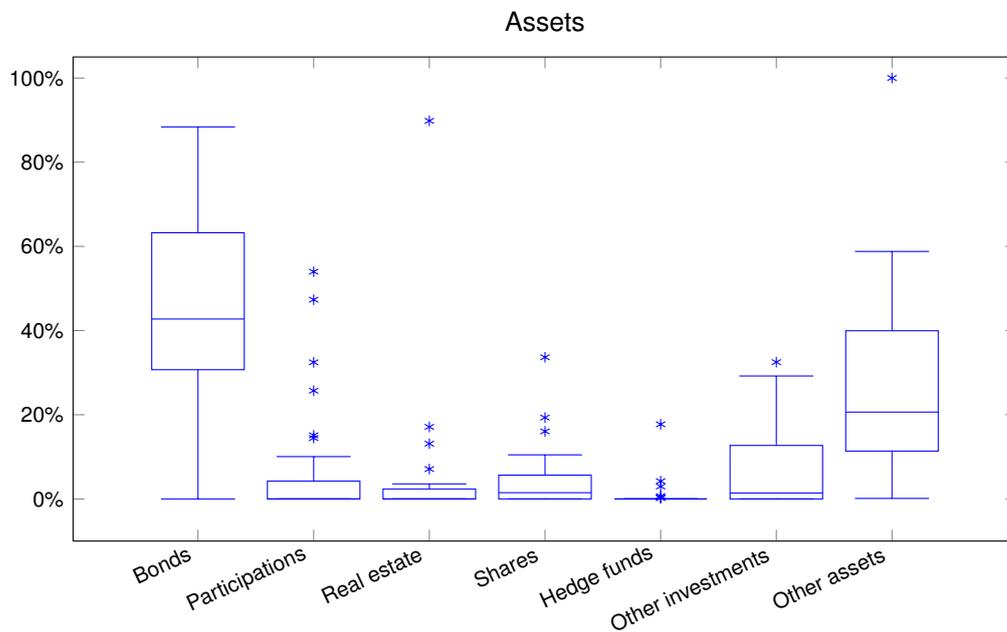


Figure 26b: Reinsurance (distribution as box-plot)

## 6.4 Liabilities

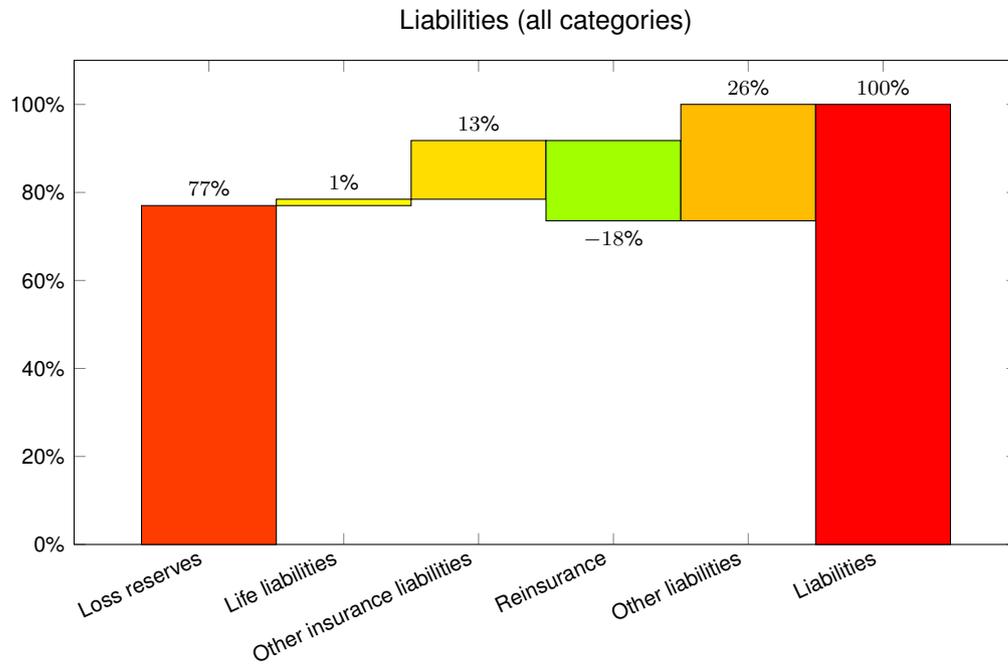


Figure 27a: Reinsurance (mean values by sector)

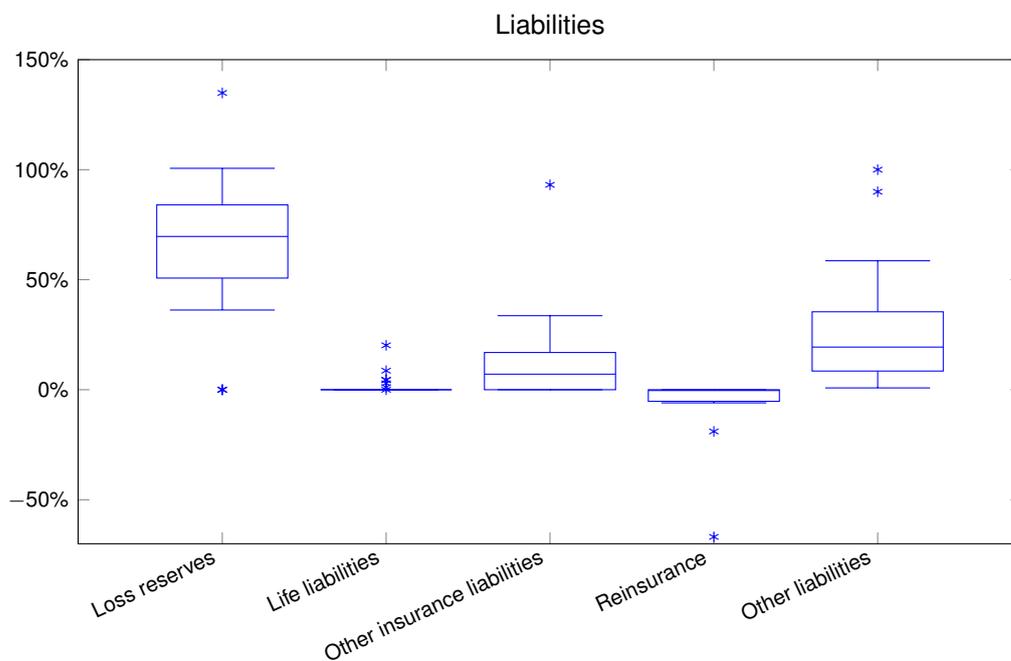


Figure 27b: Reinsurance (distribution as box-plot)

## 6.5 Best estimate of liability and target capital in relation to the balance sheet total

Best estimate of liability and target capital in relation to the balance sheet total (all categories)

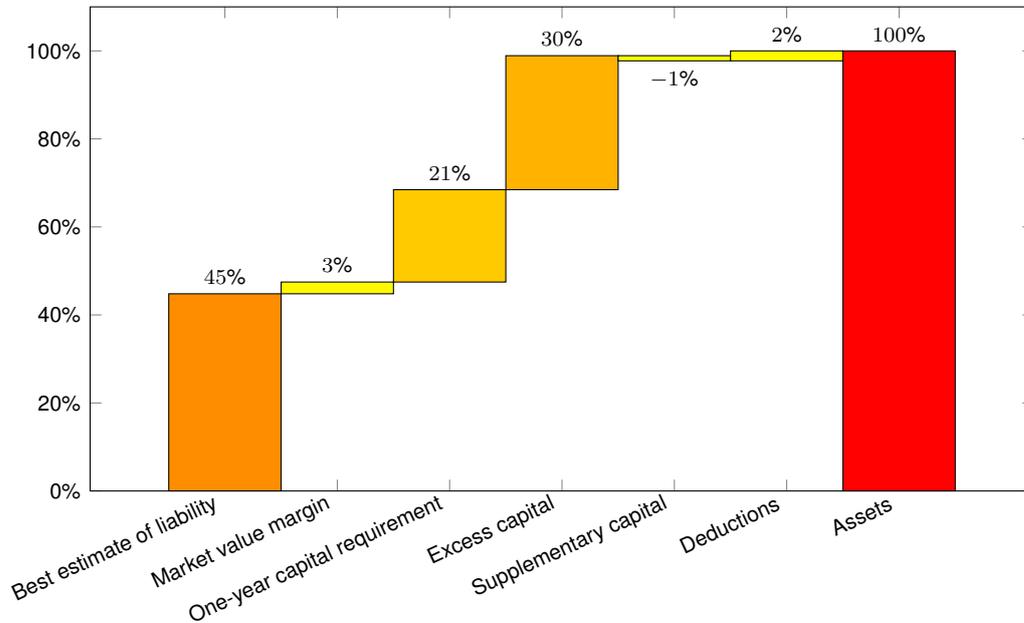


Figure 28a: Reinsurance (mean values by sector)

Best estimate of liability and target capital in relation to the balance sheet total

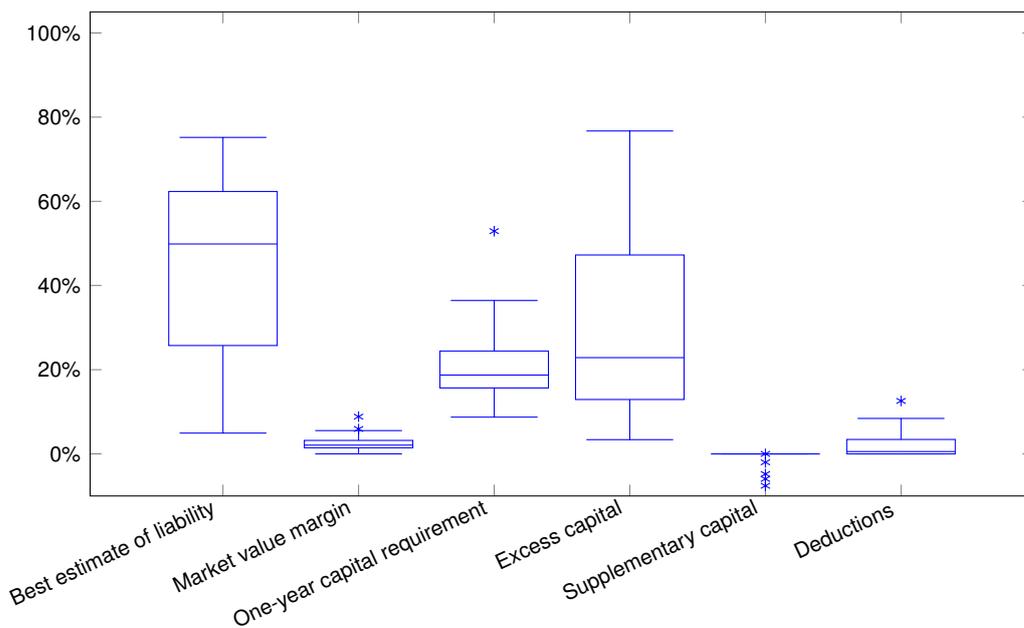


Figure 28b: Reinsurance (distribution as box-plot)

## 6.6 Target capital decomposition

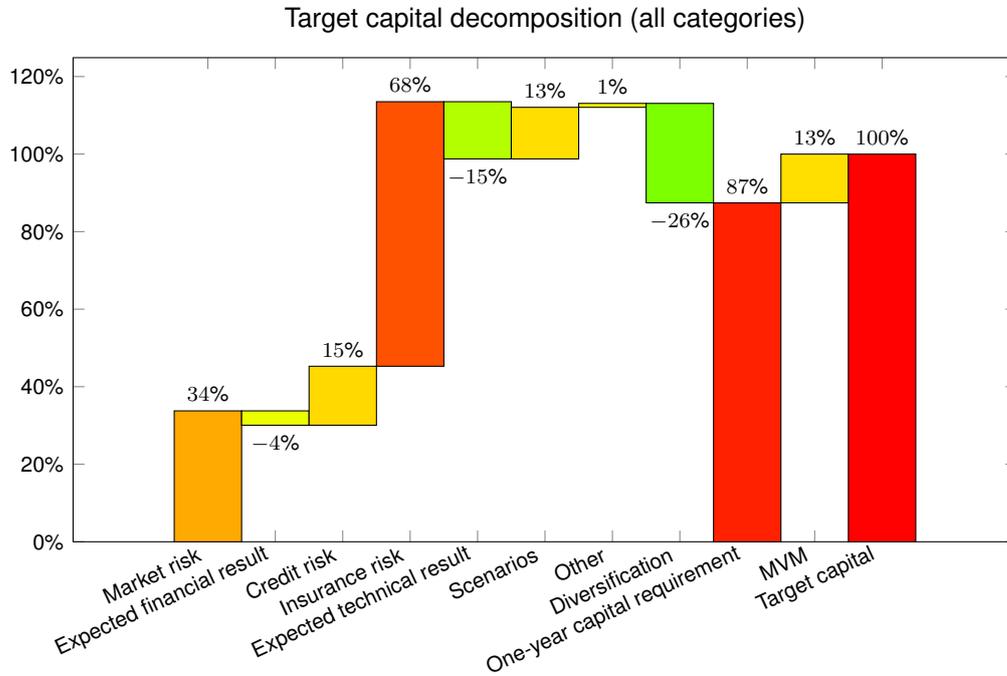


Figure 29a: Reinsurance (mean values by sector)

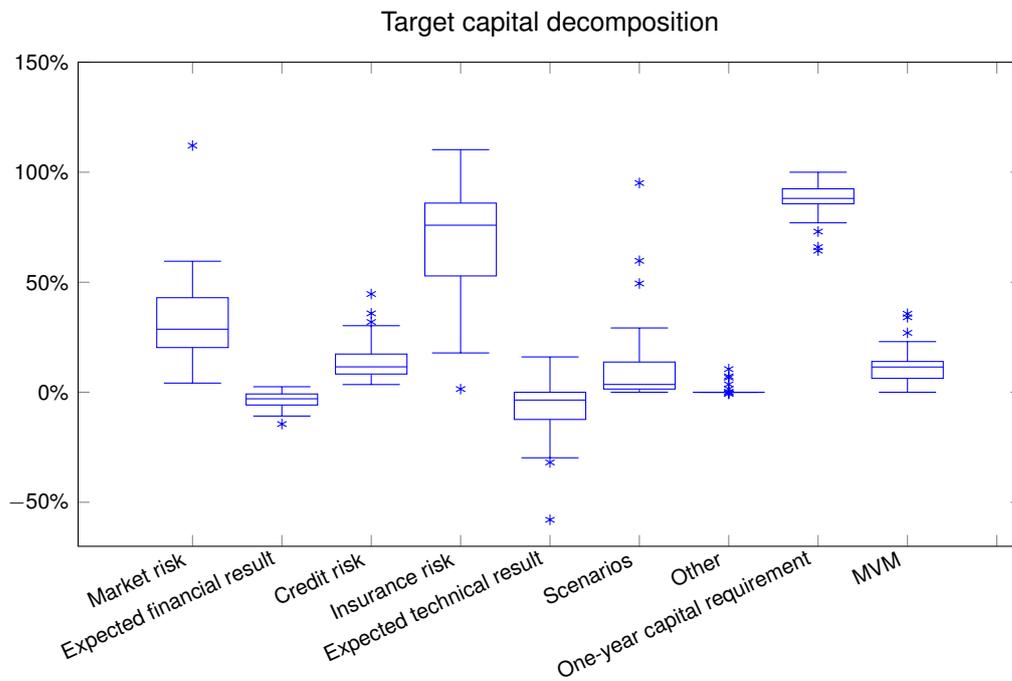


Figure 29b: Reinsurance (distribution as box-plot)

## 6.7 Market risk analysis

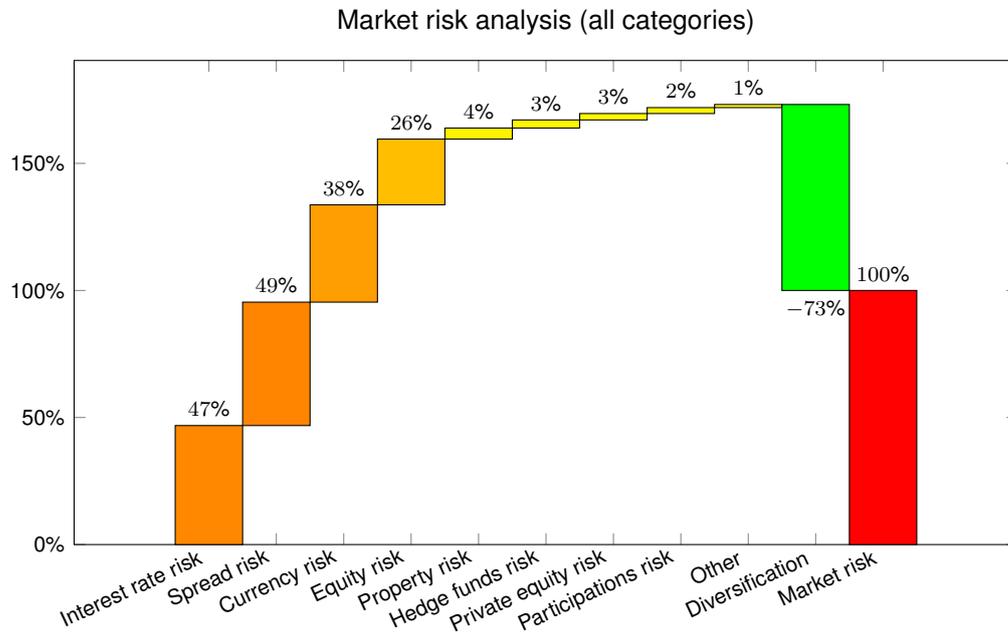


Figure 30a: Reinsurance (mean values by sector)

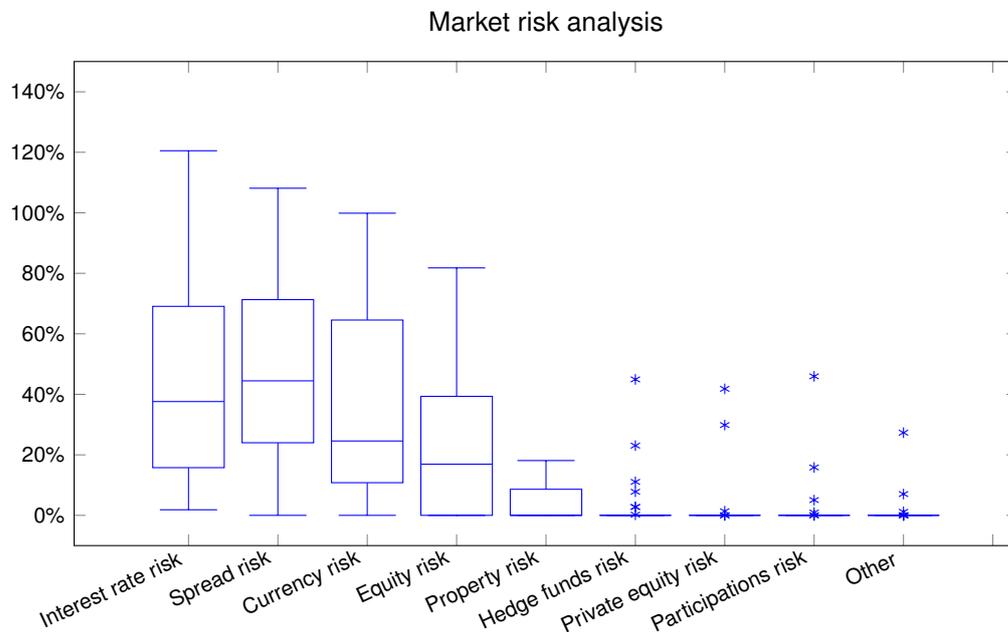


Figure 30b: Reinsurance (distribution as box-plot)

## 6.8 Interest rate analysis

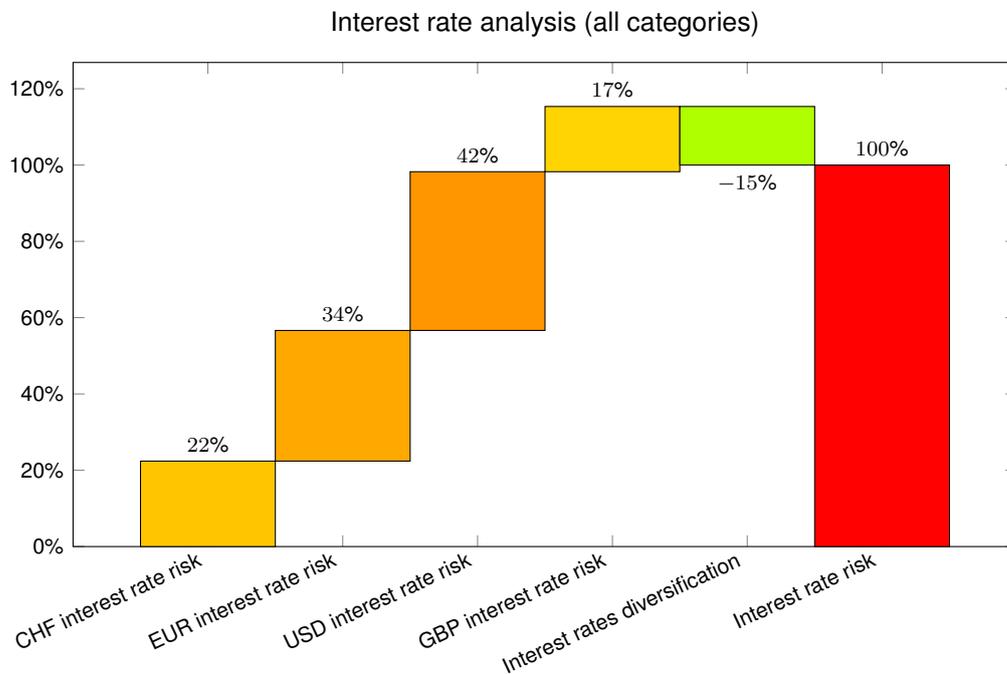


Figure 31a: Reinsurance (mean values by sector)

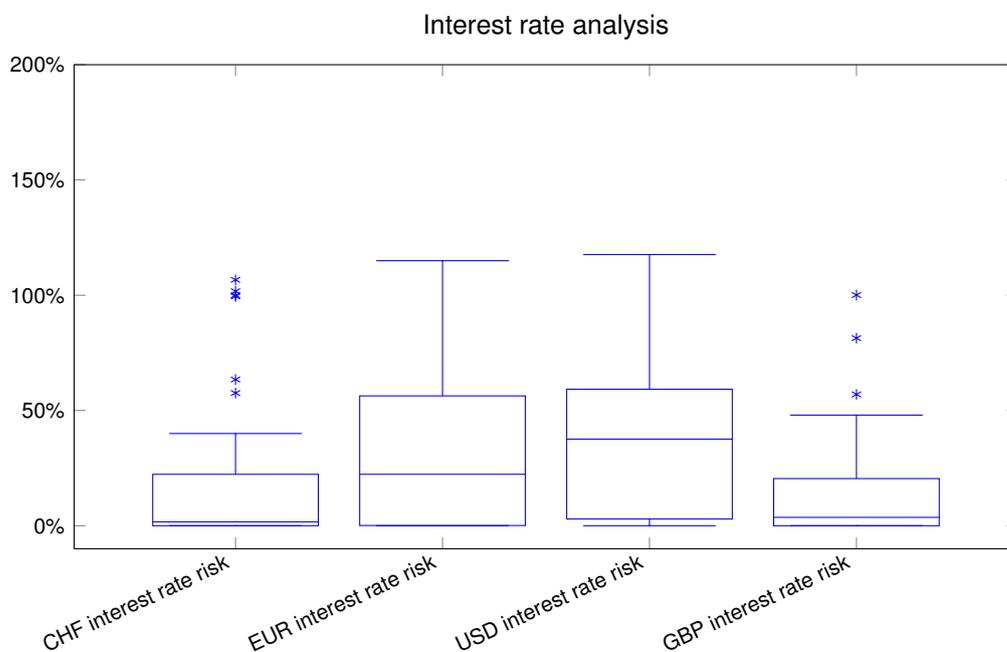


Figure 31b: Reinsurance (distribution as box-plot)

## 6.9 Market and credit risk scenarios

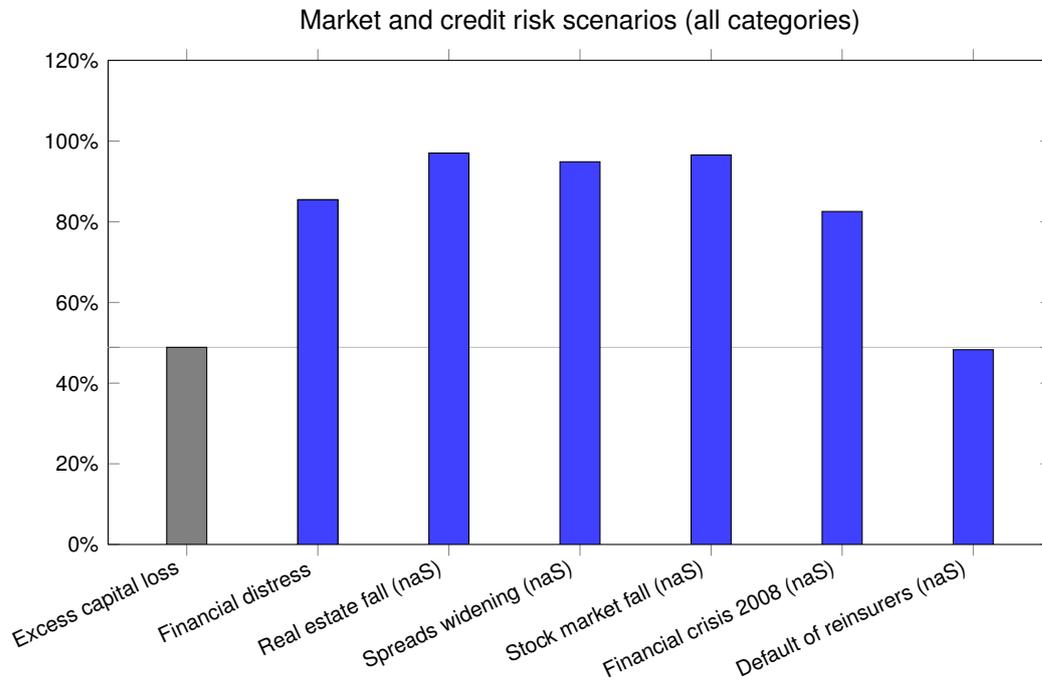


Figure 32a: Reinsurance (mean values by sector)

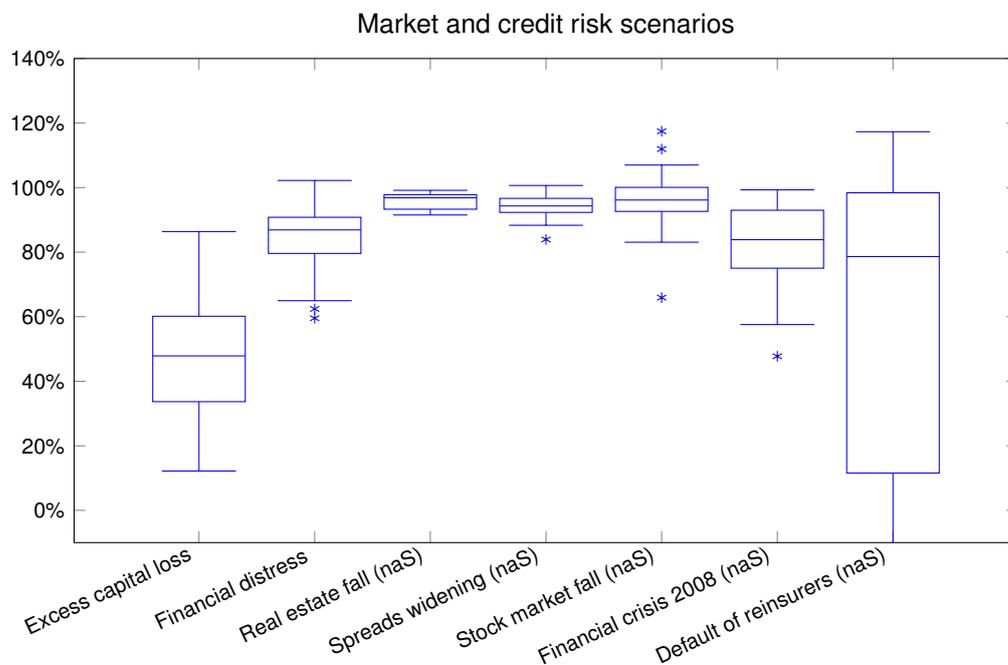


Figure 32b: Reinsurance (distribution as box-plot)

## 6.10 Insurance risk and global scenarios

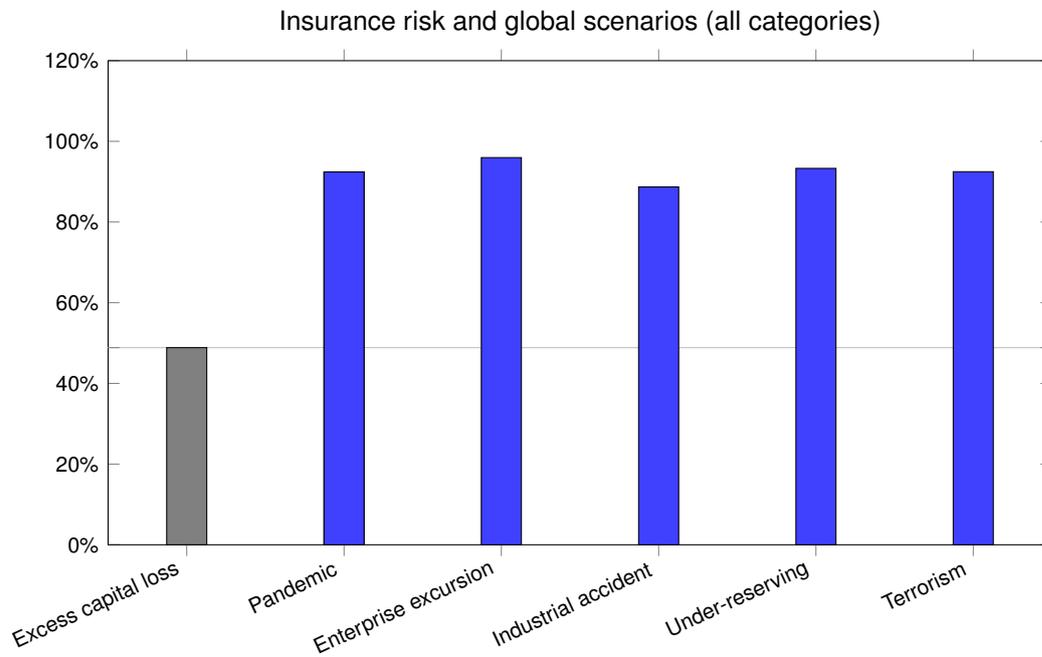


Figure 33a: Reinsurance (mean values by sector)

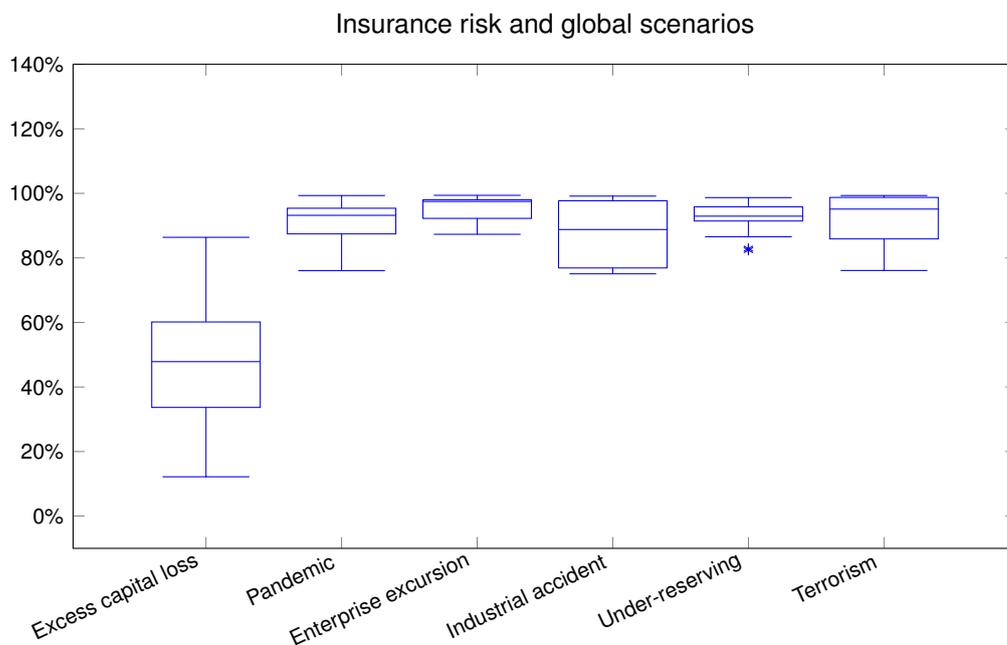


Figure 33b: Reinsurance (distribution as box-plot)

## A Glossary for figures

In the following Appendix, the risk will be measured by the 99% expected shortfall.

### A.1 Assets

Bonds	Bonds and bonds from open-end funds.
Participations	Participations in enterprises which are not admitted for official quotation.
Real estate	Residential and commercial real estate.
Shares	Shares and own shares.
Hedge funds	Hedge funds and private equity.
Unit-linked life insurance	Assets covering unit-linked life insurance products.
Other investments	Other invested assets.
Other assets	Remaining assets, e.g. liquid assets, various claims, etc.

### A.2 Liabilities

Loss reserves	Best estimate of liabilities, gross of reinsurance, for claims in general insurance or treatments in health insurance which happened prior to the reference date of the balance sheet.
Life liabilities	Best estimate of liabilities, gross of reinsurance, for life insurance contracts, excluding unit-linked liabilities.
Long-term liabilities	Best estimate of liabilities, gross of reinsurance, for health insurers owing to the fact that the insurer is obliged to renew the health insurance contract until the death of the insured.
Other insurance liabilities	Best estimate of other insurance liabilities, gross of reinsurance.
Reinsurance	Share of the insurance liabilities assumed by reinsurance contracts.
Unit-linked liabilities	Best estimate of liabilities, net of reinsurance, for unit-linked insurance contracts.
Other liabilities	Remaining liabilities, e.g. surplus funds, bonds/loans, various obligations, etc.

### A.3 Best estimate of liabilities and target capital in relation to the balance sheet total

Best estimate of liabilities	Best estimate value of liabilities at the reference date of the SST.
Market value margin	Expected cost of the risk-bearing capital to be held for the settlement of the insurance liabilities over their lifetime.
One-year capital requirement	Risk arising from the one-year change in risk-bearing capital. The sum of the one-year capital requirement plus the market value margin equals the target capital.
Excess capital	Commonly used to refer to 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.
Supplementary capital	Additional capital eligible to cover an insurer's target capital such as hybrid capital or subordinated debt.
Deductions	Regulatory adjustments for determining an insurer's core capital. Deductions include, among others, own shares, goodwill and other intangibles, planned dividend payments or repayments of debt.

### A.4 Target capital decomposition

Market risk	Standalone risk from financial market risk factors.
Expected financial result	Negative of the expected financial result on the assets in excess of the risk-free rate.
Credit risk	Standalone credit risk (default and migration).
Insurance risk	Standalone insurance risk.
Expected technical result	Negative of the expected result on the new insurance business, excluding the financial result.
Scenarios	Impact of the scenarios (prescribed and company-specific) on the target capital.
Other	Impact on the target capital of risks not included elsewhere (e.g. guarantee).
One-year capital requirement	Risk arising from the one-year change in risk-bearing capital. The sum of the one-year capital requirement and the discounted market value margin is equal to the target capital.

Market value margin	Expected cost of the risk-bearing capital to be held for the settlement of the insurance liabilities over their lifetime.
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## A.5 Market risk analysis

Spread risk	Risk arising from corporate and governmental spreads over the risk free rate.
Currency risk	Risk arising from the foreign exchange market.
Equity risk	Risk arising from quoted shares and share funds.
Property risk	Risk arising from real estate investments and real estate funds.
Hedge funds risk	Risk arising from hedge funds.
Private equity risk	Risk arising from private equity investments.
Participations risk	Risk arising from participations in enterprises not recognised for official quotation that is not private equity.
Other	Risk arising from market risk but not covered by above categories.

## A.6 Interest rates analysis

CHF interest rate risk	Risk arising from Swiss risk-free interest rates.
EUR interest rate risk	Risk arising from euro risk-free interest rates.
USD interest rate risk	Risk arising from US risk-free interest rates.
GBP interest rate risk	Risk arising from British risk-free interest rates.

## A.7 General insurance risk analysis

Reserve risk	Risk that ultimate costs relating to incurred claims (existing claims) vary from those assumed when the liabilities were estimated. Reserve risk arises from claim sizes being greater than expected or differences in timing of claims payments from expected.
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Normal claims	<p>Risk from claims with loss amounts below a certain threshold value, typically characterized by high frequencies and low severities.</p> <p>Related terms: frequency claims, small claims, attritional claims</p>
Large claims	<p>Risk from claims with loss amounts above a certain threshold value, typically characterized by low frequencies and high severities.</p>
Nat Cat	<p>Risk from claims triggered by a single event, or a series of events (natural hazards such as earthquake, flood, hail, storm, etc.), of major magnitude, usually over a short period (often 72 hours) that lead to a significant deviation in actual claims from the total expected claims.</p>

## B Global glossary

Core capital	<p>Core measure of an insurer's strength from a regulatory perspective. Core capital equals the market-consistent value of assets minus the market-consistent value of liabilities minus deductions plus the market value margin.</p> <p>Related terms: market-consistent valuation, market value margin, deductions</p>
Cost of capital charge	<p>Cost rate used to determine the costs expected for all future one-year capital requirements until run-off.</p>
Economic balance sheet	<p>Balance sheet statement based on market-consistent values for all assets and liabilities relating to in-force business, including off-balance sheet items.</p> <p>Related terms: market-consistent valuation, total balance sheet approach</p>
Expected shortfall	<p>A coherent risk measure. For a given confidence level of <math>1 - \alpha</math>, it measures the average losses over the threshold defined (typically set as the value-at-risk for a percentile given), i.e. the conditional mean value, given that the loss exceeds the <math>1 - \alpha</math> percentile.</p> <p>Related term: value-at-risk</p>
Fundamental data sheet	<p>Form to report figures for the annual SST reporting process. It needs to be filled in by all insurers, regardless of whether they use an internal model or the SST standard model.</p>
Market-consistent valuation	<p>The practice of valuing assets and liabilities on market values, where observable, with a given quality (mark-to-market); where not, on market-consistent valuation techniques (mark-to-model).</p>

<p>Premium risk</p>	<p>Risk that ultimate costs relating to <i>future</i> claims vary from those assumed when the obligations were estimated. Premium risk arises from claim sizes being greater than expected or differences in claims frequency from those expected. Premium risk is composed of frequency claims, large claims and catastrophe claims.</p> <p>Synonyms: current year risks, underwriting risks, pricing risk</p> <p>Related terms: reserve risk</p>
<p>Risk-bearing capital</p>	<p>Capital which may be taken into account when determining the insurer's available capital for SST purposes. Risk-bearing capital is defined as the sum of the core capital with the supplementary capital.</p> <p>Related terms: core capital, supplementary capital</p>
<p>Risk-free interest rate</p>	<p>Risk-free interest rate is the theoretical rate of return of an investment with no risk of financial loss.</p> <p>Related term: risk-free yield curve</p>
<p>Risk-free yield curve</p>	<p>Curve that shows the relation between the risk-free interest rate (or cost of borrowing) and the time to maturity (the term) of the debt for a given borrower in a given currency. The yield curves corresponding to the bonds issued by governments in their own currency are called the government bond yield curves and considered as risk-free in the context of the SST.</p> <p>Related terms: risk-free interest rate, risky yield curve, adjusted yield curve</p>
<p>Risky yield curve</p>	<p>Curve that shows the relation between the interest rate (or cost of borrowing) and the time to maturity (the term) of the debt for a given borrower in a given currency. Risky yield curves are typically higher than risk-free yield curves as they reflect the creditworthiness of the different institutions that borrow money from each other. Banks with high credit ratings (Aa/AA or above) borrow money from each other at the LIBOR rates. The corresponding yield curves are known as the LIBOR curve or the swap curve. The risky yield curve within the SST context is based on the swap curve.</p> <p>Related term: risk-free yield curve</p> <p>Reference: FINMA Circular 2013/2 "Temporary Adjustments to the Swiss Solvency Test (SST)"</p>

Supervisory category	<p>System of six risk categories to which each supervised institution is assigned. Categorisation is based on the risks posed to creditors, investors and policyholders, as well as to the entire system, and to Switzerland's reputation as a financial centre. Supervised institutions in category 1 are characterised by their size and global relevance, and the associated significant risks posed at various levels. In the other categories, the institutions' risk potential decreases incrementally to category 5, while those in category 6 are not subject to prudential supervision.</p> <p>Reference: FINMA Newsletter 19 (2011) "Overhaul of FINMA's supervisory approach"</p>
Supplementary capital	<p>Additional capital eligible to cover an insurer's target capital. Supplementary capital is split between lower supplementary capital and upper supplementary capital, depending on how well the capital can absorb losses. Supplementary capital includes instruments with risk-absorbing properties such as hybrid capital or subordinated debt. For instance, perpetual subordinated loans qualify as upper supplementary capital, whereas subordinated bonds with a fixed maturity date qualify as lower supplementary capital.</p> <p>Related terms: risk-bearing capital, target capital</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>Related terms: one-year capital requirement, market value margin</p>
Total balance sheet approach	<p>Principle which states that the determination of the amount of capital an insurer has available and needs for solvency purposes should be based upon all assets and liabilities, as measured in the insurer's regulatory balance sheet (e.g. market-consistently), and how they interact.</p> <p>Related terms: economic balance sheet, market-consistent valuation</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>Related term: expected shortfall</p>