Solvency Assessment and Management

Report on the results of 2nd South African Quantitative Impact Study ("SA QIS2")

JANUARY 2013

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Contents

1. Introduction

The Solvency Assessment and Management (SAM) framework is currently being developed to create a risk based framework for South African insurers[1] and insurance groups. Although there is still some way to go until the SAM requirements will go live, good progress is being made with the development of the SAM framework. Specifically, the SAM framework has already put into place interim measures for the calculation of reserves and capital requirement for non-life[2] insurers, as provided for in Board Notice 169 (BN169) of 2011. Further development of the SAM framework is expected to be enacted in 2013 through the Insurance Laws Amendment Bill (ILAB) which is expected to take effect from 1 January 2014. The ILAB will include the requirements for enhanced governance and risk management requirements as well as the requirements for insurance group supervision.

The second Quantitative Impact Study (SA QIS2) marks an important milestone in the development of the SAM framework. This is the last voluntary quantitative impact study, with the third Quantitative Impact Study (SA QIS3) planned for 2013 being compulsory. There will also be a compulsory parallel run in 2014. The approach taken to SA QIS2 is to collect information to assist in the decision-making required to determine the final measures under the SAM framework. There are a number of areas where alternative calculations or sensitivities were requested to inform such decision making. This is in contrast to the approach planned for SA QIS3, where the sensitivities will be kept to a minimum and the focus will be on requiring calculations that are expected to be close to the final calculations.

Whereas SA QIS2 considers the impact that the proposed framework will have on the financial soundness position of insurers and insurance groups, an economic impact study is also planned to consider the wider impact that the SAM framework will have on the insurance industry and the economy in general. A request for proposals to provide assistance with the economic impact study is currently out for tender. It is expected that the results of SA QIS2 will feed into the economic impact study.

SA QIS2 focuses on the quantitative requirements of the SAM framework. However, the SAM framework is wider than just the quantitative requirements and the FSB has committed to other work streams to address these areas. Specifically, the FSB is undertaking a Pillar 2 readiness exercise. A report setting out the results and findings of this exercise is expected to be released by March 2013. Further details on the status of the SAM project as well as key activities planned for 2013 will be released in a SAM 2013 update.

Where possible, the figures and tables in the report have been kept consistent with the equivalent figures and tables which were used in the SA QIS1 report for comparison purposes. In some places, the results from SA QIS1 have been included in the report.

The report assumes a working knowledge of the requirements proposed by the SAM framework and some knowledge of the SA QIS2 technical specification[3]. Therefore concepts defined in the SA QIS2 technical specification will not be defined again in this report.

[1] Unless otherwise stated, the term insurer in this report refers to both insurance and reinsurance companies.
[2] This report refers to non-life and life insurers, which are equivalent to short-term and long-term insurers respectively.
[3] The SA QIS2 technical specification can be found on the FSB website http://www.fsb.co.za. Click on "insurance", and then on "Solvency Assessment and Management".

2. Executive Summary

- *Participation*

There has been a healthy increase in participation from 95 insurers in SA QIS1 to 121 insurers in SA QIS2. This represents 98.5% of the South African insurance industry by volume of premium. Although there are still a number of insurers who have not participated in either SA QIS1 or SA QIS2, the FSB is confident that all insurers will be able to submit SA QIS3 which will be compulsory to complete for all insurers.

In addition to the strong participation from insurers, there has also been good participation from insurance groups in SA QIS2, with 26 insurance group submissions received. This response is appreciated by the FSB, especially taking into consideration the large number of calculations requested in the group submission and the fact that this is the first quantitative impact study requiring calculation of the group solvency position.

- *Overall Impact*

The overall capital impact of SA QIS2 for life insurers is summarised in the table below:

Table 2.1: Aggregate impact of SA QIS2 on life insurers (R'bn) [4]

Life insurers	Current Position (QIS1)	QIS 1	Higher under QIS 1	Current Position (QIS2)	QIS 2	Higher under QIS 2
Available Capital	R 105.5	R 157.4	90%	R 122.5	R 200.5	78%
Capital Requirement	R 31.7	R 89.8	85%	R 35.6	R 116.5	74%
Free Surplus	R 73.8	R 67.7	68%	R 86.9	R 84.0	71%
Capital Coverage Ratio	3.3	1.8	33%	3.4	1.7	29%

From the table we can see that there is very little difference in the overall free surplus under SA QIS2, compared to that under the current position. Although the aggregate free surplus showed a small decrease, 71% of life insurers actually experienced an increase in free surplus. This apparent anomaly is due to a few insurers being adversely affected by the exclusion of regulated financial and credit participations from the solvency calculation, resulting in the removal of surpluses previously held in such participations. This has resulted in a big impact for a small number of insurers, skewing the overall results.

For most life insurers, the increase in free surplus is the result of the removal of prudential margins from the valuation of technical provisions leading to lower technical provisions and therefore an increase in available capital. Although the higher available capital is partially offset by an increase in the capital

[4] A number of the tables and figures in this section include results from the SA QIS1 report for comparison purposes. Wherever SA QIS1 results are displayed, this is clearly marked in the tables or figures. The SA QIS1 report can be found on the FSB website http://www.fsb.co.za. Click on "insurance", and then on "Solvency Assessment and Management".

requirement, the net effect is positive for the majority of life insurers. However, life reinsurers were generally worse off, mainly due to the onerous capital requirements for the mortality catastrophe risk and mortality risk components.

Another apparent anomaly is the decrease in the capital coverage ratio, both at an aggregate level as well as at the individual company level. This is driven by an increase in both the numerator and the denominator of the capital coverage ratio – resulting in a lower ratio. For this reason, care should be taken when comparing the capital coverage ratios under SA QIS2 to those under the current position.

Results from SA QIS1 to SA QIS2 have remained largely consistent, with the capital coverage ratio decreasing slightly from 1.8 to 1.7.

The overall capital impact of SA QIS2 for non-life insurers is summarised in the table below:

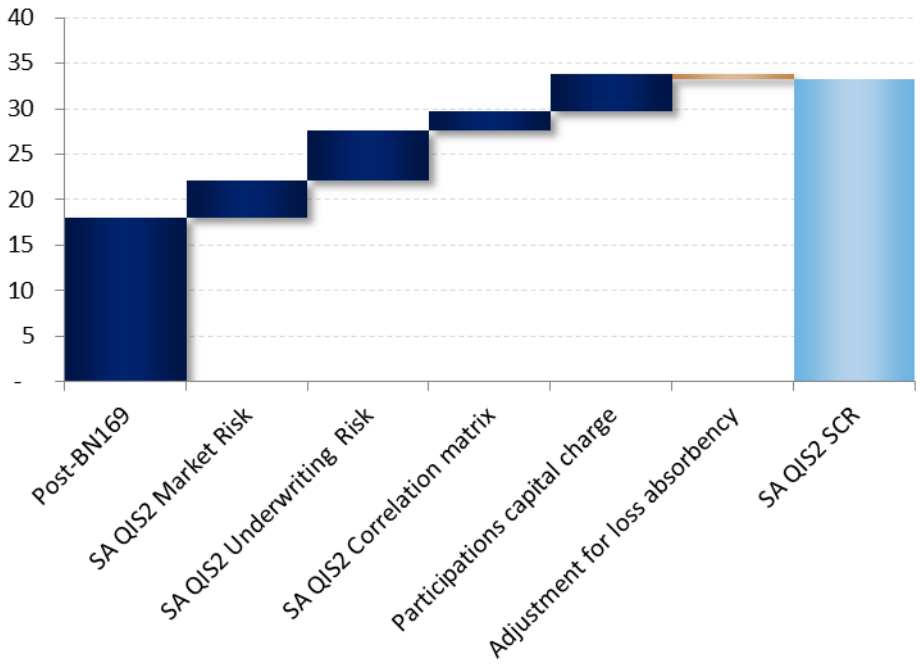
Table 2.2: Aggregate impact of SA QIS2 on non-life insurers (R'bn)

Non-Life insurers	Current Position (QIS1)	QIS 1	Higher under QIS 1	Current Position (QIS2) (pre-BN169)	Current Position (QIS2) (post-BN169)	QIS 2	Higher under QIS 2 (pre-BN169)	Higher under QIS 2 (post-BN169)
Available Capital	R 33.7	R 39.1	66%	R 41.4	R 42.8	R 49.5	63%	63%
Capital Requirement	R 13.6	R 25.9	95%	R 15.4	R 17.9	R 33.2	100%	98%
Free Surplus	R 20.0	R 13.2	29%	R 26.0	R 24.9	R 16.3	17%	24%
Capital Coverage Ratio	2.5	1.5	13%	2.7	2.4	1.5	10%	13%

For non-life insurers, the analysis is somewhat complicated by the introduction of new valuation and capital requirements as from 1 January 2012, reflecting the interim measures for non-life insurers introduced as part of the SAM project through BN169. For this reason, non-life insurers were asked to provide their current positions both before and after the implementation of BN169. Unless otherwise stated, reference elsewhere in this report to the current position for non-life insurers should be taken to be the post-BN169 position.

From the table above it is apparent that the capital requirement has increased from pre-BN169 levels to post-BN169 levels and then again to the SA QIS2 capital requirement. However, the increase from pre-BN169 to post-BN169 is small in comparison to the large increase from post-BN169 to SA QIS2. Reasons for the large movement in the capital requirement include: different calculations for the various components of the calculation, less diversification benefit allowed under SA QIS2, as well as a risk charge for participations included under SA QIS2. The figure below provides a reconciliation from the post-BN169 capital requirement to the SA QIS2 SCR.

Figure 2.1: Reconciliation from the post-BN169 capital requirement to the SA QIS2 SCR (R'bn)

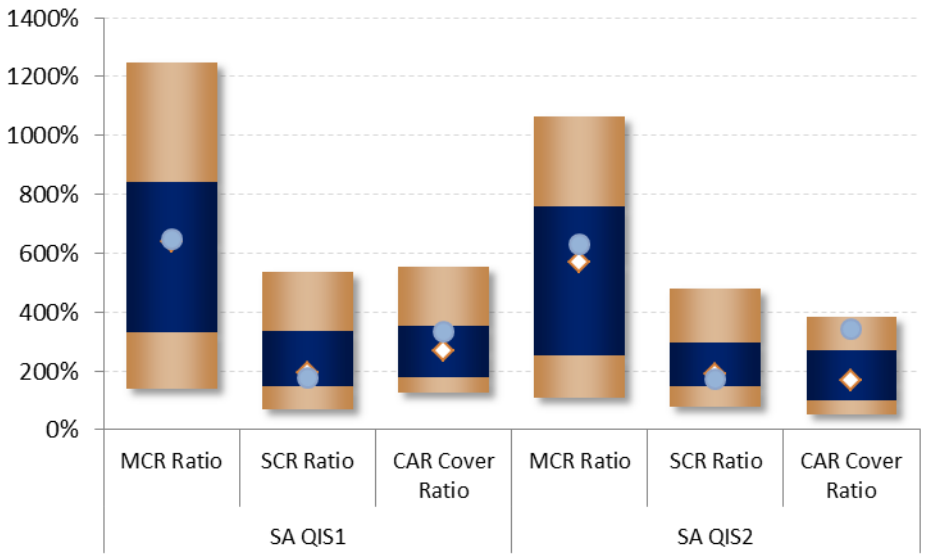


Most non-life insurers have a lower free surplus under SA QIS2 compared to that under the post-BN169 position.

Overall, the results for non-life insurers in SA QIS2 have remained consistent with SA QIS1, with the capital coverage ratio remaining at 1.5.

In addition to considering the aggregate position for all insurers, it is also useful to consider the distribution of the capital positions across insurers.

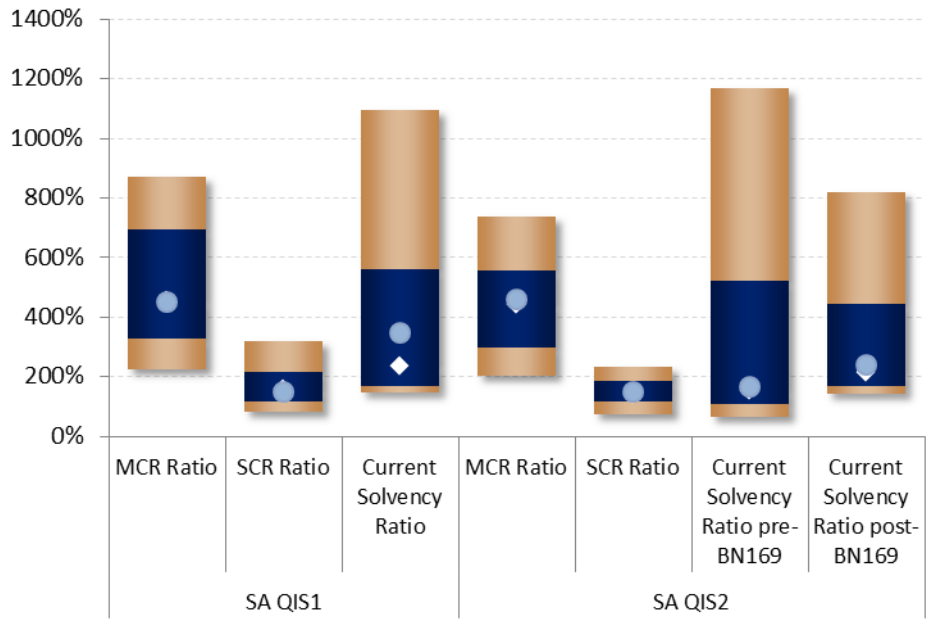
Figure 2.2: Change in coverage ratios for life insurers (ratio)



Bar charts of this nature are utilised throughout the report. These are intended to show the spread of responses across respondents rather than simply showing an industry total or average which will largely depict the responses of the largest insurers. The beige bar shows the range between the 10th and 90th percentiles of responses. The dark blue bar shows the interquartile range (the range between the 25th and the 75th percentiles). The diamond shows the median response, and the circle shows the weighted-average response.

The bar chart above demonstrates how there is a wide range in the capital coverage ratios across life insurers. Participation from life insurers increased from 40 submissions in SA QIS1 to 58 submissions in SA QIS2. The additional life insurers who submitted in SA QIS2 are mostly small insurers, so there is no significant impact on the overall average across insurers. However, the distribution of results across life insurers may vary, especially considering that the greatest increase in life insurance submissions were from linked, niche and assistance business insurers.

Figure 2.3: Change in coverage ratios for non-life insurers (ratio)



For non-life insurers, the above figure clearly demonstrates the change in the distribution of capital coverage ratio from pre-BN169 to post-BN169, and then from post-BN169 to the SA QIS2 basis. The large move from the post-BN169 basis to the SA QIS2 basis can be demonstrated by the quartiles: under the post-BN169 basis 75% of insurers have a capital coverage ratio above 165%, and under the SA QIS2 basis 75% of non-life insurers have a capital coverage ratio below 183%.

In total there were 22 insurers (eight life insurers and 14 non-life insurers) in SA QIS2 who did not meet their Solvency Capital Requirement (SCR), up from 17 in SA QIS1. Although the number of insurers has increased, the proportion of insurers that did not meet SCR as a percentage of the number of insurers who submitted responses has remained consistent at 18% from SA QIS1 to SA QIS2.

Of the 22 insurers who did not meet their SCR, there were five insurers (two life insurers and three non-life insurers) who did not meet their Minimum Capital Requirement (MCR) either.

It should also be noted that in addition to the 22 insurers described above, there were three insurers (all life insurers) who met their SCR but did not meet their MCR. These are small insurers who do not have enough available capital to meet the absolute minimum of R15m, even though they have enough capital to meet the SCR as calculated by the standard formula.

Figure 2.4: Life insurers not meeting their capital requirements

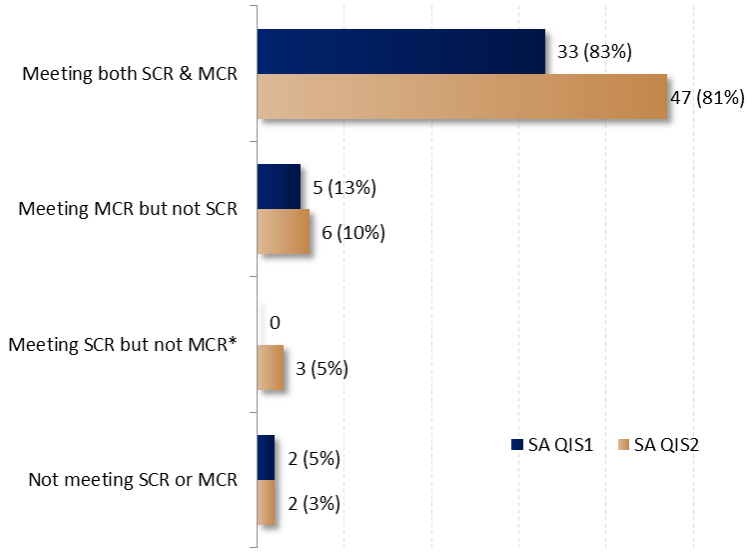
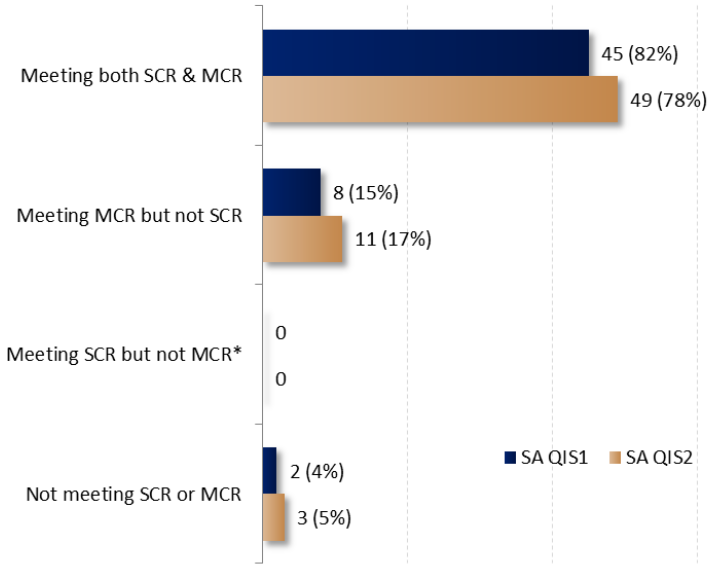


Figure 2.5: Non-life insurers not meeting their capital requirements



Various aspects of the impact of SA QIS2 are illustrated in greater detail, broken down by category of insurer, in Annexure 3.

It is intended that spread sheets containing the underlying figures that populate the various graphs in the main body of this report will be published separately on the SAM website.

- *Groups*

As set out above, SA QIS2 is the first quantitative impact study conducted where the impact of the SAM framework is tested on the solvency position of insurance groups. The SA QIS2 technical specification asked for the group solvency position to be determined on a range of methodologies, and the extent to which results were provided varied by group.

The results for the group solvency position varied by group, but overall the groups generally had higher group capital available under the SA QIS2 calculations compared to a hypothetical current position where the group position is estimated using current capital requirements. The higher capital available was generally offset by a higher group capital requirement under SA QIS2 than under the hypothetical current position.

This result is largely attributable to the results of SA QIS2 at the solo level, especially on the life insurance side, which makes up the largest part of the subsidiaries by size included in the group calculations.

3. Scope and limitations

- *SAM SA QIS 2 Participation*

As previously mentioned, participation in the SA QIS2 exercise has been widespread and greater than for SA QIS1, with approximately 65.4% of insurers representing more than 98.5% of the South African insurance industry by volume of premium submitting results (compared to approximately 50% of insurers representing roughly 90% of premium volume participating in SA QIS1). This participation includes representation from a broad range of insurance categories, as set out in Table 3.1:

Table 3.1: Number of insurers that submitted a SA QIS2 solo return[5]

	QIS2			QIS1		
Insurer Category	**Life**	**Non-Life**	**Total**	**Life**	**Non-Life**	**Total**
Assistance	4	0	4	2	0	2
Captive	0	6	6	0	8	8
Cell Captive	3	6	9	2	6	8
Linked Investment	15	0	15	7	0	7
Niche	6	23	29	3	16	19
Reinsurers	6	5	11	5	5	10
Typical	24	23	47	21	20	41
Grand Total	**58**	**63**	**121**	**40**	**55**	**95**

Participation has increased across the board for all categories, with the exception of the captive category. Life insurer participation has increased by an impressive 45%, whereas non-life insurer participation has increased by 15%. The greatest increase within life insurers has been due to the increase in linked insurers submitting SA QIS2, possibly due to the simplifications applied by assuming a short contract boundary for these insurers.

There were ten insurers that participated in SA QIS1 but did not participate in SA QIS2. The FSB contacted several of these insurers to ascertain the reasons for not participating in SA QIS2, with the key response being a lack of resources to conduct the SA QIS2 exercise.

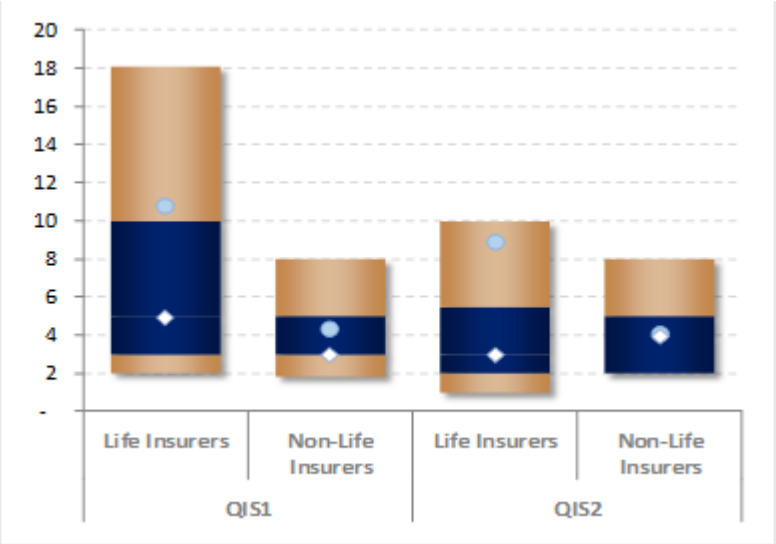
- *Impact on resources*

The industry has made a concerted effort to participate in the SA QIS2 exercise – in total more than 760 skilled person months have been used for this exercise, with approximately two-thirds representing actuarial time. The resources allocated to the SA QIS2 exercise varied widely by insurer, ranging from one person month to 140 person months to complete the exercise. The FSB

[5] Composite insurers were counted as two submissions.

appreciates the volume of work carried out by industry participants in submitting the SA QIS2 results.

Figure 3.1: Amount of time in skilled person months used in the SA QIS2 exercise



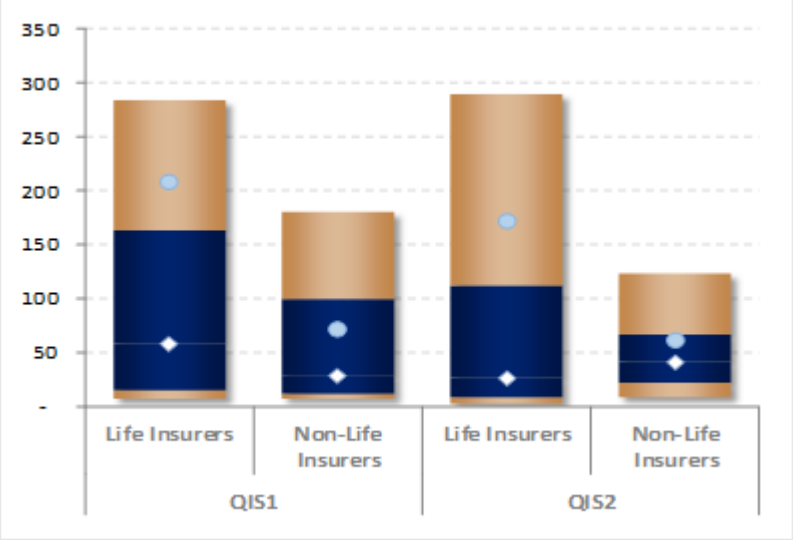
Even though SA QIS2 required more calculations than SA QIS1, overall there has been a decrease in the average amount of time spent by insurers in completing the quantitative impact study. The average time for life insurers decreased from eleven to four person months, and for non-life insurers the number remained at four person months for both SA QIS1 and SA QIS2. Although this was not specifically queried in the qualitative questionnaire, informal discussions with insurers highlighted the following reasons for the reduction in time spent:

- Many insurers building on their knowledge and systems from SA QIS1;
- Improved QIS return requiring less effort to understand and complete;
- Additional QIS workshops held by the FSB for industry contributing to better understanding of the work required;
- Additional availability of FSB staff combined with a dedicated QIS mailbox for insurer queries.

In addition to the reasons above, the decrease in the average time taken to complete SA QIS2 from SA QIS1 may also be a reflection of the nature and size of the additional insurers who completed SA QIS2 compared to SA QIS1. Most of these additional insurers are small, and there have been a number of linked insurers completing SA QIS2 for the first time for whom the calculations under SA QIS2 are simpler.

The total human resource commitment for the implementation of the SAM project across the industry is estimated at approximately 13 500 skilled person months. Again, the amount of resources planned for SAM implementation varies widely by insurer, as is shown in Figure 3.2.

Figure 3.2: Amount of time in skilled person months planned for SAM implementation



In general, life insurers have planned for more resources in their SAM projects than non-life insurers, which reflects the difference in the size of life insurers compared to non-life insurers. Overall, the number of person months planned for SAM implementation has decreased from SA QIS1 to SA QIS2, which largely reflects the additional smaller insurers who participated in SA QIS2. The average time for life insurers has decreased from 208 to 172 person months, and for non-life insurers the average has decreased from 72 to 61 person months.

- *Impact on costs*

Participation in the SA QIS exercises on top of preparation for the SAM implementation date is a time consuming exercise and the FSB greatly appreciates the efforts made by industry in this regard. Table 3.2 below shows the reported implementation and ongoing costs that are estimated by insurers, split by SAM pillar.

Table 3.2: Estimated SAM implementation and on-going costs (R'm)

	Pillar 1		Pillar 2		Pillar 3	
	Incremental implementation costs	*Incremental annual ongoing costs*	*Incremental implementation costs*	*Incremental annual ongoing costs*	*Incremental implementation costs*	*Incremental annual ongoing costs*
Life insurers	499.4	229.5	373.2	234.0	499.1	184.9
Non-life Insurers	211.7	77.7	131.5	40.9	104.1	37.1
Total	711.1	307.2	504.7	274.8	603.2	222.0

From the above table we can see that Pillar 1 is expected to be the most costly part of the SAM framework for insurers to implement, with Pillar 3 second most expensive, followed by Pillar 2.

It is also evident that life insurers expect to incur higher costs than non-life insurers on all pillars and for both implementation and ongoing costs.

To understand the split of the costs between the various components, the figures below show the split of costs for both implementation and ongoing costs separately.

Figure 3.3: Split of implementation costs across the various pillars for life and non-life insurers (%)

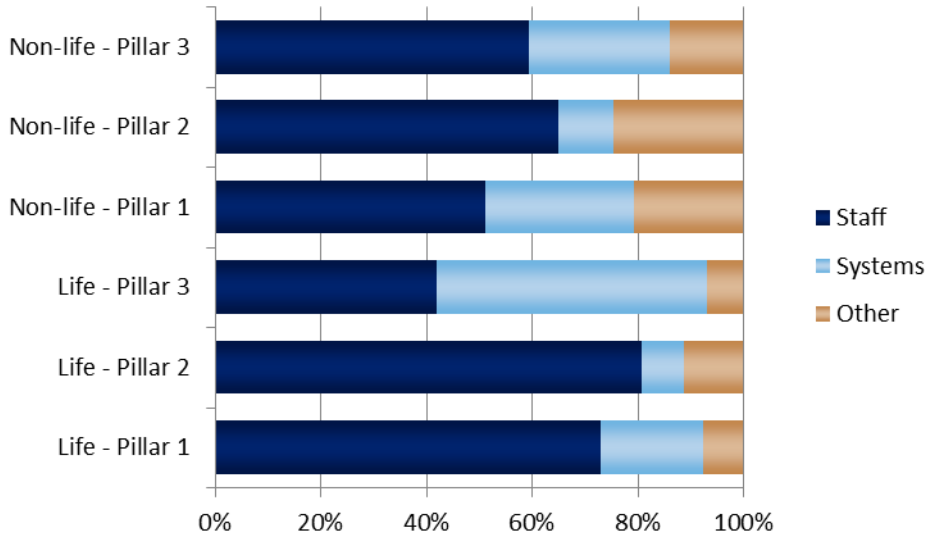
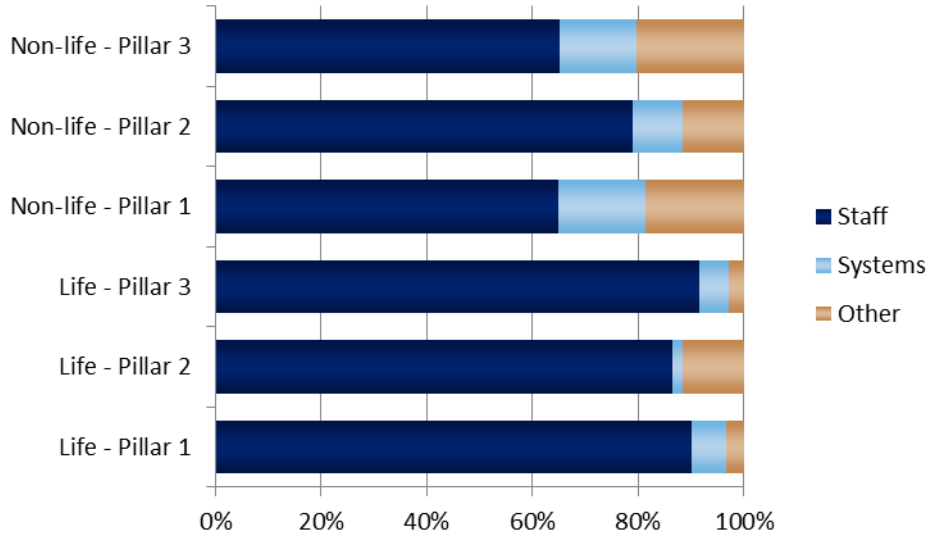


Figure 3.4: Split of ongoing costs across the various pillars for life and non-life insurers (%)



From the above figures we can see that most of the expenses relate to staff costs, with significant costs related to system developments, especially for Pillar 3 implementation[6].

When asked how these costs would be funded, participants highlighted the following sources:

- Most insurers stated that implementation costs would be funded from shareholder funds whilst a portion of longer-term ongoing costs would be funded by policyholders through higher premiums/fees (i.e. increased expense loadings).
- Other insurers stated that costs would be funded from profits (i.e. allowed for in the regular budgeting process) and excess assets.
- Captive insurers indicated that costs would be paid by the captive's parent company.

- *Quality / limitations*

Participation in the SA QIS2 study was not compulsory, and insurers were encouraged to complete the exercise, even if they were only able to do so on a best-efforts basis. In addition, for some insurers it was the first quantitative impact study, and therefore there were bound to be some areas of the calculations that may have been difficult to complete with current data, or areas needing further guidance or explanation. Moreover, for many insurers the SA QIS2 deadlines coincided with their financial year-ends, thereby increasing the likelihood of errors and/or omissions being made.

Taking the above into account, in order to improve the quality of submissions the FSB decided to provide additional assistance to insurers by setting up a dedicated e-mail address for insurer queries, as well as by providing several QIS

[6] These numbers exclude ten submissions where this question was not answered, although the ten omissions did not include any large companies. Costs for insurers that did not participate in SA QIS2 are also excluded.

workshops. The SA QIS2 return was also redesigned to be more user-friendly and to minimise the volume of user inputs.

As part of the submission, insurers had to submit a validation tool along with the returns. The validation tool was an Excel spreadsheet that had several standardised checks built into it. Insurers had to either correct or explain the possible errors picked up by the validation tool, and had to sign off on the validation tool and the queries raised. This has proven to be quite valuable in terms of improving the quality of submissions.

Overall, the quality of submissions has improved from SA QIS1 to SA QIS2. However, some of the results submitted to the FSB needed to be cleaned before the analysis could take place. Where there were significant issues that could skew the overall results, the FSB has also gone back to the relevant insurers to clarify positions. An issues log has been maintained by the FSB to track all the changes made to the results submitted. Specifically, there have been issues around:

- Balance sheets not balancing.
- Inability to tie back the "current situation" numbers to the existing statutory or quarterly returns. In some cases the numbers were not reconcilable, and it was decided to use the submitted statutory and quarterly returns, rather than the "current situation" numbers reported in the SA QIS2 submissions, for several insurers on a case-by-case basis. This was particularly the case for non-life insurers.
- Some insurers did not adequately explain errors picked up by the validation tool, or provide a reconciliation of the numbers in the SA QIS2 return with those in the relevant annual or quarterly return.
- Some insurers omitted several pieces of information from the SA QIS2 returns, e.g. asset and counterparty data. There were also a number of insurers that did not complete all the sensitivities that were requested in the SA QIS2 technical specification.

Insurers have highlighted some of the practical difficulties in interpreting the SA QIS2 technical specification as well as in completing the calculations. In particular, the following areas have been highlighted:

- Data required for the calculation:
  - Asset data, in particular the difficulty in obtaining the relevant data required to perform look-through calculations for assets held in collective investment schemes. Further asset data issues included obtaining the data at the granularity required, obtaining credit ratings and determining the duration of assets.
  - Data required for the non-life underwriting risk, in particular difficulties in obtaining accurate pricing and claims data, as well as the data required for the catastrophe risk calculations.
  - Splitting the data in the segmentation of business as per the SA QIS2 technical specification. There was also difficulty in unbundling contracts, especially contracts that had both life and health benefits.
  - Many insurers were unable to split discretionary participation business into the respective guaranteed and future discretionary benefits.

- Methodology to calculate the technical provisions:

- Some life insurers struggled with the valuation of the with-profit liabilities, and in the determination of the future discretionary benefits.
- There were some difficulties reported in interpreting the contract boundaries.

- Methodology to calculate the SCR:
  - Some non-life insurers reported difficulties in applying the calculation for catastrophe risk, particularly in calculating the granular exposures required and in the treatment of re-insurance.
  - Some insurers experienced difficulties in grouping their policies into homogenous groups for the purpose of deriving the SCR life lapse risk charge.
  - Some insurers reported difficulties in determining the level of management action to allow in each shock scenario. There were also difficulties reported for the determination of management actions to apply in the combined scenario required to avoid the double-counting of management actions.
  - Many insurers commented on the large amount of work required to understand and to carry out the various interest rate shocks.
  - Many insurers experienced difficulties in understanding and using the non-life underwriting risk workbook.

- Methodology issues other than technical provisions and SCR:
  - Many insurers reported difficulties in the treatment of tax throughout the calculation, in particular with setting assumptions on which tax basis to use, recognition of deferred tax assets and deferred tax liabilities on the regulatory balance sheet, and the extent to which losses could be absorbed by decreasing the deferred tax liabilities within the SCR calculation.
  - Some insurers commented on the difficulties in checking the reasonableness of their SA QIS2 balance sheets due to the new format, particularly in splitting assets between unit-linked funds and non-unit linked funds.
  - Many insurers commented on the difficulties related to calculating the surrender value gaps and paid-up value gaps at a per policy level.

- General difficulties in performing the calculations:
  - There were some difficulties reported in completing the exercise due to a lack of resources, especially where the timing of the exercise clashed with other financial reporting deadlines.
  - There were some constraints in IT systems and current valuation models to perform the calculations required.
  - Despite the fact that the various returns had built-in import tools, many insurers commented on the time delays caused by the release of various versions of the returns.
  - Many insurers found it difficult to apply the principle of proportionality.

The SA QIS2 exercise was conducted as at 31 December 2011. However, not all insurers used this date, and some insurers were granted approval to use different reporting dates. The reporting dates used by the insurers are set out in the table below.

Table 3.3: Reporting dates used by insurers submitting SA QIS2 results

Year-end	Number of Insurers
Jun-11	5
Nov-11	2
Dec-11	76
Feb-12	5
Mar-12	19
Apr-12	1
Jun-12	13

The table below shows how insurers rate themselves in terms of preparedness to perform the required calculations for the various elements of Pillar 1.

Table 3.4: Self-reported level of preparedness for SAM of SA QIS2 participants (% of respondents)

Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	*SA QIS 1*				*SA QIS 2*			
	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical Provisions	39%	28%	28%	6%	40%	19%	36%	5%
SCR	21%	38%	34%	7%	24%	24%	48%	4%
MCR	64%	17%	15%	4%	69%	8%	20%	3%
Own Funds	76%	17%	5%	2%	71%	12%	15%	3%

It is interesting to note from the table above that, in comparison to SA QIS1, insurers who completed SA QIS2 have reported fewer problems with methodologies, but have reported an increase in problems with data.

Given the practical difficulties reported by insurers, it is surprising that insurers have reported that they are very well prepared and that in many cases they have all the data required to complete the calculations required under SA QIS2. As an example, more than a third of insurers felt that they were fully prepared to calculate the technical provisions, without any problems relating to data or methodology.

It is important to note that a few participants did not provide the above information. The same is true of Table 3.4.

Insurers mentioned the endeavours below in terms of increasing preparedness:

- Consulting or employing adequately skilled resources, particularly actuarial skills. Available resources will need to be up-skilled to be ready for implementation.
- Ensuring that the full granularity of data required is available; particularly with regards to postal code/CRESTA[7] areas, the look-through approach for assets, and data from cedants and brokers in general. More detailed data requests will be sent to asset managers.
- Improving data management by ensuring that data collection is done at a central point.
- Enhancing IT systems in order to meet SAM requirements including more efficient data gathering, calculation of technical provisions, and reporting.
- Improving documentation of processes.
- Increasing budgets for SAM implementation.
- Finalising and refining methodologies for calculating technical provisions; where simplifications are used for the risk margin, some insurers indicated the intention to use more detailed calculations.
- Implementing more robust calculation systems through modelling software, more frequent calculations, and improved analysis of movements.
- Increasing training of staff and Board members to ensure buy-in from all parties, to increase the understanding of SAM implications, and to increase the understanding of technical matters.

As mentioned above, insurers felt in general that they are fairly prepared for SAM Pillar I requirements; however, further work needs to be done to improve Pillar II readiness. Pillar III progress is still in the very early stages, given that the industry is awaiting further guidance. It is interesting to note that this is opposed to the planned costs to be incurred by insurers set out in table 3.1, which sets out that most costs are expected for Pillar 1, followed by Pillar 3 with the least amount of costs planned to implement Pillar 2.

Securing the appropriate resources and the required skills was mentioned as being difficult and costly, particularly for small insurers. More clarity is required around the final specifications and the implications in order to accurately budget/plan for additional resources.

- *Reliability of results*

Participants were asked to assess the reliability of their results on a 4-point scale, across various dimensions of the SA QIS2 submission.

Given the comments received on the difficulties in understanding the technical specification and the availability of data, it was also surprising that insurers generally reported that their reliability of results was good, as shown in Table 3.5.

Table 3.5 shows the results of participants' self-assessment of reliability.

[7] A geographical zoning mechanism frequently used in the non-life industry.

Table 3.5: Self-reported reliability of results in SA QIS2 submissions (number of respondents)

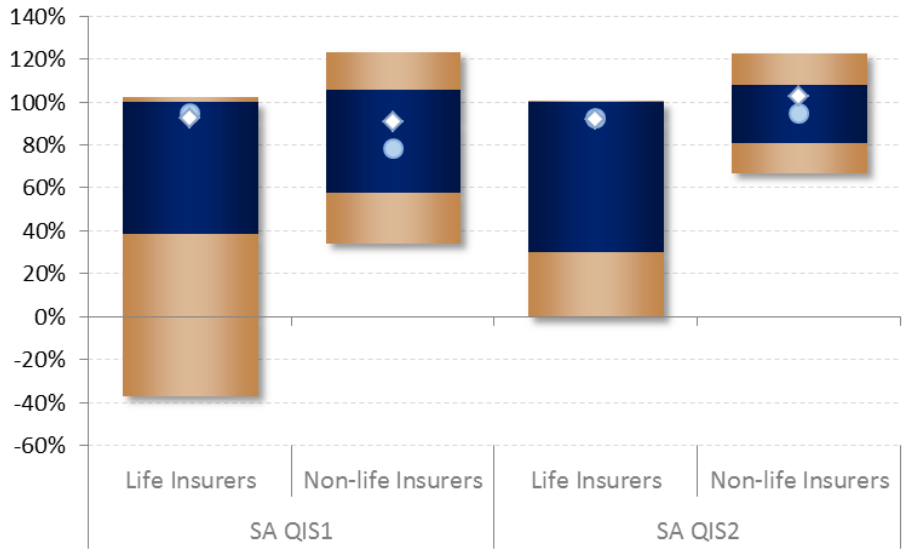
	SA QIS 1				SA QIS 2			
	Poor	Fair	Good	Excellent	Poor	Fair	Good	Excellent
Technical provisions	2	17	56	10	2	18	67	29
Best Estimate	3	15	61	10	2	15	71	28
Risk Margin	6	32	45	6	6	28	64	16
Valuation of assets and liabilities other than tech. prov.	1	6	42	40	0	6	57	51
User specific parameters	1	4	17	3	2	2	18	11
SCR standard formula market risk	0	21	48	17	2	20	67	25
SCR standard formula Counterparty default risk	2	21	57	9	2	9	29	24
SCR standard formula Life underwriting risk	0	6	22	11	2	20	29	15
SCR standard formula Health underwriting risk	3	8	10	6	5	15	77	17
SCR standard formula Non-Life underwriting risk	0	14	32	8	1	9	44	60
SCR standard formula overall	0	22	55	11	0	6	42	65
MCR	1	18	45	24	4	12	68	32
Own funds	0	6	36	45	4	10	69	33

Life insurers have reported stronger reliability ratings than the non-life insurers for almost all of the components listed above. The proportion of insurers who deem their reliability of information to be either good or excellent has increased across the majority of components. This is promising given the increase in the number of smaller insurers who participated in SA QIS2. The FSB expects that the reliability of results will improve in SA QIS3 and in the parallel run. This is likely as insurers continue efforts to enable the embedding of calculations into the business-as-usual process before the SAM framework is implemented in 2015.

4. Technical Provisions

The economic balance sheet approach to technical provisions under the SAM regime implies a greater level of comparability across insurers. This approach involves valuing liabilities on a best-estimate basis (excluding any current margins). The best estimate liabilities, together with the risk margin as specified in SA QIS2, form technical provisions. Therefore, insurers who have either held substantial margins with their liabilities, or who historically zeroised negative liabilities, would therefore be expected to hold significantly lower (and in some cases negative) technical provisions compared to the current basis. The impact of this change in methodology is demonstrated in Figure 4.1 below.

Figure 4.1: Technical provisions on SAM basis as a percentage of the current basis (ratio)



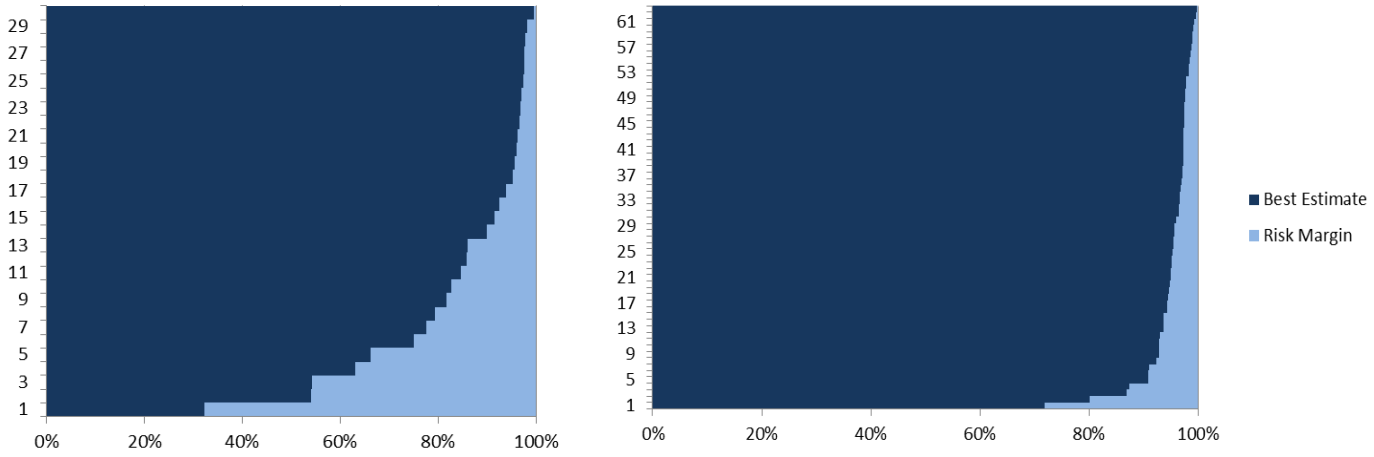
For life insurers, the weighted average is the same for both SA QIS1 and SA QIS2 (92%), and the medians similar (94.6% for SA QIS1, 92.4% for SA QIS2). These are close to 100%, and so show that technical provisions are on average on a SAM basis similar to those under the current basis. Below the medians, however, a significant number of life insurers have ratios well below 100%. This largely reflects the release of margins which exceed the best estimate plus risk margin under SAM. Approximately 11% of participants in SA QIS2 indicated negative technical provisions.

For non-life insurers, the weighted average is higher for SA QIS2 than for SA QIS1 (78.4% for SA QIS1 and 94.8% for SA QIS2), as are the medians (91% for SA QIS1 and 102% for SA QIS2). For more than half of the non-life participants, the SA QIS2 basis implies technical provisions greater than those on the current (post-BN169) basis. The range of ratios below 100% was far narrower under SA QIS2 in comparison to SA QIS1: approximately 20% of participants had technical provisions of 50% or less as a percentage of current basis liabilities under SA QIS1, while under SA QIS2 less than 6% of participants had a ratio of 50% or less. Part of the reason for the change in the distribution between SA QIS1 and SA QIS2 is due to the implementation of BN169 for non-life insurers.

- *Composition of Technical Provisions*

The market-consistent valuation of technical provisions under SAM entails calculating liabilities on a best-estimate basis, and then explicitly calculating a risk margin which brings the value of provisions up to a market-consistent level. Risk margins will vary according to the specific nature of the liabilities and the level of capital allocated to those liabilities. Risk margins may also vary depending on the methodology used.

Figure 4.2: Proportions of technical provisions comprising best estimate liabilities and risk margin (%)



For some life insurers the removal of prudential margins in the calculation of the best estimate liabilities can result in a very small level of best estimate liabilities, and hence lead to the best estimate liabilities making up a very small proportion of technical provisions. There have also been some cases where the best estimate liability is negative. For approximately 66% of both life and non-life respondents the risk margin comprises less than 5% of overall technical provisions. Respondents that have negative best estimate liabilities (nine life insurers) and those that only calculated technical provisions as a whole (nineteen life insurers) have been excluded from the above graph.

- *Best estimates – contract boundaries*

Few significant changes were made from SA QIS1 to SA QIS2 in terms of contract boundaries, other than more detailed guidance being provided at a product level. One significant application tested in SA QIS2 was for pure linked insurers, where the contract boundary was assumed to be zero. For other linked contracts not sold by pure linked insurers, a longer contract boundary was applied; however additional information was sought for these contracts to enable an estimation of the impact (on both the technical provisions and the SCR) of a shorter contract boundary.

Insurers were furthermore requested to split the unitised elements of their technical provisions, specifically universal life contracts, linked policies, and investment-related contracts, into a linked portion and a non-linked portion. It is the non-linked portion that would be affected by a change in contract boundary,

and hence the impact of the stresses on this element of the unit-linked contracts was requested.

In terms of the actual calculation on the non-linked portion of unitised contracts, a total of eight insurers provided information. Results however indicated that a wide range of approaches were used, and the results are not therefore comparable or meaningful in aggregate. A follow-up exercise will be conducted with relevant insurers to enable a meaningful understanding of the impact of a shorter contract boundary.

SA QIS2 participants raised some concerns pertaining to contract boundaries. Most notable was a concern over the apparent inconsistency in the treatment of linked products based on the provider. Other issues included concerns raised by reinsurers over the ability and need to recognise contracts which had been signed but only incepted after the valuation date, and the need for further guidance (specifically in terms of credit life policies). Participants noted the difficulty in interpreting and applying contract boundaries. Overall, however, 92% of respondents who answered the qualitative questions indicated that the requirements pertaining to contract recognition are appropriate, and 77% indicated that the definition of contract boundaries is appropriate.

- *Best estimates – matching premium*

A matching premium[8] was introduced for certain life insurance products in SA QIS2. A number of conditions were set before products would qualify for the application of the matching premium (e.g. defined assets, fixed cash flows, minimum BBB local rating). Product classes where the matching premium could be applicable were "risk contracts with only longevity and expense risk", and "other life contracts". Insurers who did qualify for and use the matching premium were asked to also provide results ignoring the matching premium, so that the impact of the matching premium could be estimated.

The "other life contracts" class exhibited a negligible effect of matching premiums. Ten insurers completed information for the "risk contracts with only longevity and expense risk" category. The aggregate impact of including a matching premium for these insurers is a decrease in best estimates of R2.1bn. The sizes of the matching premiums used ranged from 25 to 57 basis points.

The majority of relevant insurers found the conditions for the use of the matching premium appropriate. Some areas where concerns were raised were the minimum credit quality, the inclusion of death risk, and the allowance of products with a small and predictable probability of surrender.

In terms of the actual calculation of the matching premium however, all respondents indicated that this was not appropriate, with some respondents indicating that a fixed illiquidity premium would be more appropriate.

[8] An addition to the risk free rate for the purpose of valuing the best estimate liability where the addition is based on the assets backing long-term illiquid liabilities.

- *Risk Margin*

In calculating the risk margin, six possible approaches were provided, and respondents were asked to indicate per class of business which method they used. Table 2.1 shows the number of insurers adopting each approach:

Table 4.1: Number of insurers using the various approaches to calculate the risk margin

Risk Margin Methodology	Insurers
SCR approximation	60
% BE	31
Risks approximation	16
Duration approach	4
Full Calculation	3
Other	2

Participants were asked to provide information pertaining to the calculation of unavoidable market risk as part of their estimate of the risk margin, both in terms of significance as well as the methodology used. The SA QIS2 guidance was that this may be considered zero for non-life insurers, and accordingly the responses emanated mainly from life insurers.

Similarly to SA QIS1, most insurers either did not calculate "SCR unavoidable market risk", or assumed it to be zero.

- *Simplifications*

Most insurers stated that the principle of proportionality is sufficiently clear, and that no further simplifications are needed. One insurer stated that there are too many simplifications.

Some suggestions for further simplifications included:

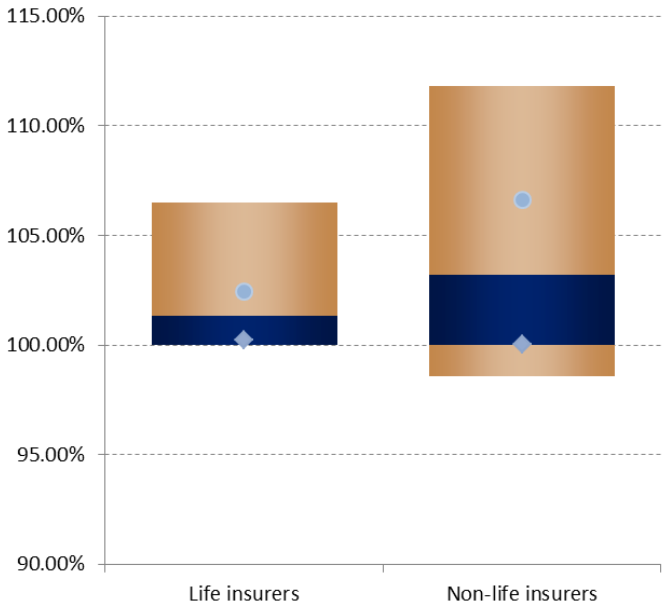
- A simplification guide pertaining to modelling management actions;
- A simplified approach for calculating non-life technical provisions;
- Prescribing a matching adjustment;
- Calculating the risk margin based on a fixed percentile;
- Data benchmarks for insurers without very much historical data.

5. Valuation of assets and other liabilities

- *Valuation of assets*

The valuation of assets under SA QIS2 was very similar to the valuation of assets under the current FSB basis. Figure 5.1 shows the distribution of the ratio of the valuation of assets under SA QIS2 to the valuation of assets under the current FSB basis. This is shown separately for life and non-life insurers.

Figure 5.1: Valuation of assets on SA QIS2 basis over current FSB basis (ratio)



Note that in these graphs the reinsurance recoverables have been removed from the SA QIS2 valuation, so that both the SA QIS2 and the current FSB approach are shown on a comparable basis.

The key reasons for differences in the valuation of assets between the SA QIS2 and the current basis include:

Inadmissible assets – Under the current FSB basis "inadmissible assets" may not be valued for statutory purposes, whereas certain of these inadmissible assets are valued and included in the SA QIS2. This will lead to a small increase in the valuation of assets under the SA QIS2 basis.

Participations – Different valuation principles are applied for participations under SA QIS2 and the current FSB basis, and the interpretation of results will vary accordingly.

Deferred Tax assets – There was no uniformity in the treatment of deferred tax assets on the SA QIS2 balance sheet. Some of the treatments included:

- Using the same as is required under IFRS;

- Recalculating the deferred tax asset based on the decreased technical provisions resulting from the removal of current statutory margins;
- Ignoring the deferred tax asset.

The deferred tax asset is further considered in section 10.

- *Valuation of liabilities other than technical provisions*

For both life and non-life insurers, the key difference between the valuation of liabilities other than technical provisions is due to the increase in deferred tax liabilities. This is especially true for life insurers, where more than 25% of insurers have reported that the value of other liabilities have more than doubled from the current position to SA QIS2. This large increase in the deferred tax liability is due to the removal of margins from technical provisions under SA QIS2, resulting in the realisation of a profit.

The impact of tax is considered further in section 10 of this report.

- *Application of IFRS valuation requirements*

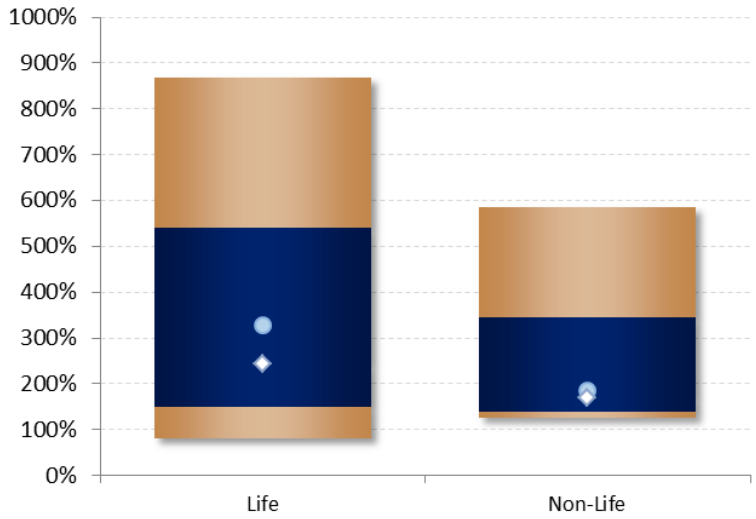
Insurers were asked to highlight problem areas in the application of IFRS valuation requirements for SAM purposes. The vast majority of insurers indicated that there were no problem areas pertaining to assets and liabilities other than technical provisions. Where responses were given, the following were stated as problem areas:

- Material differences between IFRS and SAM valuation requirements for property and subsidiaries. Under IFRS the valuations are based on cost less any accumulated depreciation and accumulated impairment where applicable, whereas under SAM the valuations are based on market value, with property based on external valuation and the subsidiaries on a price-earnings ratio.
- There is some uncertainty around the final requirements of IFRS4 Phase 2 and its implications for technical provisions and capital requirements on financial statements.
- There is likewise uncertainty around the appropriate method for non-life insurance premium recognition. There seems to be inconsistent treatment by non-life insurers writing annual-paid monthly business, i.e. some insurers recognise the full annual premium as written while others recognise it as monthly business.
- For reinsurers, there are uncertainties relating to the distinction between risk-attaching and losses-occurring business (the latter's full premium might need to be shown as written while the former's written premium could be seen to be recognised in line with the recognition of the underlying portfolio's premium income in the cedant's financial statements).
- Inconsistencies in the inclusion/exclusion of written premiums from future business between life and non-life insurers.

6. Solvency Capital Requirement (SCR)

The graph below sets out the distribution of the ratio of SA QIS2 SCR to the current capital requirement.

Figure 6.1: SA QIS2 SCR as a percentage of current capital requirements (ratio)

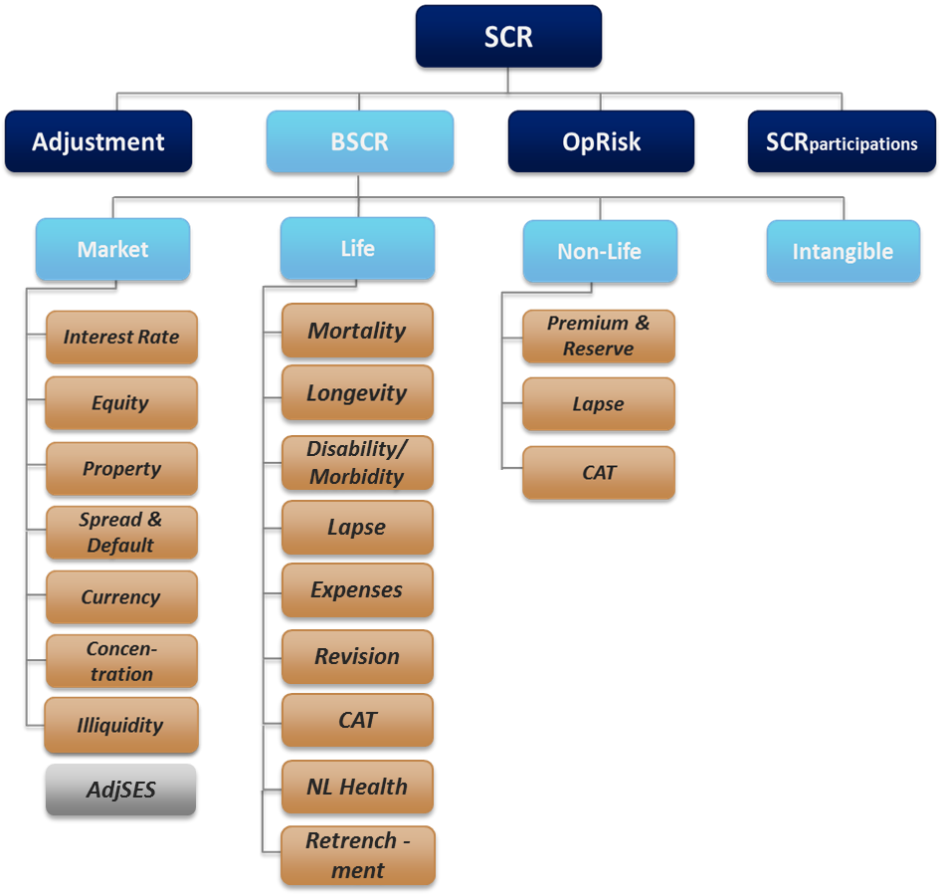


Please note that for the purposes of the graph above, the SCR takes into account the minimum absolute level of R15m, as applied in the MCR calculation. The current capital requirement for non-life insurers is taken as the post-BN169 values.

From the graph it is clear that the SCR is significantly higher than the current capital requirement. The ratio across all life insurers is 327%, with the corresponding ratio for non-life insurers at 185%.

In order to get a better understanding of the drivers of the SCR the components of the SCR are analysed in this section. The figure below, taken from the SA QIS2 technical specification, illustrates the structure of the SCR as tested under SA QIS2.

Figure 6.2: Structure of the SCR under SA QIS2



The SCR structure tested in SA QIS2 differs from that tested in SA QIS1. The key differences in the structure across risk modules are as follows:

- The risk charge for participations was included within the equity risk sub-module of market risk in SA QIS1, whereas in SA QIS2 participations now has its own category.
- The adjustment component tested in SA QIS1 included the impact of management actions on the SCR. The impact of management actions has now been removed and all risk capital at the sub-module levels is calculated net of management actions. There is an explicit calculation that has been added in the market risk module to ensure that management actions are not double-counted.
- The counterparty default module tested in SA QIS1 has been removed and is now allowed for in the sub-module to which the counterparty default risk applies.
- The health underwriting risk module has been removed and is now included in the life underwriting risk module.

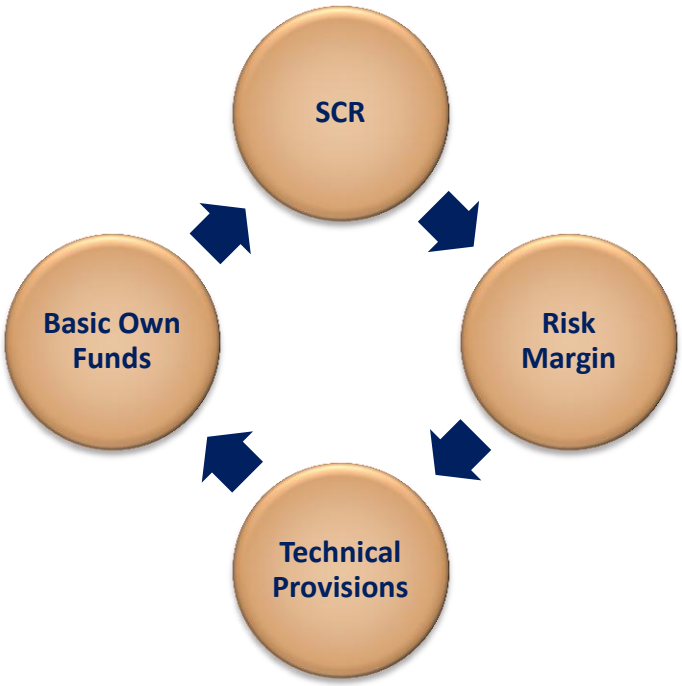
Changes in the SCR structure at module and sub-module levels are considered later in the report.

- *Circularity of SCR calculation*

Under the SAM framework, the SCR is based on the variability of the Basic Own Funds under various risk modules. However, the Basic Own Funds consists of

the assets less the liabilities, which includes technical provisions. One portion of the technical provisions is the risk margin, which is dependent on the level of the SCR. This circularity is depicted in the figure below:

Figure 6.3: Circularity of the SCR calculation



This circularity problem is overcome in the standard formula by only considering the change in the best estimate portion of the technical provision when applying a stress, without considering how the risk margin is impacted. For most insurers, this simplification is not critical, as the risk margin makes up a small proportion of the technical provisions, as set out in Figure 4.2. However, for some insurers, the application of the stress to the risk margin may lead to a very significant change.

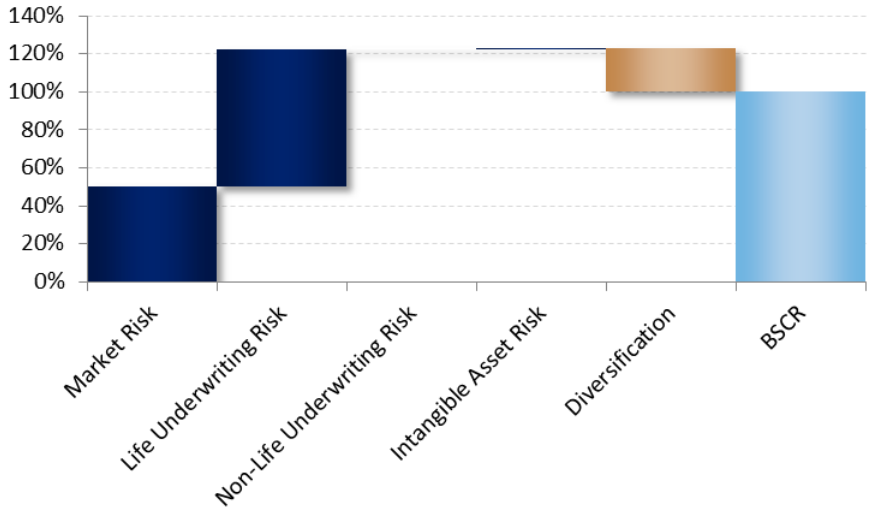
In the SA QIS2 specification, an appendix was provided to give an example of how to calculate the SCR including the allowance for the change in risk margin, although insurers were not limited to this approach.

One insurer calculated their SCR to include the change in risk margin, and this approach resulted in a significant decrease in the overall SCR. The approach used by this insurer was the one which was set out in the appendix to the SA QIS2 technical specification.

Life insurers

Figure 6.4 shows the risk components of the Basic Solvency Capital Requirement (BSCR) for life insurers.

Figure 6.4: Contribution of risk components to BSCR (%) – life insurers

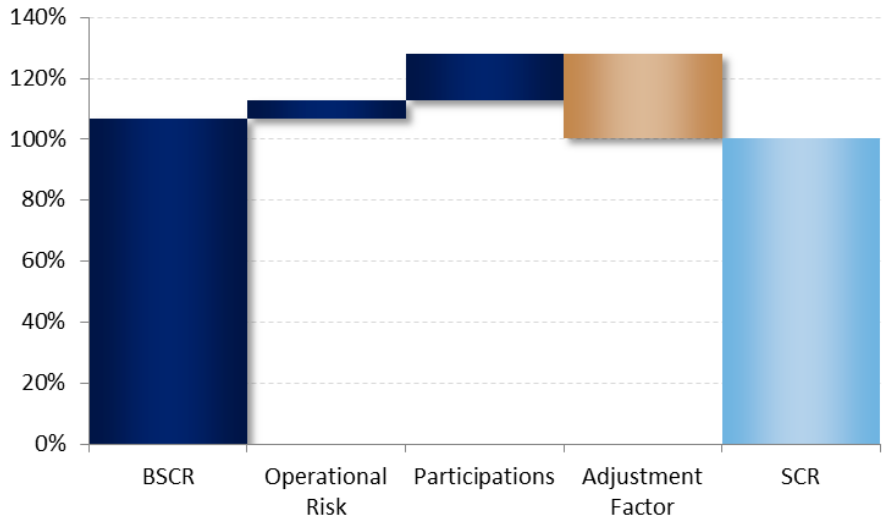


From the graph above, we can see that life underwriting risk is the largest component and market risk is the second largest component of the BSCR. Non-life underwriting risk and intangible asset risk are not significant, and there is a diversification benefit decreasing the capital requirement by 22.5% of the BSCR.

This result is different from SA QIS1 where market risk was the largest component, followed by life underwriting risk. There are two main drivers for this change. Firstly, the removal of participations from the market risk to a specific participations risk category, leading to a decrease in market risk. Secondly, the lapse parameters have been increased, leading to an increased lapse sub-module, increasing the life underwriting risk module.

The movement from the BSCR to the total SCR for life insurers is explained in the figure below.

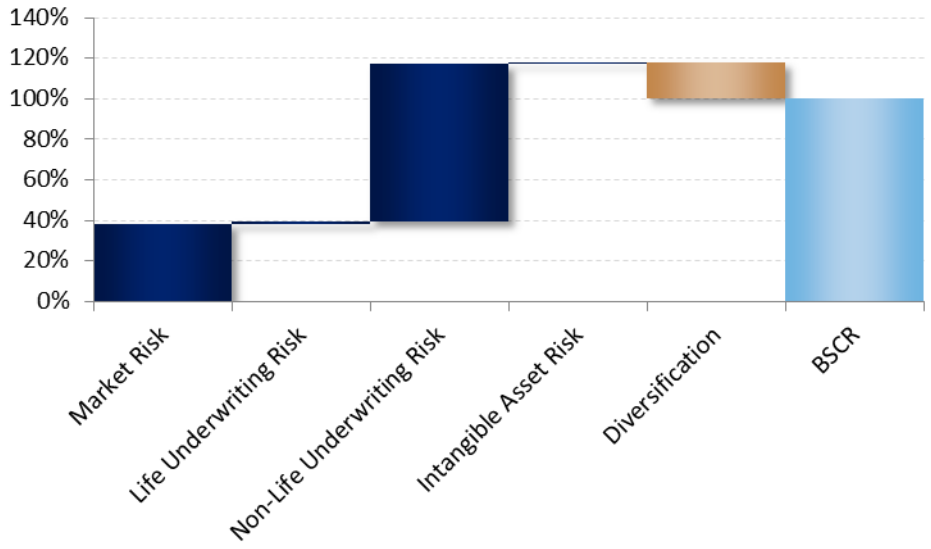
Figure 6.5: Components of the total SCR for life insurers (%)



Non-life insurers

The components of the BSCR for the non-life insurers are given in the figure below.

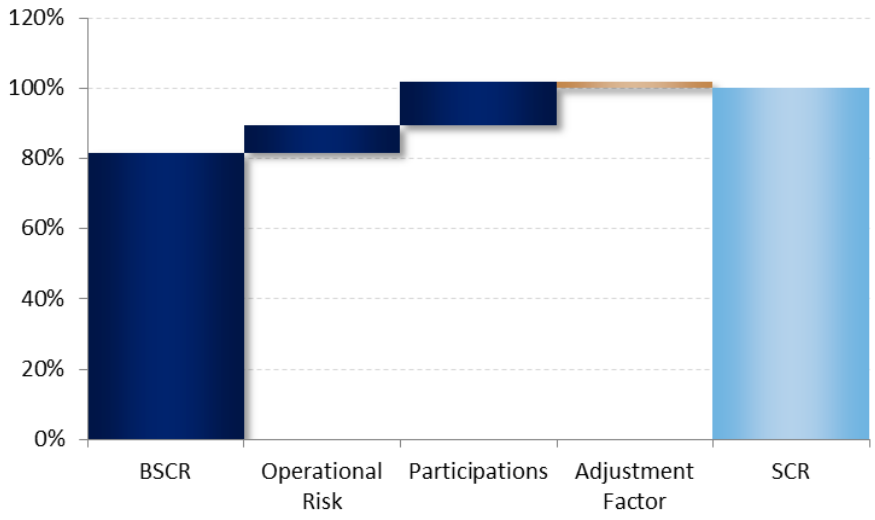
Figure 6.6: Contribution of risk components to BSCR (%) – non-life insurers



As in SA QIS1, the largest component of the BSCR is non-life underwriting risk, followed by market risk, with life underwriting risk and intangible asset risk insignificant. For non-life insurers there is a diversification benefit of 17.8% in aggregating the risk modules to the BSCR.

The figure below provides the build-up from the BSCR to the SCR for non-life insurers.

Figure 6.7: Components of the total SCR for non-life insurers (%)



- *Operational Risk*

For life insurers, operational risk accounted for 6% of the SCR, whereas operational risk accounted for 8% of the SCR for non-life insurers.

A number of insurers highlighted that the operational risk formula is not risk-sensitive, and does not take business-specific considerations, such as operational risk management and insurance in respect of operational risk losses, into account. However, no specific suggestions on how to calculate a more appropriate operational risk component were put forward.

Linked insurers were concerned with the link between operating expenses and the operational risk, especially in relation to the third-party management fees. The argument was made that this measure is not indicative of the level of operational risk exposure, and in some cases the formula may result in counterintuitive outcomes.

A minority of insurers expressed a view that the current operational risk component is not prudent enough, especially where the maximum limit of 30% of the BSCR may not be appropriate due to a low risk profile within the BSCR.

- *Participations*

A summary of the participations reported on by insurers is included in the table below.

Table 6.1: Summary of participations for all insurers

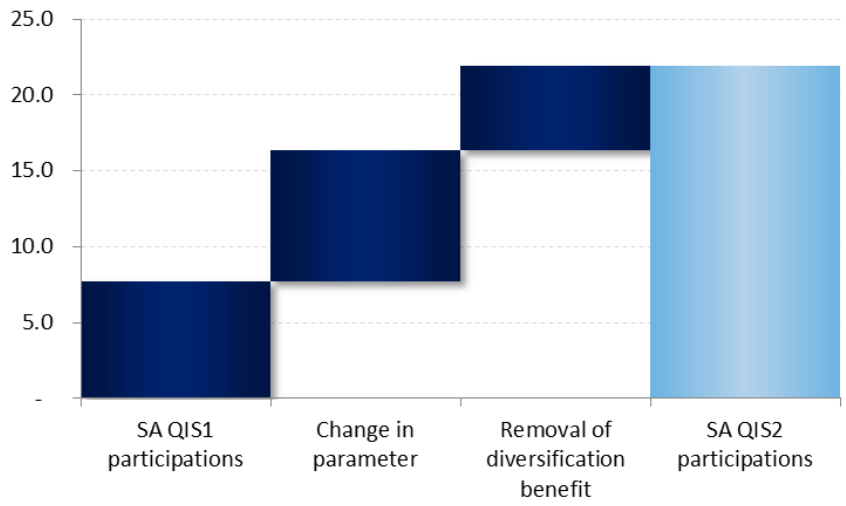
Types of Participations	Number of participations	% of participations	Value of Participations (Rm)
Strategic			
Financial & Credit Institutions	30	10%	35 896
(Re)insurer subject to SAM Directive	46	15%	31 965
Other	211	71%	10 106
Non-Strategic			
Financial & Credit Institutions	1	0%	3
(Re)insurer subject to SAM Directive	0	0%	0
Other	9	3%	104
Total	**297**	**100%**	**78 074**

The risk charge for strategic participations was previously allowed for in SA QIS1 in the equity sub-module of the market risk, but in SA QIS2 this is allowed for in a separate risk category. From SA QIS1 there are two factors that have an impact on the result:

- Firstly, the stress factor for strategic participations has increased from 22% in SA QIS1 to 47% in SA QIS2;
- Secondly, moving the participation risk charge out of the equity sub-module has resulted in the removal of the diversification benefit held between the participation risk charge and all other risk charges.

The combined impact of these two factors is illustrated in the figure below.

Figure 6.8: Movement of strategic participations risk charge from SA QIS1 to SA QIS2 (R'bn)



In order to estimate these numbers, it was assumed that all strategic participations were South African.

There was a mixed reaction to the new treatment of participations, with not all insurers agreeing with the approach. Those that disagreed were concerned with the resultant higher capital charge under this approach, and consider the treatment of participations as equity holdings as a more appropriate treatment.

There was also a view that the capital charge for controlled participations in other regulated insurers should be based on the SCR of that entity, given that this will be known to the insurer. There was also a view that unit trusts should not be included in the calculation as participations.

- *Adjustment*

Whereas in SA QIS1 the adjustment included the loss absorbing capacity of both deferred tax liabilities as well as the loss absorbing capacity due to management actions, the adjustment in SA QIS2 is purely due to the loss absorbing capacity of deferred tax liabilities.

The analysis of this adjustment is considered in section 10 of this report dealing with tax.

- *Market Risk*

The figures below give the breakdown of the market risk module of the SCR for life and non-life insurers.

Figure 6.9: Market risk components for life insurers (%)

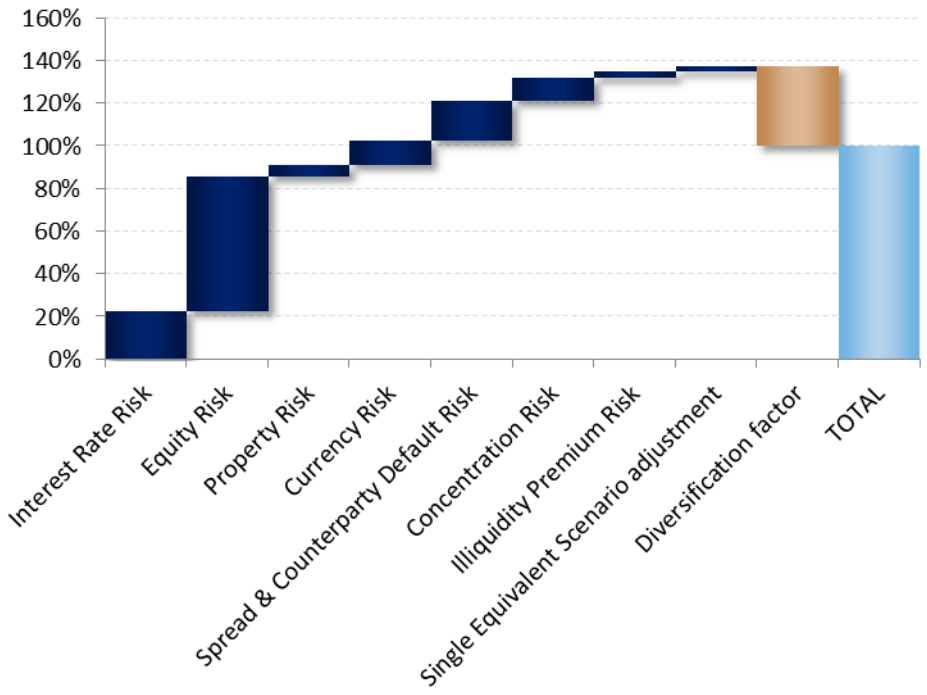
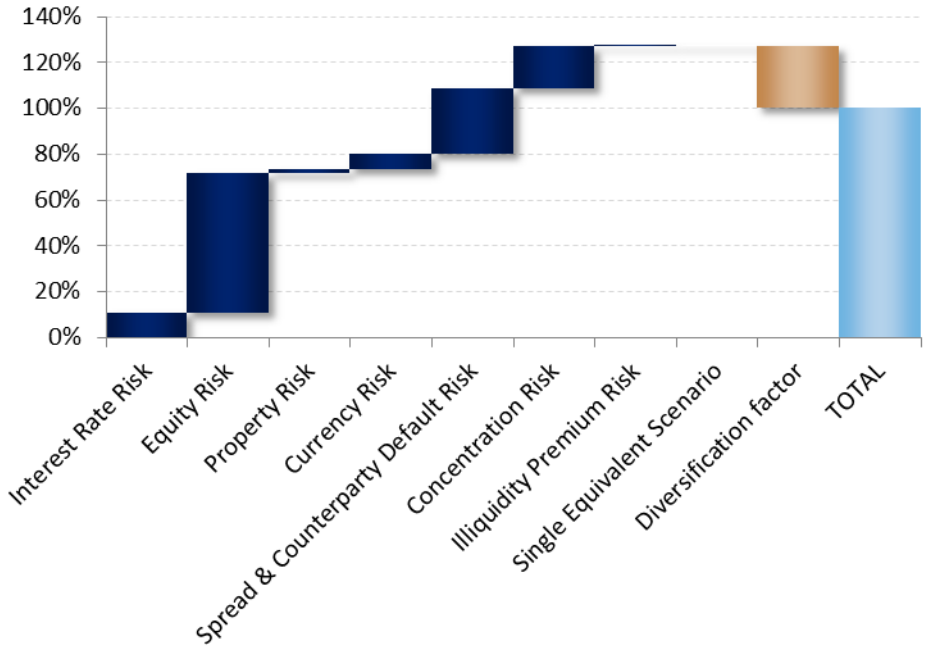


Figure 6.10: Market risk components for non-life insurers



From the figures above it can be seen that equity risk is the largest component for both life and non-life insurers. This is the case even after the removal of the risk charges for strategic participations.

For life insurers, the other key market risks include interest rate, spread and counterparty default risk as well as concentration risk.

For non-life insurers, spread and counterparty default risk is the second largest market risk, followed by concentration risk and interest rate risk.

- *Market Risk*
  - *– interest rate risk*

For interest rate risk, insurers were required to consider both an upward and downward stress in the interest rate, and use the stress which is most onerous for them. Table 6.2 shows the number of insurers to whom an upward or downward stress is more onerous, as well as the number of insurers who did not complete an interest rate stress.

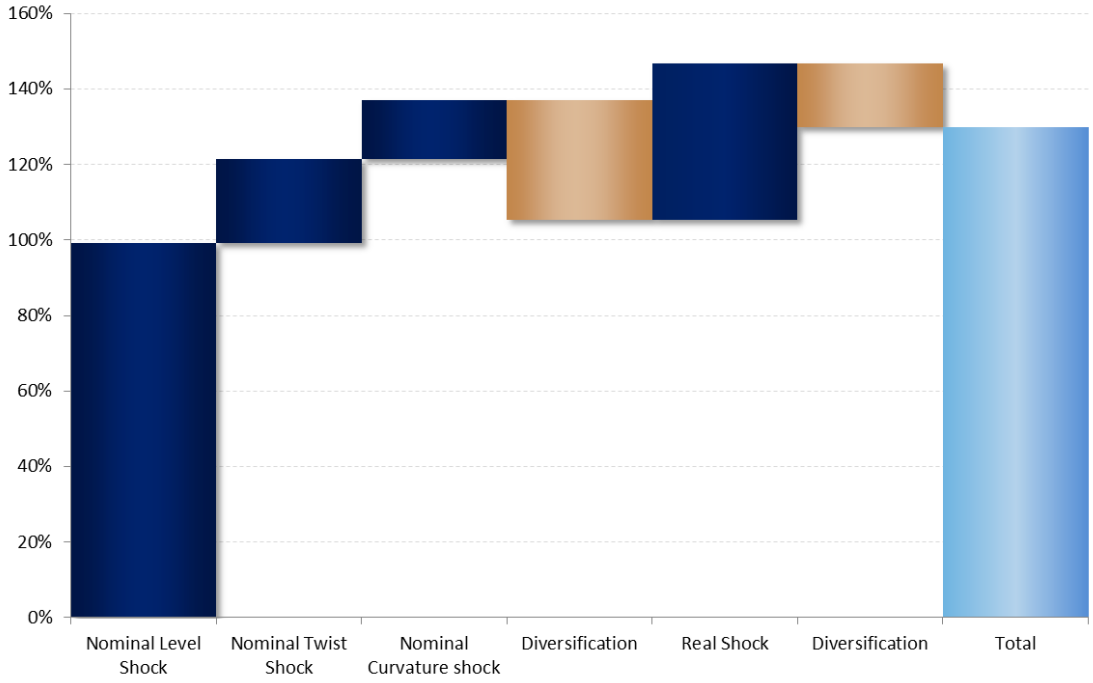
Table 6.2: Summary of which interest rate stress is more onerous

Types of Participations	Life insurers	Non-life insurers	Total
Upward stress more onerous	40	33	73
Downward stress more onerous	10	16	26
No stress completed	8	14	22
Total	**58**	**63**	**121**

In SA QIS2, an alternative calculation was tested for interest rates which considers the movements in the principal components of the stress, rather than just an upward or downward movement in the interest rate curve. The principal components include level, twist and curvature shocks to the nominal interest rate, with an allowance for diversification between these shocks. In addition to the nominal shocks, there is also a shock to the real interest rate curve, with an allowance for diversification between the nominal and real interest rate shocks.

In total there were 55 insurers - 31 life and 24 non-life insurers - that provided results for the alternative calculation. The aggregate results for the various components of the alternative calculation (as a percentage of the capital for the base interest rate risk) are given in Figure 6.11 below.

Figure 6.11: Aggregate results of the alternative interest rate calculation (% of base interest rate result)

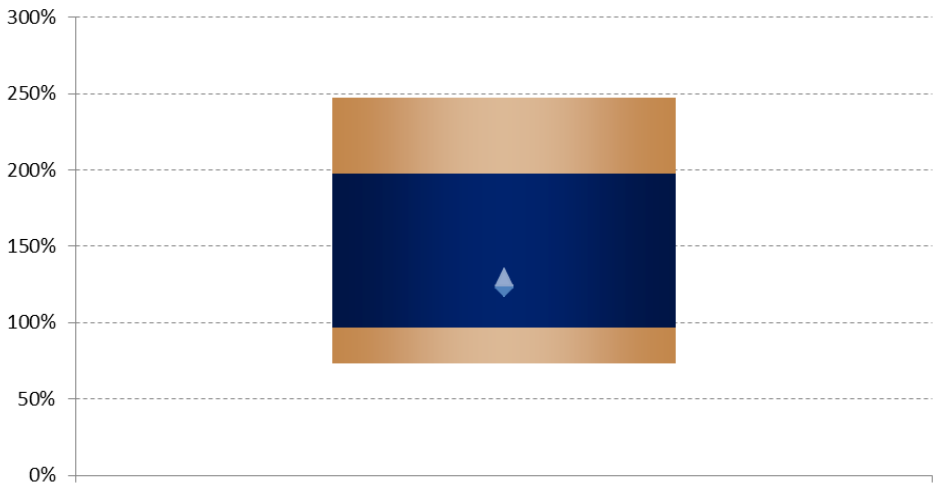


From the figure above we can see that the nominal level shock is very similar to the base capital requirement. Although the nominal twist shock and the nominal curvature shock adds a capital requirement, this capital requirement is largely offset by the diversification benefit between the various nominal shocks. This results in the overall nominal shock for the alternative capital calculation of 105% of the base capital requirement.

The real interest rate shock provides an increase in the capital requirement of 41%, although this is offset by a diversification benefit of 17%. Taking the nominal and real stresses into account and allowing for diversification, the capital requirement under the alternative calculation results in a 30% increase compared to the base capital requirement.

In order to understand the variance of the increase across the 55 insurers who provided the information, the distribution of the ratio is given in the figure below.

Figure 6.12: Alternative interest rate calculation capital requirement as a percentage of the base capital requirement (ratio)



From the figure we can see that there is a fair amount of variance in how the alternative calculation has affected the interest rate risk capital requirement. There is an interquartile range of the ratio of alternative calculated capital to the base capital between 97% and 197%.

Insurers generally agreed that there should be a nominal as well as a real interest rate shock. However, a concern was raised as to whether a real interest rate shock may double-count the impact of inflation, as inflation is already allowed for implicitly in the expense risk component. The majority of insurers who felt that there was not a need for real interest rate stresses were insurers reported not to have significant exposure to movements in the real interest rate curve.

The alternative of basing the interest rate calculation on the principal component analysis received mixed commentary. Although some insurers felt that this was more accurate, there were a number of insurers that felt the additional calculations requirement were too burdensome. This was especially the case for life insurers with guarantees requiring stochastic valuations. One insurer suggested that more focus should be given to risks which are not addressed by the current SCR calculation, such as equity volatility, instead of focussing too much on interest rate risk.

- *Market Risk*
  – equity risk

The following figures show the split of equity risk capital across the various risk contributors for both life and non-life insurers.

Figure 6.13: Equity risk components for life insurers

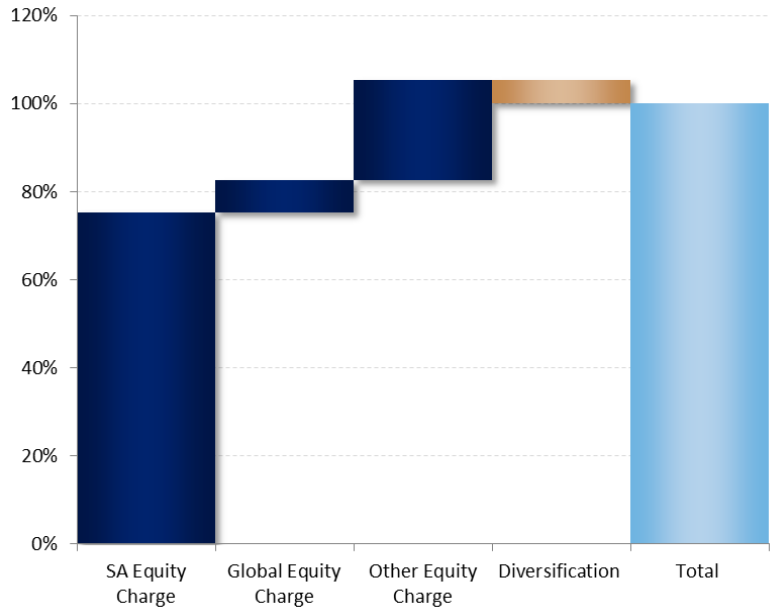
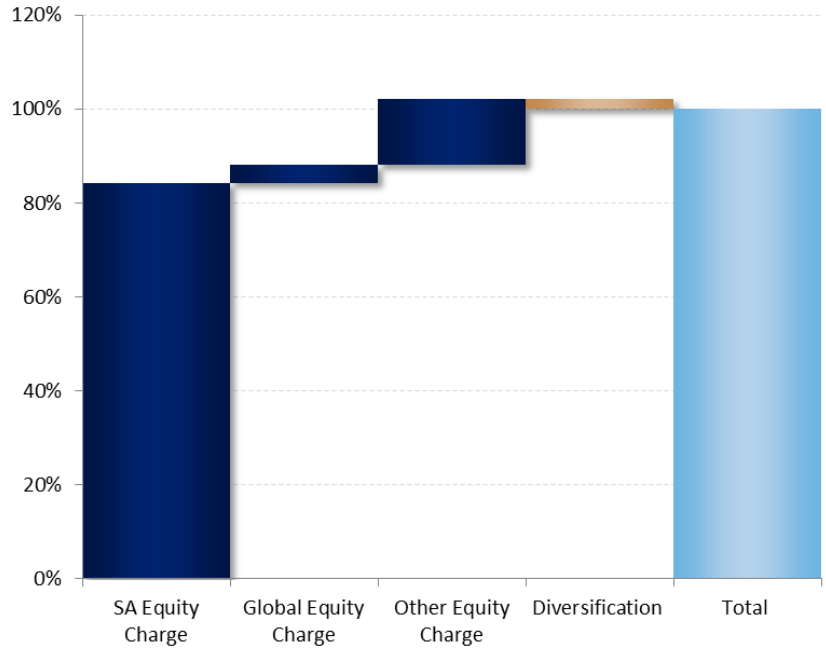


Figure 6.14: Equity risk components for non-life insurers



From the above figures, it is apparent that both life insurers and non-life insurers have higher exposure to South African equities than Global or Other Equities[9]. Life insurers also have relatively more global equity exposure than their non-life counterparts.

[9] For SA QIS2 equities are categorised as either South African equities listed on the JSE ("SA equity" category), those listed in regulated markets in the countries which are members of the EEA or the OECD ("Global equity" category) and other equities ("Other equity" category) comprising equity listed only in emerging markets (excluding South Africa), non-listed equity, hedge funds and any other investments not included elsewhere in the market risk module.

More guidance was requested on the treatment of preference shares – whether they should be treated as equity or as a separate asset class.

- *Market Risk – property risk*

Property risk capital makes up a small part of the overall market risk capital for both life and non-life insurers. No significant comments were made on the treatment of property risk from the SA QIS2 approach.

- *Market Risk – currency risk*

No significant concerns were raised on the calculation of the currency risk capital.

- *Market Risk – spread and counterparty default risk*

The approach taken to spread and counterparty default risk was changed significantly from SA QIS1 to SA QIS2 by making the following key changes:

- Counterparty Default was moved out of the counterparty default module and applied within the various sub-modules where the risks are mitigated.
- A dual approach was taken for the spread risk, whereby the risk capital applied to the assets depends on the liquidity of the assets:
    - For illiquid assets, a credit default approach using a probability of default and loss given default was taken, similar to the calculation which was applied in the counterparty default module within SA QIS1;
    - For liquid assets a spread risk scenario, where there is a movement in the credit spread, was used to calculate the risk capital. Separate stresses were applied to bonds, credit derivatives and structured products.

The figures below provide the aggregate view of the components of the spread and counterparty default risk capital for both life and non-life insurers.

Figure 6.15: Spread and counterparty default risk components for life insurers

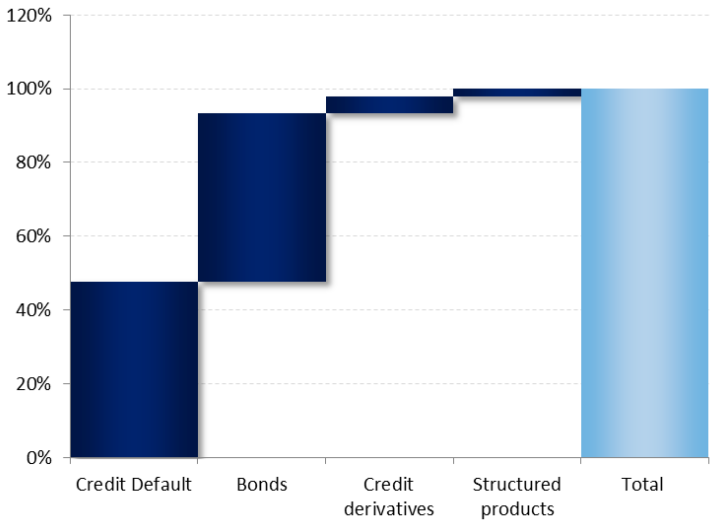
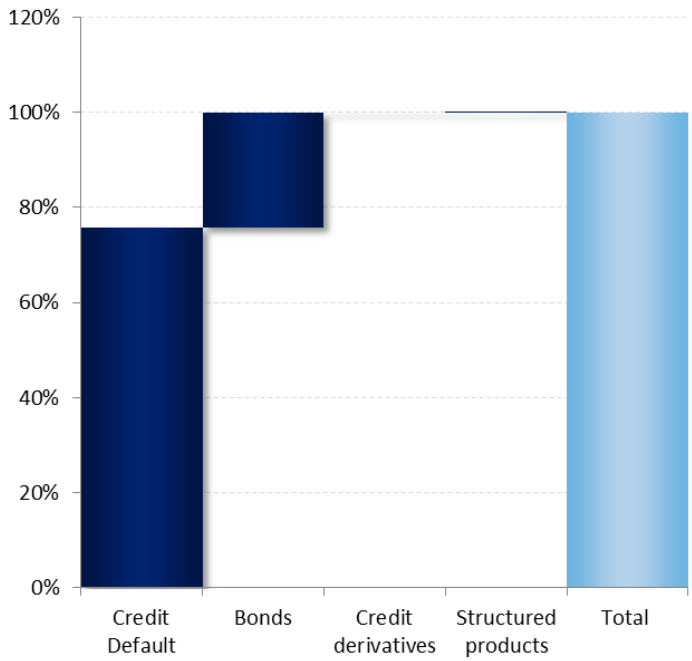


Figure 6.16: Spread and counterparty default risk components for non-life insurers



For life insurers, just less than 50% of the risk capital has been calculated by the credit default approach, with most of the remainder of the risk capital coming from the credit spread approach applied to bonds.

For non-life insurers, there was a much greater portion of the risk capital calculated through the credit default approach.

Of those that provided an opinion, two-thirds of the insurers agreed to apply a different stress based on the liquidity of the assets, with the remaining insurers disagreeing with this approach. Some of the concerns raised by the insurers included:

- Differing treatment of liquid and illiquid assets will likely result in inconsistency between valuation principles of the assets and/or the stress parameters;
- Classification principles of asset as either liquid or illiquid can be difficult to standardise across the industry.

There was also a view that both default and spread risk should be applied to all assets.

In relation to whether assets should be deemed liquid or not, many of the insurers suggested that the remaining term of an asset should be used to determine whether an asset is liquid or not. There was also a suggestion to use the average volume traded over a certain period in determining liquidity.

- *Market Risk – concentration risk*

The level of the concentration risk increased significantly from SA QIS1 to SA QIS2. For life insurers, concentration risk increased from 4.9% of market risk to 11.2% of market risk, while for non-life insurers the increase was from 12.5% to

18.2%. This increase was mainly due to the scope of the calculation widening to include assets such as cash deposits, which had previously been excluded from the calculation.

A number of insurers shared the concern that the capital required for concentration risk was onerous, especially in the South African environment where the small number of large banks made it difficult to decrease the concentration risk capital.

There was likewise a concern that the concentration risk calculation was too onerous to complete.

- *Market Risk – illiquidity premium risk*

The illiquidity premium risk is reasonably insignificant, which reflects the relatively small impact of the illiquidity premium risk as outlined in the technical provisions section.

- *Market Risk – single equivalent scenario adjustment*

As opposed to SA QIS1, SA QIS2 required all the risk capital calculations to be completed net of management actions. However, to avoid double-counting of management actions, a single equivalent-scenario adjustment was required to be calculated. This calculation compares the management actions that would be taken in an extreme scenario, way beyond the 1 in 200 level, to the management actions which are assumed in the stresses to ascertain whether management actions have been double-counted.

SA QIS1 demonstrated that the impact of management actions was largely attributable to market risk. Consequently, the single equivalent scenario in SA QIS2 was limited to the market risk module of the SCR.

A total number of 17 insurers completed the Single Equivalent Scenario (SES) adjustments to management actions section with a total of 113 funds, with six insurers calculating a positive adjustment. A summary of the results is included in the table below.

Table 6.3: Single Equivalent Scenario (SES) adjustment results by insurer (R'm)

Insurer number	Completed adjSES for # funds	# positive adjSES values	Ratio of adjSES to Market Risk SCR	Total adjSES (R'm)
Insurer 1	8	2	0.0%	R 36
Insurer 2	1	0	0.0%	R -
Insurer 3	1	0	0.0%	R -
Insurer 4	2	0	0.0%	R -
Insurer 5	1	1	0.0%	R 3
Insurer 6	1	0	0.0%	R -
Insurer 7	1	0	0.0%	R -
Insurer 8	5	0	0.0%	R -
Insurer 9	10	2	0.0%	R 233
Insurer 10	23	7	0.0%	R 87
Insurer 11	1	0	0.0%	R -
Insurer 12	17	0	0.0%	R -
Insurer 13	2	0	0.0%	R -
Insurer 14	11	1	0.0%	R 1 321
Insurer 15	24	3	0.0%	R 31
Insurer 16	2	0	0.0%	R -
Insurer 17	3	0	0.0%	R -
Total	**113**	**16**	**0.0%**	**R 1 711**

Some of the insurers commented that the calculation was labour-intensive to complete, and that it was difficult to determine some of the management actions after extreme events.

A concern was also raised that the approach in SA QIS2 does not allow for potential double-counting of management actions applied to risks other than market risk.

- *Market Risk – impact of management actions*

In addition to the adjustment for management actions above, further information on the impact of management actions was investigated in SA QIS2. Insurers were asked to calculate the net asset value assuming different management actions. Under the base case, insurers were allowed to use realistic management actions in line with the reasonable expectations of policyholder actions. Under the alternative calculations, insurers were required to use standardised management actions.

The reason for this additional information is the significant impact that management actions had in SA QIS1. The additional information was only limited to the market risk sub-modules, as this is where the management actions have the biggest impact.

Unfortunately, too few insurers completed the alternative calculation, and therefore it is not possible to draw any conclusions from the results of SA QIS2.

The FSB continues to consider what information would be appropriate for insurers to report in order to understand the impact of management actions assumed by insurers.

- *Market Risk – dynamic policyholder behaviour*

In SA QIS2, the impact of different policyholder behaviour due to market stresses was investigated. The base scenario requires no policyholder behaviour as a result of market stresses. Two alternatives to the base scenario were tested:

- Alternative 1 – Insurers were required to apply specific policyholder behaviours to the downward interest rate shock as well as the equity shock.
- Alternative 2 – Insurers were required to apply their own modelled policyholder behaviours to the downward interest rate shock as well as the equity risk shock.

Due to the complexity of the modelling, the results were only limited to the downward interest rate risk and the equity risk.

Very few insurers provided all the calculations, and the results provided are summarised in the table below.

Table 6.4: Results of dynamic policyholder behaviour sensitivities

	Alternative 1		Alternative 2	
	Interest rate risk	*Equity risk*	*Interest rate risk*	*Equity risk*
Number of insurers submitting results	12	13	5	2
Increase in liabilities	-2.6%	1.2%	-2.1%	0.7%
Increase in capital requirement	NA	40.9%	NA	9.2%

From the table above, we can see that the different alternative calculations led to small movements in the stressed liabilities, although this could potentially lead to a significant increase in the capital requirement. For the interest rate risk stress, it was not appropriate to show the impact of the alternative calculations on the capital requirements, as the results were influenced by which directional stress of the interest rate risk was more onerous.

Some insurers preferred insurer-specific modelling of policyholder behaviours over standard stresses defined for policyholder behaviour. There was also a concern that it would not be possible to find an appropriate definition of

policyholder behaviours that would be suitable for all lines of business and all insurers.

One view was raised that the policyholder behaviours were very complex to model, and thus should only be allowed under an approved internal model that has been subjected to the internal model approval process of the FSB.

Other insurers highlighted that there is a risk of double-counting the lapse risk, as lapses are already allowed for in the lapse stresses performed under the life underwriting risk module, with the interaction between market risk and lapse risk implicitly allowed for within the correlation structure.

A further view was that this should form part of the ORSA process under Pillar 2, and that it was not appropriate to allow for dynamic policyholder behaviour under the Pillar 1 calculation.

This alternative was generally not material for non-life and pure linked insurers.

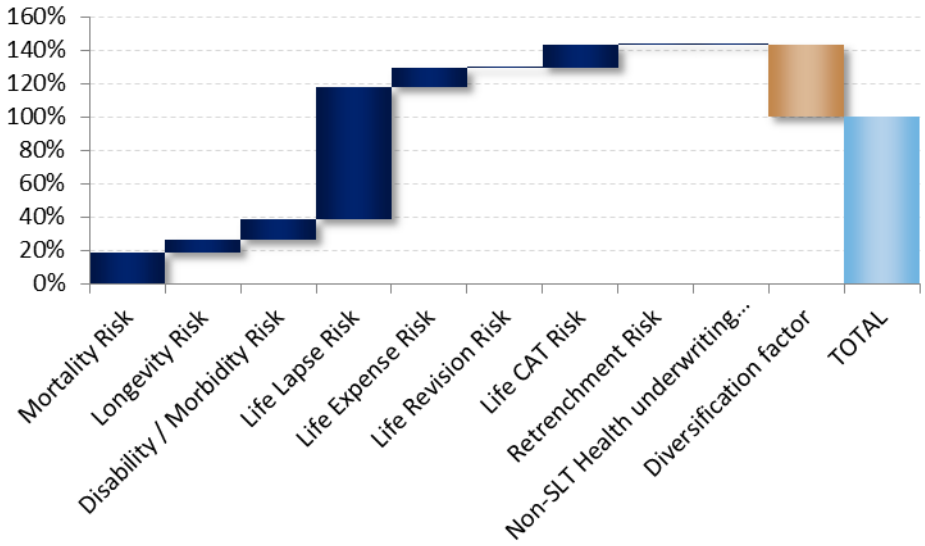
- *Life Underwriting Risk*

The key changes in the life underwriting structure from SA QIS1 to SA QIS2 are as follows:

- A sub-module was included to allow for retrenchment risk.
- The health module tested in SA QIS1 is now included in the life underwriting risk module. This has been included in the following sub-modules:
    - A new sub-module has been included to allow for the non-similar to life techniques (non-SLT) health underwriting risk;
    - The similar to life techniques (SLT) health underwriting risk has been included in the disability and morbidity risk sub-module;
    - The catastrophe risk associated with the health underwriting risk has been included in the life catastrophe risk module.

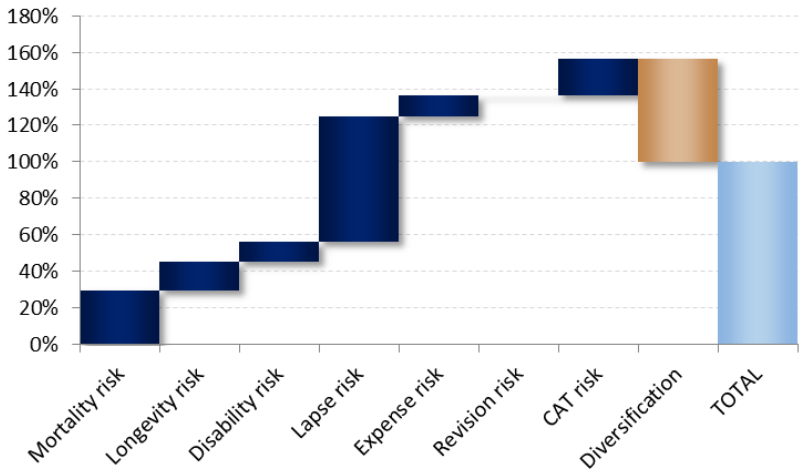
The figure below sets out the components of the life underwriting risk.

Figure 6.17: Components of life underwriting risk for life insurers under SA QIS2 (%)



For comparison purposes, the equivalent figure from SA QIS1 is included below.

Figure 6.18: Components of life underwriting risk for Life insurers under SA QIS1 (%)



Apart from the additional sub-modules, the greatest difference seems to be the increase in lapse risk, which has increased from 69% to 79% of the total life underwriting risk. There has also been a decrease in mortality risk from 30% to 19%, and a decrease in longevity risk from 15% to 7% of the total life underwriting risk capital.

However, it is also worth looking at the absolute values between SA QIS1 and SA QIS2, and these are provided in the table below.

Table 6.5: Comparison of life underwriting risk under SA QIS1 and SA QIS2

	SA QIS1	*SA QIS2*
Mortality Risk	15.5	16.9
Longevity Risk	8.0	6.4
Disability / Morbidity Risk	5.5	11.4
Life Lapse Risk	35.5	71.1
Life Expense Risk	6.2	10.2
Life Revision Risk	0.0	0.0
Life CAT Risk	10.2	12.3
Retrenchment Risk	n/a	0.4
Non-SLT Health Underwriting Risk	n/a	0.3
Diversification Factor	-29.2	-38.9
Total	**89.4**	**90.1**

Although more insurers participated in the SA QIS2 than the SA QIS1, the bulk of the life underwriting risk capital is attributable to insurers who completed both SA QIS1 and SA QIS2.

From the above table, we can see that there has been a 74% increase in the total life underwriting risk capital, mostly driven by the increase in the life lapse risk, which has doubled from SA QIS1 to SA QIS2. This is further discussed in the lapse risk section below.

The results of the various sub-modules are considered in more detail below.

- *Life Underwriting Risk – mortality risk*

There was very little change in the results for the mortality risk under SA QIS2 compared to that for SA QIS1.

The concern was raised that the mortality stress did not take into account the number of lives to which the insurer is exposed, as is currently done in the current capital requirement calculations.

There was also a concern raised that the mortality stress applied is too onerous.

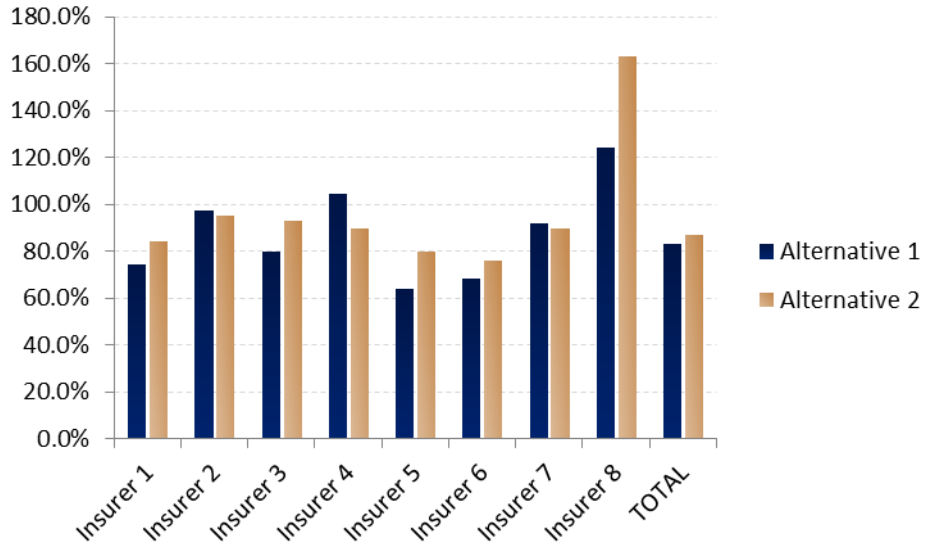
- *Life Underwriting Risk – longevity risk*

SA QIS2 considered the impact of various stresses for the purposes of longevity risk. The following information was requested from insurers:

- Base stress: a permanent 20% decrease in mortality rates;
- Alternative 1: a 1.5% increase in the rate of mortality improvements;
- Alternative 2: a permanent 10% decrease in mortality rates as well as a 0.75% increase in the rate of mortality improvements.

The results of the calculations are provided in the figure below.

Figure 6.19: Results of longevity risk under Alternative 1 and Alternative 2



From the figure above we can see that, for most insurers, the permanent decrease in mortality rates tested under the base case was more onerous than the various alternatives tested. Of the eight insurers who provided results, only two insurers reported an increase in capital requirement under the alternative 1 calculation compared to the base calculation.

The insurers generally had a preference for using a combination of a permanent decrease in the mortality rate, as well as an increase in the rate of mortality improvements.

- *Life Underwriting Risk – disability risk*

There was an increase in the aggregate capital requirement for disability risk under SA QIS2 compared to that for SA QIS1. This was largely due to the restructuring of the health underwriting risk, moving the health underwriting risk into the life underwriting risk module.

- *Life Underwriting Risk – lapse risk*

The lapse risk sub-module has changed significantly from the version which was tested in SA QIS1. The key changes were as follows:

- The mass lapse stress parameters have increased as follows:
  - The parameter for group and linked business has increased from 30% to 70%;
  - The parameter for all other business has increased from 30% to 45%.
- In SA QIS1, the lapse risk capital was calculated on a policy by policy basis. In SA QIS2, this has been changed so that the lapse risk is calculated for each homogenous risk group.
- SA QIS2 calculates the lapse risk capital as the maximum of the following three stresses:

- A once-off mass lapse scenario;
- A change in the level of stresses. This requires both an upwards and a downwards stress;
- An increased level in stresses after a once-off mass lapse scenario.

Due to all the changes made to the lapse sub-module, lapse risk is now the sub-module in the standard formula which generates the highest capital requirement. This large capital requirement reflects the extent to which positive net cash-flows are taken into account in the valuation of technical provisions.

The table below sets out the results of applying the different stresses described above.

Table 6.6: Results of the various lapse stresses required under SA QIS2

	Mass lapse shock	Level shock	Level shock given a mass shock	Total
Total Capital (Rbn)	63.7	38.1	71.1	
Number of insurers for which shock is most onerous	1	3	34	
Capital counting towards lapse risk capital (R'bn)	0.0	0.5	70.6	71.1

From the table above we can see that the level shock, given a mass shock is the most onerous of the stresses tested, with 34 of 38 insurers finding this the most onerous stress.

The three insurers where the level shock was more onerous are all reinsurers where a decrease in the level of lapses led to the most onerous capital requirement.

There were a number of concerns raised at the increased level of the mass lapse shock, as well as the requirement to calculate the level shock, given a mass shock. There was some concern that the latter stress resulted in double-counting of the lapse risk.

Insurers were required to apply the calculations at the level of homogenous risk groups. Limited guidance was given on how to determine the homogenous risk groups, suggesting that they were to be guided by the categorisation used in order to set lapse assumptions for the best estimate calculations. The application of the guidance varied widely between insurers, as can be seen from the table below.

Table 6.7: Number of homogenous risk groups used for the lapse risk calculation

Homogenous risk groups	Number of firms
1	7
2 to 5	19
6 to 10	2
11 to 20	2
21 to 50	2
51 to 100	4
101 to 200	2
Total	**38**

In addition to the calculations above, insurers were asked to perform a sensitivity calculation to consider the impact of keeping total expenses unchanged for a period of two years after the mass lapse event, which would lead to higher per policy expenses over the period. The application of this stress leads to a 20% increase in the capital requirement from the mass lapse stress where insurers do not change their per policy expenses.

There were mixed responses from insurers on whether per policy expenses should change after a mass lapse event, however there were more insurers who thought that the per policy expenses should not change. Those who believed that the per policy expenses should change felt that this reflected the reality of not being able to change overhead costs immediately after a mass lapse event. There was also a suggestion that a twelve month period may be more appropriate to keep total expenses unchanged, instead of the two year period tested in the calculation.

- *Life Underwriting Risk – expense risk and revision risk*

There were very few changes to the results for the expense risk, and no specific concerns were raised relating to this calculation.

Only one insurer that submitted SA QIS2 was exposed to revision risk. For this insurer, revision accounted for less than 3% of the total SCR. It is thus clear that the revision risk capital in its current form is not significant to the South African insurance industry.

- *Life Underwriting Risk – catastrophe risk*

A concern was raised by a number of insurers that the calibration of the mortality catastrophe risk capital calculation resulted in a number which was too onerous. This was specifically the case for reinsurers who are required to hold a large proportion of their SCR for mortality catastrophe risk.

Specific concern was raised regarding the lack of diversification within the stress for a well-diversified portfolio. There was also a concern raised in relation to the requirement to complete the calculation on a policy level. It was suggested that the calculation should be performed at the company level.

- *Life Underwriting Risk – retrenchment risk*

Retrenchment risk is a new sub-module within the life underwriting risk module, included in SA QIS2 in response to the feedback received from the SA QIS1 exercise.

Although 15 insurers completed the retrenchment risk calculation, the results of the calculation is relatively low. The total retrenchment risk capital calculated by the 15 insurers is R0.4bn. This represents 3.3% of the SCR for the insurers who completed the retrenchment risk calculation.

All insurers who raised concerns on the calculation were concerned that the calculation was understating the risk. In particular the following points were raised:

- The calculation did not allow for either concentration or catastrophe risk.
- The calculation did not reflect the cyclicality of retrenchment risk. There was a view that an increase in the retrenchment rates would be more severe than the parameters suggested in SA QIS2, but would last for a shorter time period.

- *Life Underwriting Risk – non-SLT health risk*

As described previously, the non-SLT health risk was moved from the health underwriting risk module to the life underwriting risk module. This sub-module is relatively small and only makes up an insignificant part of the overall life underwriting risk.

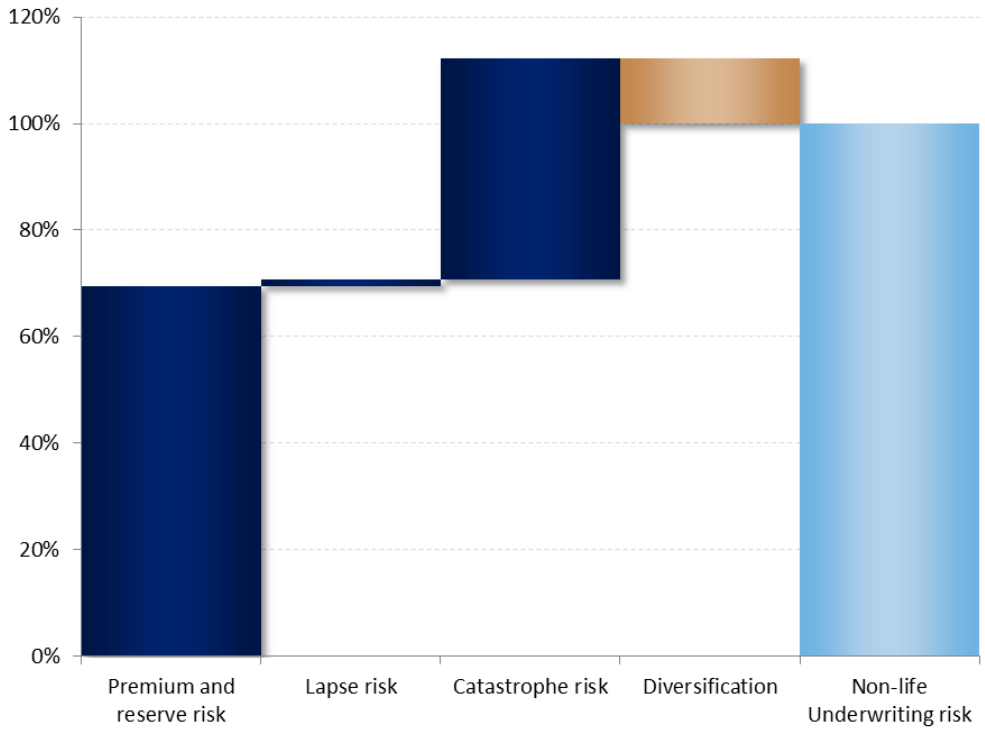
- *Non-life Underwriting Risk*

Non-life underwriting risk comprises premium and reserve risk, lapse risk, and catastrophe risk. A number of changes were made from SA QIS1 to SA QIS2. In terms of premium and reserve risk, the 2011 non-life data request did not yield sufficient information to enable a South African calibration, and as a result the latest parameters published by EIOPA were used. No changes were made to the lapse risk calculation – this is an insignificant component of the overall non-life underwriting risk capital requirement.

In terms of catastrophe risk, while the broad structure of the calculation remained the same as in SA QIS1, the application thereof changed somewhat. Concerning natural catastrophe risk, it was decided to focus on the key perils affecting the South African market from a capital perspective, namely earthquake risk and hail risk. New scenarios were defined for man-made catastrophe risk. These were defined in conversation with industry experts, and were calibrated by the non-life underwriting risk catastrophe working group.

Non-life underwriting risk comprises premium and reserve risk, lapse risk, and catastrophe risk. Each of these components is considered in turn below. Their contribution towards the non-life underwriting risk component of the SCR is shown in the figure below.

Figure 6.20: Contribution of non-life underwriting risk components to non-life underwriting risk SCR (%)



- *Non-life Underwriting Risk – Premium and Reserving Risk*

Premium and reserve risk represents the greatest component of non-life underwriting risk. For both premium and reserve risk, the calculation is based on a volume measure together with a standard deviation measure. These are then combined to give the overall capital charge for premium and reserve risk. Although the insurers' own assessments of standard deviation parameters were requested in the form of user-specified parameters (for those who have them), the calculation was based on the standard industry parameters. The figures below show the split of overall volume measures per line of business, separated into direct business (figure 6.21) and inwards reinsurance business (6.22).

Figure 6.21: Split of premium and reserve risk volume measures across lines of business for direct insurance (%)

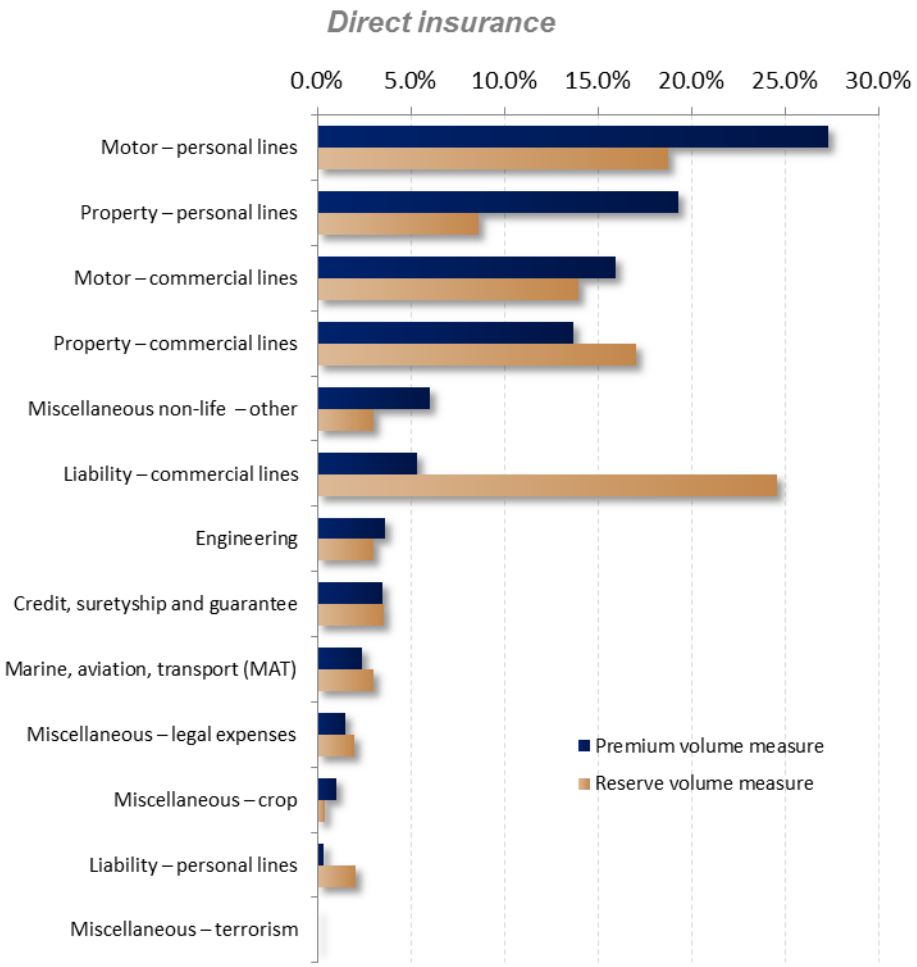
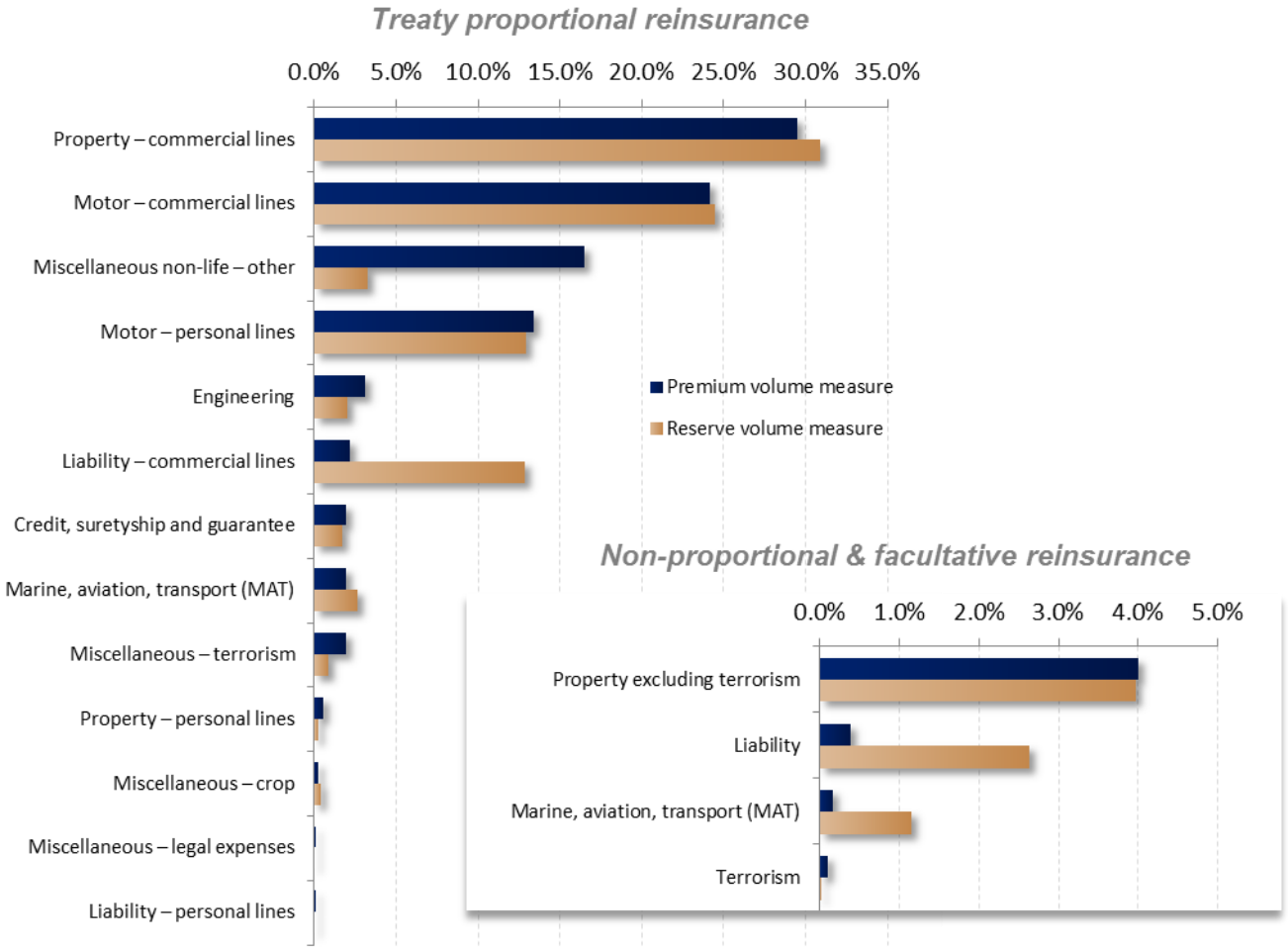


Figure 6.22: Split of premium and reserve risk volume measures across lines of business for inwards reinsurance (%)



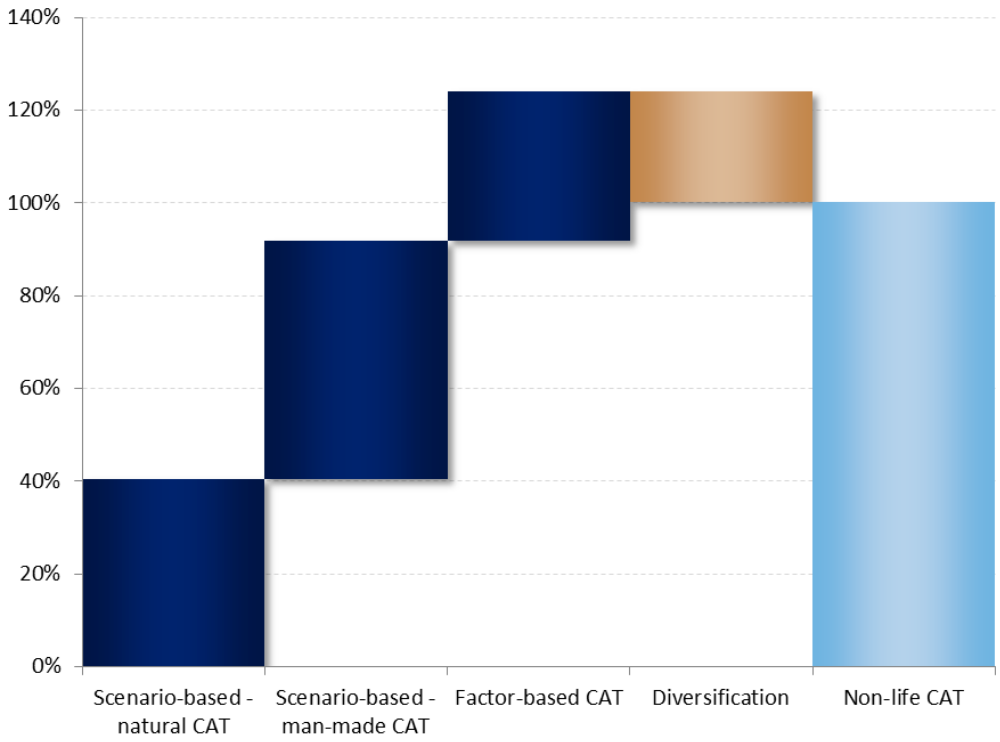
- *Non-life Underwriting Risk – Lapse Risk*

In SA QIS2, eight non-life insurers completed the lapse risk capital calculation. For SA QIS1, this number was four. For the insurers that did complete the calculation, the contribution to overall capital was less than 5%. For the remaining two, the contribution was greater than 10%. Lapse risk thus appears to not affect the majority of non-life insurers, and for those that are affected, the effect in most cases is relatively small.

- *Non-life Underwriting Risk – Catastrophe Risk*

The calculation for the non-life underwriting catastrophe risk for SA QIS2 consisted of both a scenario-based and factor-based calculation, with some allowance for diversification between the two components. As can be seen in the figure below, the scenario-based approach is the greatest contributor to non-life catastrophe risk capital.

Figure 6.23: Contribution of the scenario based and factor based calculations on non-life catastrophe risk capital



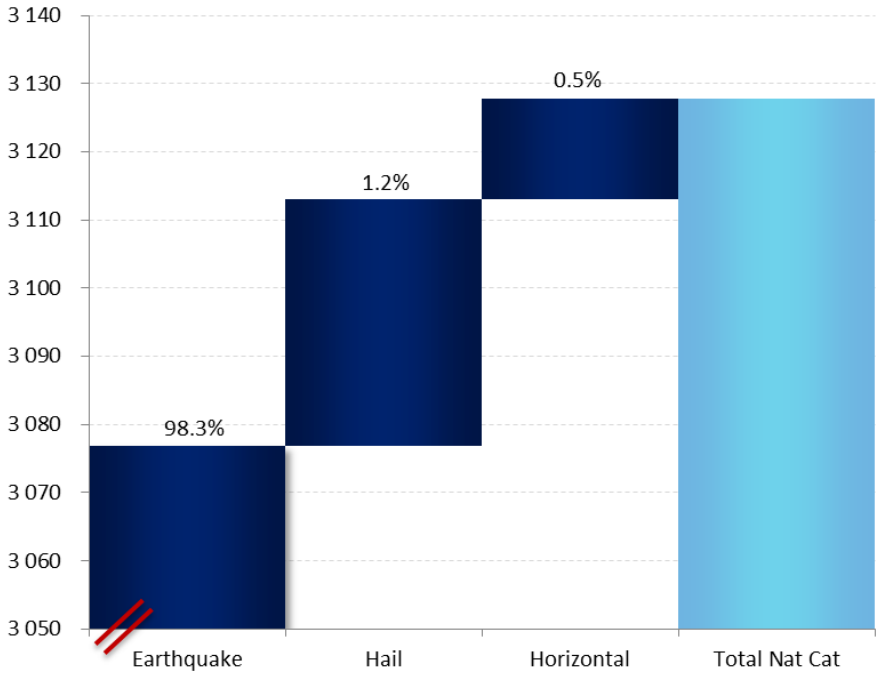
Of the capital requirement arising from the scenario-based approach, man-made catastrophe is a slightly greater contributor than natural catastrophe.

Natural catastrophe risk

Natural catastrophe risk is applicable (based on submissions) to approximately half of the respondents. The capital requirement for this risk is based on separate calculations for earthquake risk, hail risk, and horizontal risk[10]. The figure below demonstrates the capital requirements.

[10] Horizontal risk is a capital charge based on four smaller events happening in the year as opposed to earthquake and hail risk in which the impact of a single large event is calculated.

Figure 6.24: Contribution of earthquake risk, hail risk, and the horizontal scenario risk to total natural catastrophe risk (R'm)



Although the capital for a particular peril for natural catastrophe is driven by whichever is the greatest, the aggregates across all insurers per peril gives an indication of the overall industry exposure to that peril. The table below shows this concentration per peril, both before and after mitigation, as well as the number of insurers for whom the shock contributes to capital.

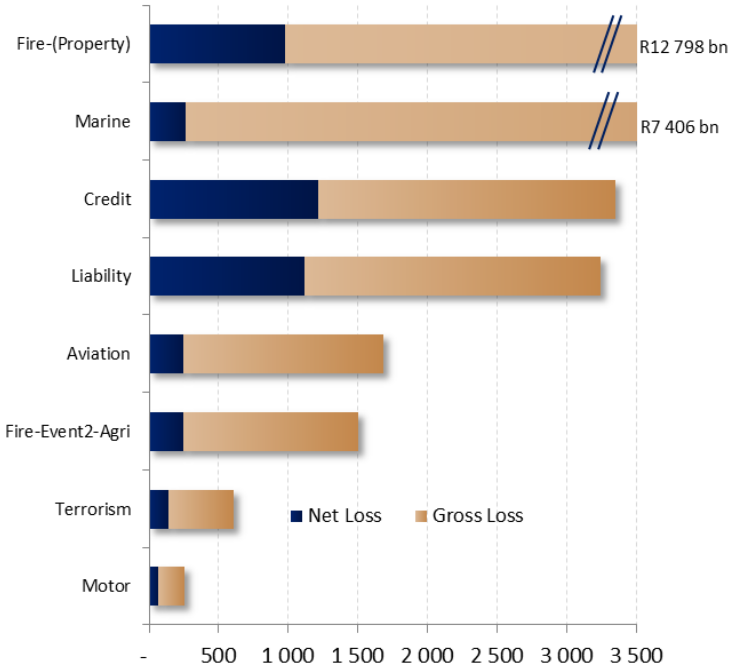
Table 6.8: Natural catastrophe split into earthquake risk, hail risk and horizontal scenario risk showing risk mitigation and overall aggregate results

	Earthquake	*Hail*	*Horizontal*	*Total*
Total Capital (Rbn)				
Before risk mitigation	45 578	5 719	1 350	
After risk mitigation	3 226	759	627	
Number of insurers for which shock is most onerous	26	3	2	31
Capital counting to natural catastrophe risk				
Before risk mitigation	41 446	540	42	42 028
After risk mitigation	3 077	36	15	3 128

Man-made catastrophe risk

The figure below shows the magnitude of the different man-made scenarios stipulated in the man-made catastrophe risk calculation. The net loss elements are aggregated for each individual insurer on the assumption of independence within the calculation framework, to get to a total capital charge for man-made catastrophe risk.

Figure 6.25: Sub-risks of the man-made catastrophe risk capital calculation showing gross and net losses (R'bn)



The allowance for risk mitigation (and the resulting credit risk charge) was significantly improved from SA QIS1 to SA QIS2. The non-life underwriting risk submission template included a standardised approach allowing both proportional as well as non-proportional reinsurance, and also included the impact of any stop loss agreements. Further allowance was made for any additional risk mitigation not catered for by these more traditional reinsurance instruments.

Significant work is required for SA QIS3 in terms of further calibration of parameters for non-life underwriting risk. The data arising from SA QIS2 as well as the 2012 non-life underwriting risk data request will be utilised in an attempt to provide an adequate South African calibration for premium and reserve risk, natural catastrophe risk and man-made risk.

- *First-party insurance structures*

SA QIS2 tested a specific simplification for non-life first-party insurance structures. The result of the simplified calculation replaces the standard formula's

non-life premium and reserving risk, lapse risk and catastrophe risk components of the non-life underwriting risk capital requirement of the SCR.

The simplification formula ensures that the SCR relating to first-party insurance structures plus the premium received is equal to the total net retention multiplied by a factor (which depends on the historic loss experience of the class of business). An additional limit is introduced by requiring that the total non-life underwriting capital requirement is at least 80% of the liability class' net retention.

The simplification does not allow for diversification between lines of business within a first-party insurance structure or between different first-party insurance structures within a single legal entity.

The results for eight captives and six cell insurers are as follows:

Table 6.9: Effect of the first-party simplification calculation on overall capital requirements for captives and cell insurers

	R'000		
	Captives	Cell Insurers	Total
Current basis			
Current FSB capital requirement	393	1 996	2 389
Standard formula results			
Non-life underwriting risk	1 341	2 487	3 828
BSCR	1 599	2 681	4 281
SCR	1 738	2 881	4 618
Simplification results			
Non-life underwriting risk - SCR simplification (first-party insurance structures)	743	594	1 338
Non-life underwriting risk - standard formula results for non first-party structures)	-	1 500	1 500
Non-life underwriting risk - Total Capital requirement including simplification	743	2 095	2 838
Revised BSCR	1 059	2 306	3 366
Revised SCR	1 197	2 506	3 703
Ratios			
Non-life underwriting risk - simplification as a % of standard formula result	55%	84%	74%
SCR (using the simplification) as a % of the standard formula SCR	69%	87%	80%

The simplification resulted in a non-life underwriting risk component which is around 25% less than that of the standard formula's non-life underwriting risk component. The reduction is more pronounced for captives than for cell insurers.

When the simplified non-life underwriting risk component is reinserted into the standard formula, the revised SCR is on average 20% less than the result of the standard formula (without any simplification).

Although the simplification resulted in a lower SCR compared to the standard formula, the revised SCR is still much higher than the current capital requirement for this group of insurers. The revised SCR is approximately three times higher than the current capital requirement for captives and 26% higher for cell insurers.

Information from the SA QIS2 results as well as from the non-life data request will be provided to the working groups for further analysis and refinements to the proposed simplification.

Qualitative analysis

An analysis of the qualitative questionnaire revealed that insurers felt that there should be a difference in the treatment of first- and third-party cells since these structures represent different risk levels. A first-party arrangement is seen as having limited risk transfer and minimal insurance risk. Insurance losses are limited but credit risk exists to the extent that the policy limit exceeds the fund balance. It is proposed that the level of regulatory protection under these structures to be less onerous than that of third-party cells.

A third-party arrangement is perceived to operate like a conventional insurance company, thus having exposure to all typical insurance risks. If ring-fencing is introduced it is suggested that every first- and third-party cell should be separately ring-fenced.

Most insurers saw the suggested simplification as a worthwhile addition to SA QIS2; however there were diverse opinions on whether the simplification is done correctly and how it can be improved. Some insurers felt that the proposed simplification is not appropriate for their business.

78.4% of insurers[11] felt that a parental guarantee between a first-party insurance structure and its parent should be included in capital resources. Of these insurers, 41% believe that the parental guarantee should be included under Tier 1, 28% believe it should be included under Tier 2 and 31% believe it should be under Tier 3.

- *Effect of risk mitigation and counterparty default risk*

As set out earlier in this section, the structure of SA QIS2 allows for the effect of risk mitigation, as well as the counterparty default risk associated with that risk mitigation within the sub-module to which that risk mitigation relates. All the results analysed above in the various modules and sub-modules are therefore net of any effect of risk mitigation as well as the counterparty default risk associated with that risk mitigation.

However, in our analysis we have separated out the impact of risk mitigation and the corresponding risk mitigation, and this is set out in the table below:

[11] 78.4% of the number of insurers that answered the question in the qualitative questionnaire.

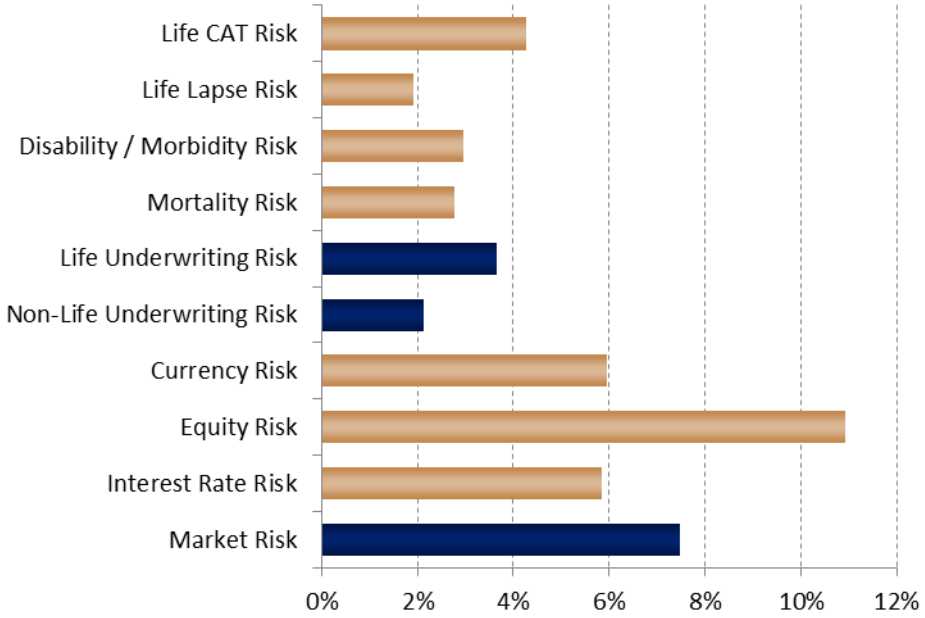
Table 6.10: Capital charges for sub-risk categories of market risk, non-life underwriting risk and life underwriting risk showing the effect of risk mitigation and the counterparty default adjustment

	Before Risk Mitigation	Effect of Risk Mitigation	Counterparty Default Adjustment	Net Capital Charge
Market Risk				
Interest Rate Risk	26 434	11 936	696	15 194
Equity Risk	50 804	6 231	681	45 255
Property Risk	3 336	0	0	3 336
Currency Risk	9 153	1 292	77	7 938
Non-Life Underwriting Risk				
Premium & Reserve Risk	21 049	6 413		14 636
Catastrophe Risk	77 021	68 276		8 745
Aggregate counterparty default adjustment			1 577	
Life Underwriting Risk				
Mortality Risk	18 490	1 589	44	16 944
Longevity Risk	6 436	0	1	6 437
Disability / Morbidity Risk	12 802	1 468	43	11 377
Life Lapse Risk	72 409	1 313	25	71 121
Life Expense Risk	10 174	32	21	10 163
Life Revision Risk	30	0	0	30
Life CAT Risk	14 160	1 984	84	12 260
Retrenchment Risk	395	60	16	351
Non-SLT Health underwriting risk	289	28	2	263

Please note that for non-life underwriting risk, the counterparty default adjustment was calculated in aggregate for catastrophe risk as well as for premium and reserve risk, as the same reinsurers may be used to mitigate the risk from both the sub-modules.

From the table above, we can conclude that the impact of risk mitigation is significant for a number of the risk types to which insurers are exposed, particularly for non-life underwriting risk as well as interest rate risk and equity risk. It is also worth noting that the ratio of counterparty default adjustment to the effect of risk mitigation varies across risk types. This can be seen from the figure below.

Figure 6.26: Ratio of capital charge for counterparty default on risk mitigation to the effect of risk mitigation



In this figure, only sub-modules with effect of risk mitigation in excess of R1bn have been included. The dark blue bars indicate ratios at sub-module level, whereas the tan bars indicate ratios at risk module level.

- *Simplifications*

Various simplifications were allowed for in SA QIS2, although there is still a significant amount of work to be done on the SAM project with regard to the simplifications which may be applied, and also when it is appropriate to use such simplifications.

The correct treatment of simplifications is key to the application of the principle of proportionality to the Pillar 1 component of the SAM framework. The FSB is committed to the use of simplifications where it is appropriate to do so.

In addition to the simplifications explicitly allowed for in the SA QIS2 technical specification, insurers applied simplifications in the following areas:

- Market risk:
  - Stressing assets at a group level where granular data is not available or the calculation is too onerous;
  - Approximation of asset composition where the look-through approach was not possible due to a lack of data;
  - Exclusion of the real interest rate stress;
  - Approximation of the impact of risk mitigation instruments;
  - Assumptions for the split between liquid and illiquid assets for the purpose of calculating the spread risk;
  - Calculation of the loss given default at a grouped level where it was not possible to do so at an individual instrument level;
  - Estimation of international credit rating where this is not available;

    - Exclusion of short-dated assets from stresses;
    - Applying one single weighted average shock for all equities, rather than applying shocks separately.
- Life underwriting risk:
    - Applying a single level of shock for morbidity risk instead of a shock which varies by duration as set out in the technical specification;
    - Approximations for income protection to combine the inception and termination rates into one stress using claims ratios;
    - Exclusions of the lapse movement shocks as these were not as onerous as the mass lapse shocks;
    - Retrenchment risk shock results were not provided as some insurers have an immaterial amount of this type of business;
    - Using grouped data to recalculate the liabilities under the various stresses, rather than doing a full policy by policy valuation;
    - Exclusion of insignificant product lines, or estimation of impact of stress by considering impact on similar product lines.
- Non-life underwriting risk:
    - Implicit morbidity rates in the UPR were derived for the morbidity catastrophe risk shock;
    - For non-life catastrophe risk some insurers assumed that growth in exposure will equal growth in premium. Where CRESTA zone information was unavailable but province information was, assumptions were made when splitting the province exposures;
    - With respect to catastrophe exposure data, assumptions were made for missing postal codes as some postal code exposures were unavailable;
    - An aggregate deductible was used and the allowance for facultative reinsurance cover was approximated;
    - In the application of reinsurance, simplifications were made because of the difficulty in applying particular reinsurance structures to some of the catastrophe gross losses;
    - Grouping of business in order to calculate the non-life underwriting risk;
    - Some assumptions were made regarding segmentation.

Further suggestions of where the standard formula for the SCR should include simplifications were as follows:

- Market risk
    - The spread/credit default module could be simplified. Bonds, structured credit products and credit derivatives should be treated consistently.
    - The concentration risk calculation is very arduous for small insurers with large unrated exposures.
- Life underwriting risk
    - For group business, a mortality/morbidity catastrophe simplification could be provided where a multiple is given to apply to the expected best-estimate claim ratio or where the multiple is a function of the average sum assured per life covered per social class.
    - For the mortality/morbidity catastrophe shock, it was suggested to either have a single shock to underlying rates or expressing the

shock as a simple additional rate as opposed to a complex formula.

- Other
  - There was a suggestion from the pure linked insurers that the SCR be simplified and should be based on actual exposures.

It was suggested that the FSB adopt a flexible approach allowing undertakings to choose appropriate simplifications rather than prescribing/ standardising them.

- *Undertaking Specific Parameters*

Under SA QIS2, insurers were invited to disclose undertaking specific parameters, where they have used their own data to determine parameters instead of the parameters used in the standard formula. There were three areas where undertaking specific parameters were allowed:

- The standard deviation parameters within the non-life premium and reserving risk sub-module;
- The standard deviation parameters within the non-SLT health premium and reserving risk sub-module;
- The level of stress within the revision risk sub-module in the life underwriting risk module.

There were three insurers who provided USPs for the standard deviation parameters for non-life premium risk, and these are summarised in the table below.

Table 6.11: Undertaking specific parameters for standard deviation pertaining to non-life premium risk

Line of Business	Standard Deviation for Premium Risk		
	Market	*Average USP*	*Ratio*
Motor – personal lines	8.2%	5.7%	69.0%
Motor – commercial lines	8.2%	5.7%	69.4%
Marine, aviation, transport (MAT)	14.9%	12.0%	80.3%
Property – personal lines	8.2%	6.9%	84.6%
Property – commercial lines	8.2%	6.4%	77.7%
Liability – commercial lines	13.9%	9.0%	64.7%
Miscellaneous non-life insurance – other	12.8%	6.4%	50.1%

The table above only shows the USP's where all three insurers provided data. Where there are fewer than three data points, information has not been included to maintain confidentiality.

Of the three insurers, only one also provided USPs for non-life reserving risk.

There was only one insurer who provided a USP for non-SLT health premium risk, with the USP significantly lower than the standard formula parameter.

There were no insurers who provided USP's for the revision risk sub-module.

Insurers indicated the following additional areas where they think that USPs may be used:

- Non-life underwriting risk
    - Catastrophe risk;
    - The inclusion of non-proportional reinsurance within the non-life underwriting premium and reserve risk;
    - An additional parameter to allow for the underwriting margin in the non-life underwriting risk module.
- Life underwriting risk
    - Parameters for lapse shocks, credit spreads and probability of defaults;
    - Lapse risk;
    - Expense risk;
    - Retrenchment risk;
    - Mortality risk, especially to allow for the number of lives within the portfolio.
- Market risk
    - Credit spreads;
    - Probability of default.
- Operational risk, especially for linked insurers.

Although the areas above were highlighted as possible areas where USPs may be used, a number of concerns were raised by insurers, most notably data availability to determine the USPs with a large level of confidence. There was also a concern that it may be imprudent to allow insurers to use their own parameters, and that at the very least there will need to be robust controls in place in order to avoid manipulation of the standard formula.

7. Minimum Capital Requirement (MCR)

While the SCR is the amount of capital that insurers need to hold to remain solvent in a 1-in-200 year extreme event, the MCR is the amount of capital at which point the regulator would be expected to take immediate action to ensure that policyholders are protected. This is in line with the "ladder of intervention" that is integral to the FSB's risk-based approach to prudential supervision.

The structure of the MCR is set up as a relatively simple linear formula, subject to a corridor between 25% and 45% of the SCR. There is also an absolute minimum applicable, depending on the type of business written by the insurer.

There are eight insurers who do not meet MCR in SA QIS2. This comprises three non-life insurers and five life insurers. Three of the life insurers not meeting MCR do however meet SCR. This is due to the fact that, for these insurers, the absolute minimum MCR is applicable and thus exceeds the SCR.

The table below sets out the distribution of insurers holding the absolute minimum and the relation between the MCR and the SCR.

Table 7.1: Split of insurers' solvency positions in relation to the MCR

	Life	Non-life	Total
Absolute minimum applicable	18	9	27
MCR is 25% of SCR	24	20	44
MCR between 25% and 45% of SCR	4	29	33
MCR is 45% of SCR	12	5	17

One of the main changes in the MCR calculation from SA QIS1 to SA QIS2 was the increase of the rand value component of the absolute minimum for non-life insurers. This was increased from R10m to R15m. Of the 13 non-life insurers for whom the absolute minimum is applicable, seven insurers have the R15m as their minimum. The impact of the increase from R10m to R15m is difficult to ascertain, as the other element of the minimum (25% of the annualised operating expenses of the preceding 12 months) may exceed R10m. The calculated MCR values for these seven insurers range from R7.5m to R14.5m.

In terms of the methodology for MCR, some concerns were raised that the minimum capital level implied is excessive. This concern was raised by a few life reinsurers as well as pure linked insurers. Difficulties experienced with the calculation were with the Capital-At-Risk calculation, and one participant noted that the misalignment of segmentation between technical provisions and MCR resulted in some difficulty.

8. Own Funds

Part of the move towards a more holistic view of the (economic) balance sheet is a change in the recognition of assets used to back liabilities and capital requirements. Depending on the capital instruments and structures held, the impact of changes to the recognition of assets for statutory purposes will vary from insurer to insurer.

Figure 8.1: Overall own funds as a percentage of current capital resources (ratio)

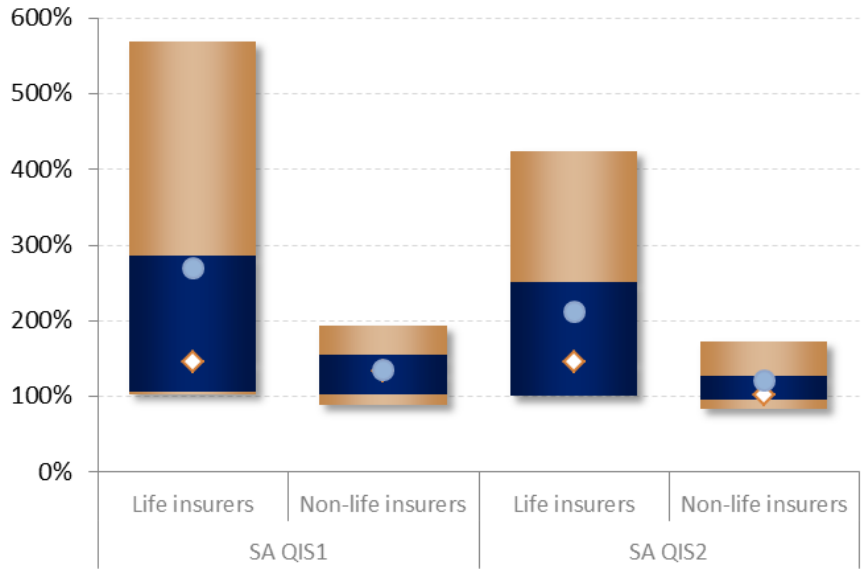


Figure 8.1 above shows the significantly greater spread in the ratio of overall own funds to current capital resources for life insurers as compared to non-life insurers. The median ratio for life insurers was 146%, while that of non-life insurers was 103%. 95% of life insurers had ratios at least as great as 100%, while 59% of non-life insurers had ratios as great as 100%. The higher ratio for the life insurers is mainly due to the removal of margins from the current valuation basis. The wide spread reflects how the value of the current margins included in the valuation of the liabilities varies between insurers.

Although the median for life insurers remained the same from SA QIS1 to SA QIS2 (146%), the 90th percentile decreased from 568% to 423%. The reasons for this varied, but were mainly due to changes in the business mix of various life insurers and hence changes in values of technical provisions on the SA QIS2 basis, as well as changes in the type and number of life insurers participating in the SA QIS2 exercise compared to that in the SA QIS1 exercise.

- *Tiering of own funds*

Tiering of own funds is also important, as this will affect the overall solvency position of an insurer. Tier 1 capital is the strongest capital resource and therefore insurers with significant own funds in Tier 2 and Tier 3 capital will be in a weaker solvency position than those with mostly Tier 1 capital.

Only three life insurers and twelve non-life insurers reported holding any Tier 2 capital. A further ten life insurers and 29 non-life insurers reported holding Tier 3

capital. Of the twelve non-life insurers holding Tier 2 capital, five of these insurers also reported holding Tier 3 capital. The largest proportion of own funds not in Tier 1 reported by a life insurer was 18%, while that for a non-life insurer was 63%. It should be noted however that a few insurers indicated pursuing instruments which would qualify as ancillary own funds in future.

Although insurers made more of a concerted effort in tiering their own funds for SA QIS2 as compared to SA QIS1, it should be noted that it appears that a number of insurers did not undertake a tiering of their own funds, and as a result the true exposure to Tiers 2 and 3 may be higher than that indicated in the SA QIS2 results.

- *Basic own funds vs. eligible own funds*

Eligibility requirements are imposed on assets used to back the MCR and SCR to ensure that the assets used are of a sufficiently high quality. Basic own funds will therefore exceed eligible own funds if the tiering of assets results in the exclusion of Tier 2 or Tier 3 own funds.

Results show a very close alignment between basic own funds and eligible own funds for all insurers. Looking at eligible own funds to meet the SCR as a percentage of basic own funds, this percentage ranges from 42% to 100% for life insurers and from 78% to 100% for non-life insurers, with by far the majority of respondents indicating a ratio of 100%.

- *Surrender value gap and paid-up value gap*

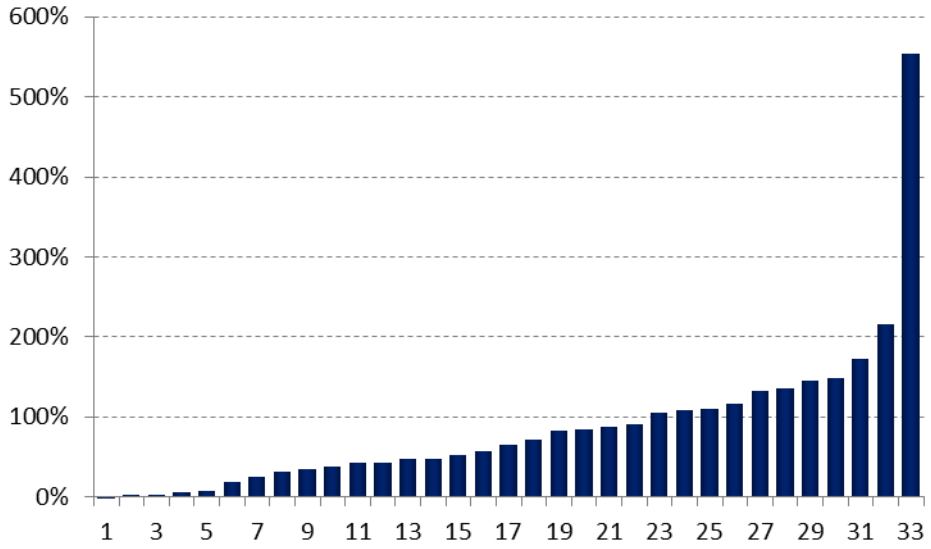
In the course of determining the quality and fungibility of own funds, it was necessary to determine to what extent insurers were recognising future profits within their own funds. Under SA QIS1, insurers were requested to calculate the expected profits included in future premiums (EPIFC). This measure was replaced by the surrender value gap[12] and the paid-up value gap[13] in SA QIS2. Insurers were requested to calculate both the surrender value gap and the paid-up value gap for all policies under SA QIS2.

The majority of life insurers calculated the surrender value gap, although there were 25 life insurers that did not calculate this measure. The reasons for not calculating the surrender value gap were largely reported as time constraints and lack of data. The below figure shows the total of surrender value gaps (excluding the risk margin) per life insurer as a percentage of basic own funds (before adjustments).

[12] The amount by which the surrender value of a policy exceeds the technical provision held for that policy, subject to a minimum of zero.

[13] The change in the technical provision for a policy if that policy were to be made paid up, subject to a minimum of zero.

Figure 8.2: Total surrender value gap (excluding the risk margin) as a percentage of basic own funds (before adjustments) for life insurers



From the above it can be seen that the percentage ranges from 0% to 553%, with the average being 87%, for life insurers. Eleven life insurers had a percentage equal to or greater than 100%.

Only two non-life insurers submitted surrender value gap information. For the one insurer the percentage was 16%, and for the other it was close to 0%.

The treatment of the surrender value gap within the own funds from a tiering perspective will significantly influence the eligibility of own funds and hence the solvency ratios of insurers. If these assets are considered to be eligible assets, the associated risks in these cash flows should be fully reflected within the SCR.

Only a handful of insurers attempted the paid-up value gap calculations. One non-life insurer attempted the calculation and this resulted in the total of paid-up value gaps being 16% of basic own funds (before adjustments). Eight life insurers attempted the calculations, with the average values of paid-up value gap as a percentage of basic own funds being 57%.

The vast majority of insurers stated that the surrender value gap and paid-up value gap methodology is reasonable and appropriate. It was also confirmed that the calculations are clear and relatively easy to interpret. Only a few insurers indicated that they did not understand the purpose of the calculations.

9. Ring-Fenced Funds

- *Approach tested*

Ring-fenced funds relate to funds held within insurers where there may be limits on the extent to which losses can be shared with other funds held by the insurer. There may be legal or operational reasons why funds may be ring-fenced. Specific areas currently being investigated as to whether ring-fencing should be applied, include:

- With-profit funds, where the insurer may not be able to meet losses in one fund with profits made in another fund due to policyholders' reasonable expectations;
- Cells, where the insurer manages a block of business separately.

There could be two areas where ring-fenced funds may impact the financial position of the insurer:

- Own funds may be limited, as the insurer may not be able to access own funds held in a ring-fenced fund to meet losses occurring outside that ring-fenced fund;
- It may not be appropriate to recognise diversification benefits between ring-fenced funds, as it may not be possible to offset losses occurring in different ring-fenced funds.

The approach to ring-fenced funds under the SAM framework is still being developed, and as such two alternative approaches were tested in SA QIS2. These alternative approaches are described in the table below:

Table 9.1: Approaches to ring-fenced funds tested in SA QIS2

	OWN FUNDS	SCR
Approach A	Any own funds within a ring-fenced fund in excess of the notional SCR of that ring-fenced fund should not count towards the overall own funds of the insurer.	No diversification benefit is allowed. The notional SCR for each ring-fenced fund, as well as the notional SCR for business outside the ring-fenced fund is added together.
Approach B	Any own funds within a ring-fenced fund in excess of the notional SCR of that ring-fenced fund should not count towards the overall own funds of the insurer.	The diversification benefit is allowed to the extent that losses can be met from the funds held outside the ring fenced funds.

Further detail of the approaches described in the table can be found in the SA QIS2 technical specification.

Although the approaches described above were tested, the SA QIS2 base case assumed no allowance for ring-fenced funds.

- *Participation*

All insurers with with-profit funds or cell arrangements were requested to complete the alternative approaches highlighted above. However, the calculations required were onerous, especially for the calculation of a notional SCR at a ring-fenced fund level, and as such not all insurers completed the calculations.

In total there were nine insurers with with-profit funds who completed the calculations, covering a total of 75 with-profit funds, ranging from one with-profit fund to 27 with-profit funds per insurer.

There were six insurers with cell arrangements who provided the results of the calculations for ring-fenced funds. These insurers covered a total of 85 first-party cell arrangements and 205 third-party cell arrangements.

- *Results*

The results of the ring-fenced funds calculations applied to the nine insurers with with-profit funds who completed the calculations are summarised in the table below:

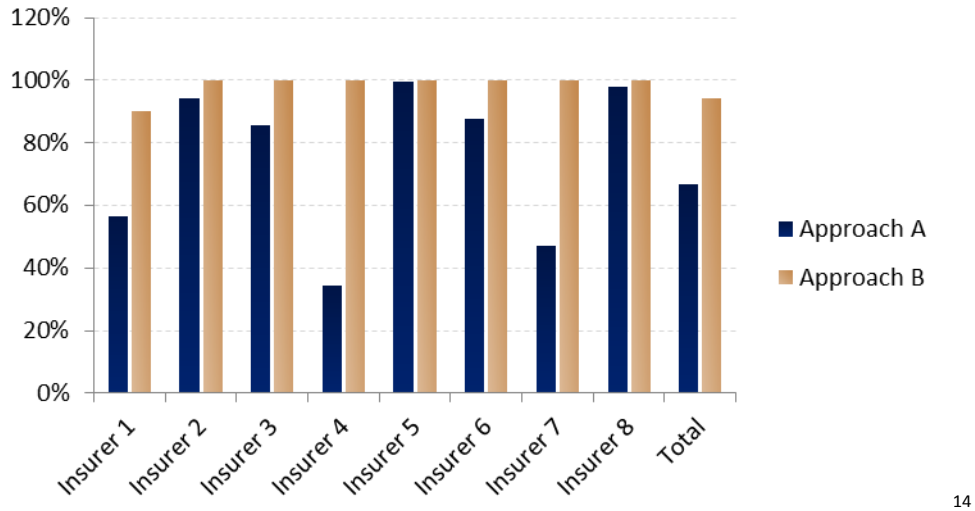
Table 9.2: Ring-fenced funds results for with-profit insurers (R'bn)

	No ring fencing	Approach A	Approach B
Eligible Own Funds	50.0	49.5	49.5
SCR	34.5	39.2	35.0
Surplus	15.5	10.3	14.6

From the table above we can see that Approach A is more onerous than Approach B. It is also apparent that the greatest impact is due to the limitation on diversification benefit and hence the increase in SCR, rather than limiting of own funds.

In order to better understand the results, the following figure sets out the surplus under both approaches.

Figure 9.1: Ratio of surplus under ring-fenced calculation to surplus under base calculation (%)



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From the table we can see that for most insurers, the application of approach B had no impact on their surplus, whereas the impact on the surplus under approach A varied widely.

Most insurers with with-profit funds suggested that ring-fencing should only be applied to the extent that there is contractual or legal ring-fencing in place, for example as part of the terms and conditions of the acquisition of the with-profit fund. There was also a request for the calculation to be simplified.

The results for the insurers with cell arrangements are set out in the table below.

Table 9.3: Ring-fenced funds results for insurers with cell arrangements (R'bn)

	No ring fencing	Approach A	Approach B
Eligible Own Funds	7.6	5.9	5.9
SCR	5.1	9.0	8.2
Surplus	2.5	-3.1	-2.3

As can be seen from the table above, the application of both approaches to insurers with cell arrangements led to a significant deterioration in the results. Under both Approach A and Approach B, the insurers do not have sufficient own funds to meet the SCR. On an individual basis, four of the six insurers do not meet the capital requirement under both Approach A and Approach B.

Once again the decrease in the diversification benefit within the SCR is more onerous than the limitation of excess funds within the ring-fenced funds.

[14] The table excludes one insurer that had a negative surplus under the base calculation

Some of the insurers experienced difficulties in applying the calculations to cells, due to the large volume of calculations required. There were also some operational issues, in that the spreadsheet contained some errors in the non-life underwriting risk calculation for cells[15]. There were also some concerns that the simplification provided in the spreadsheet was the only method allowed.

There was general agreement from insurers that the cell arrangements were operationally managed separately, although in wind-up, all policyholders ranked equally and insurers were allowed to use surpluses in one cell to meet losses in another cell. With regard to applying the calculations, there were mixed responses from insurers, with some agreeing that cells should be treated as ring-fenced funds whereas others disagreeing that the ring-fenced fund calculations should be applied to cell arrangements.

- *Further work required*

From the results above, it is apparent that the application of the calculations tested in SA QIS2 can have potentially significant impacts on insurers, especially those with cell arrangements. This is an area where further development work will be required. The development work should specifically cover when and how ring-fenced fund calculations should be applied. The SA QIS2 exercise has provided granular information which will help with the understanding of how the potential treatment of ring-fenced funds may impact the financial soundness position of insurers under the SAM framework.

[15] In completing the results for table 9.3, the errors in the spreadsheet were corrected.

10. Taxation

Summary

The tax treatment of shareholder tax tested under SA QIS2 for both life and non-life insurers was an adjusted IFRS approach. The statutory basis was used as the tax basis under SA QIS1. The adjusted IFRS approach is not necessarily an indication of what the final measures will entail, given that the final tax treatment is currently being investigated by National Treasury and the SAM Tax Task Group. The treatment of tax can have an impact on the solvency position of an insurer under the SAM framework in the following areas:

- Deferred tax asset – where future profits may not be subject to tax for a limited period;
- Deferred tax liability – where a provision is made for future tax that is expected to be paid in future periods;
- Net deferred tax assets relegated to Tier 3 – the extent to which net deferred tax assets are not taken into account to meet the SCR and the MCR;
- Loss absorbency adjustment to the SCR – the extent to which the SCR can be reduced to allow for decreasing deferred tax liabilities under the stressed position.

A summary of the impact that tax under SA QIS2 has for the above areas is given in the table below.

Table 10.1: Impact of taxes on the SA QIS2 results (R'm)

	Life insurers	Non-life insurers	All insurers
Deferred tax assets	629	756	1 385
Deferred tax liabilities	37 048	739	37 786
Net deferred tax assets relegated to Tier 3	28	521	549
Loss absorbing adjustment to SCR	31 793	503	32 296

Each of the above areas is considered separately below.

Deferred tax assets

According to the SA QIS2 technical specification, deferred tax assets should only be set up to the extent that future taxable profits are probable and where the realisation of the deferred tax asset is probable within a reasonable timeframe. The vast majority of insurers with deferred tax assets stated that these provisions had no effect on the valuation of their deferred tax assets, with the remaining insurers stating that the effect was immaterial.

For both life and non-life insurers, deferred tax assets make up a very small part of total assets. Across all life insurers, deferred tax assets contribute less than 0.05% to total assets, while for non-life insurers the figure is 0.7%.

- *Deferred tax liabilities*

As can be seen from Table 10.1, the treatment of deferred tax liabilities can have a significant impact on the valuation of liabilities for life insurers, with R37bn of deferred tax liabilities being reported for SA QIS2 by life insurers. The reason for this large amount of deferred tax liability is due to the difference in the valuation basis and the tax basis tested for SA QIS2:

- Under the valuation basis insurers remove all prudential margins (apart from the risk margin), leading to a large portion of profits being recognised up front.
- Under the tax basis (adjusted IFRS basis), Net Rand Reserves (NRR) and deferred acquisition costs (DAC) are zeroised up to the level of acquisition costs over the reporting period, thus tax is not paid up front, but will be paid as profits are expected to emerge in the future.

This difference in bases results in taxes expected to be paid in the future. A deferred tax liability is then created to provision for the expected tax to be payable in the future.

In order to better understand the provisioning of these deferred taxes, life insurers were asked to provide additional information on the amount of NRR and DAC zeroised, as well as the impact that this had on the amount of deferred tax liabilities. The table below sets out the information obtained from life insurers.

Table 10.2: Zeroisation of NRR and DAC by life insurers for the calculation of deferred tax liabilities (R'bn)

NRR zeroised	59.6
DAC zeroised	1.5
Tax impact of the zeroisation of NRR and DAC	13.5
Effective tax rate used	22%

Although Table 10.2 provides interesting information on the extent to which NRR and DAC is zeroised, there are two points to note on the information provided.

Firstly, the information seems to be incomplete. Only 22 of the 58 life insurers provided information. This can also be observed in that the tax impact from zeroisation of NRR and DAC only explains R13.5bn of the R37bn of deferred tax liabilities reported. The difference could be attributed to a deferred tax liability related to capital gains tax, however this cannot be verified from the SA QIS2 submissions.

Secondly, there has been varying interpretation on how to calculate the tax impact from the zeroisation of the NRR and DAC. It was expected that the tax impact would be equal to the tax rate (28%) multiplied by the zeroisation of NRR and DAC. However, only 11 of the 22 life insurers used a rate of 28%, with the remainder using different rates. If all insurers had used 28%, the tax impact of the zeroisation of NRR and DAC would have been R17.1bn.

The amount of deferred tax liabilities reported by non-life insurers is small when compared to the life insurers. For non-life insurers, deferred tax liabilities make up 1.2% of the total liabilities.

- *Tiering of net deferred tax assets*

Under SA QIS2, the net deferred tax assets[16] have been treated as Tier 3 own funds where deferred tax assets are greater than deferred tax liabilities. This treatment reflects the availability and loss absorbency of net deferred tax assets. The treatment of net deferred tax assets was not a significant issue for life insurers, primarily because deferred tax liabilities were generally greater than deferred tax assets, as described earlier in this chapter.

In total there were 36 insurers (7 life insurers and 29 non-life insurers) reporting positive net deferred tax assets, and hence treating these as Tier 3 own funds.

- *Loss absorbing capacity*

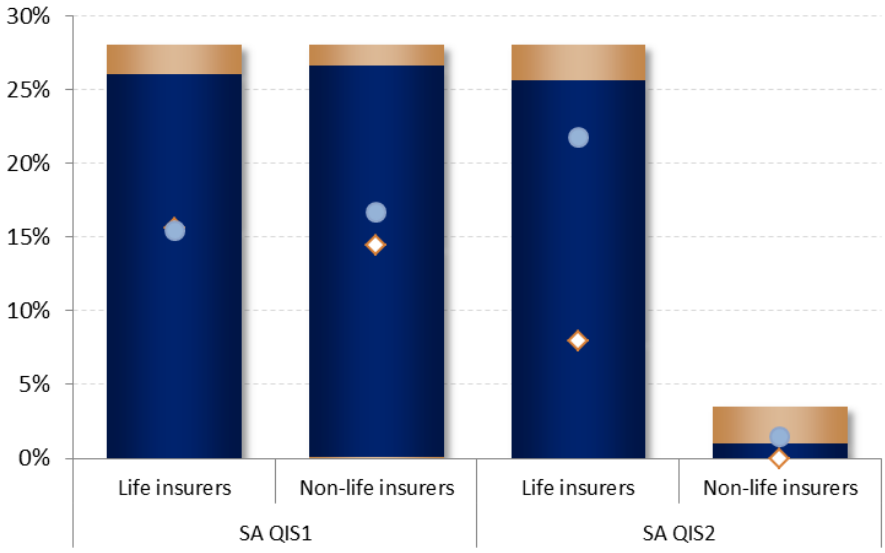
The loss absorbing capacity of deferred tax liabilities in the SCR was treated inconsistently between insurers in SA QIS1. In order to avoid this under SA QIS2, the FSB decided to use an automated simplification in the solo return for the calculation of the loss absorbing capacity of deferred taxes, within the calculation of the SCR. The simplification netted off the deferred tax asset from the deferred tax liability, and then assumed this deferred tax liability to be loss absorbing, up to a maximum of the tax rate (28%) of the SCR before the adjustment for loss absorbency of deferred tax liabilities.

Figure 10.1 shows the reduction in SCR[17] due to loss absorbing capacity of deferred taxes for both life and non-life insurers.

[16] Net deferred tax assets is equal to the deferred tax assets less the deferred tax liabilities.

[17] For the purpose of this section, SCR is defined as meaning BSCR + SCR_{Op} + SCR_{Part}.

Figure 10.1: Reduction in the SCR due the loss absorbing capacity of deferred taxes (%)



From the above we can see that the automated calculation had opposite impacts for life insurers and non-life insurers.

For life insurers, the average deduction in SCR increased from 15% to 22%. This increase seems to be linked to the large deferred tax liability associated with the zeroising of NRR and DAC, as set out earlier in this section. In total, the deduction to the SCR for life insurers was R31.8bn, which is clearly very significant. Further work will be required to understand whether it is appropriate to allow such a large deduction from the SCR for the allowance of the loss absorbing capacity of the deferred tax liability, and it may be inappropriate to apply a simple formula as used under SA QIS2 to calculate this amount.

For non-life insurers, the average deduction in SCR decreased from 17% to 1%. The automated calculation resulted in a zero deduction for the 29 non-life insurers who had greater deferred tax assets than deferred tax liabilities. For the remaining non-life insurers, the deduction in SCR was limited to the difference between the deferred tax liabilities and the deferred tax assets, resulting in a large decrease from the values reported in SA QIS1.

11. Internal Models

As with SA QIS1 it was not the specific intention of SA QIS2 to perform a detailed review of internal models. Once again a number of insurers supplied information in response to the quantitative and qualitative requests relating to internal models as part of SA QIS2.

In total seven insurers submitted results for their internal models, of which six were non-life insurers. This is a significant reduction from the 12 insurers who provided information on their models during the SA QIS1 submissions. Eight insurers submitted internal model questionaires, of which one was a life insurer. Of the seven insurers who supplied internal model results, four also submitted questionaires.

A further three non-life insurers submitted information indicating their plans to develop internal models, all citing lower premium risk than implied by the standard formula as a reason for the development.

The table below shows the impact of using an internal model for each risk component. Components of submissions related to partial internal models were excluded where these components are excluded from the scope of the partial internal model.

In all cases, apart from operational risk, the internal model results for each risk component yielded answers that were lower than the corresponding amount calculated by the standard formula. For operational risk, the results show that there are more insurers where the internal model produces a higher risk capital than that calculated by the standard formula.

Table 11.1: Impact of the use of internal models on capital requirements – life and non-life insurers[18]

	Overall SCR	Non-life underwriting risk	Market risk	Operational risk
Internal model capital less than standard formula capital	7	6	5	2
Internal model capital greater than standard formula capital	0	0	0	3
Average internal model capital as a % of standard formula capital	57%	51%	53%	109%

All seven internal model submissions received resulted in a lower capital requirement than produced by the standard formula. The internal model SCR ranged from 37% of the standard formula SCR to 79% of the standard formula SCR. It is therefore evident that internal models consistently produce a significantly lower capital requirement than the standard formula, and this emphasises the importance for a robust approach by the FSB in considering

[18] [18] Life underwriting risk has been excluded from the table above as there was only one submission

applications from insurers to use an internal model for the purpose of calculating the SCR.

12. Groups

- *Introduction*

SA QIS2 was the first exercise to test the impact of completing a group solvency calculation under the proposed SAM framework. This is an area where there is still a lot of uncertainty on the methodology to be used for the calculation. There are also currently no formal requirements to calculate a group capital adequacy requirement. As such, the approach taken in SA QIS2 was to collect a good deal of information, which could then be used to assist in the decision making process to inform the final group solvency calculation.

The different group solvency calculations requested in the SA QIS2 exercise were as follows:

- **Current:** Using the deduction and aggregation approach[19] where the current capital requirements for insurers are used in the calculation;
- **SAM Alternative 1:** Using the deduction and aggregation approach where the SA QIS2 specification is used for South African insurers and the current local requirements are used for non-South African insurers;
- **SAM Alternative 2:** Using the deduction and aggregation approach where the SA QIS2 specification is used for both South African and non-South African insurers;
- **SAM Alternative 3:** Using the deduction and aggregation approach where an internal model (where available) is used for South African insurers and the current local requirements are used for non-South African insurers;
- **SAM Alternative 4:** Using the accounting consolidation[20] approach;
- **SAM Alternative 5:** Using a combination approach, where part of the group uses the accounting consolidation approach outlined in SAM Alternative 4, and the remainder of the group uses the deduction and aggregation approach outlined in SAM Alternative 1.

For more detail on the different approaches tested, please refer to the groups section of the SA QIS2 technical specification.

Due to the volume of information requested, groups were not compelled to complete all calculations, but were asked to complete as many of the calculations as they could. Groups were also requested to complete this exercise on a best efforts basis, and the widespread use of simplifications was allowed, especially in the application of the SA QIS2 technical specification to non-South African insurers.

As set out above, the final measures for the calculation of the group solvency position under the SAM regime is still being developed. Specifically, the Insurance Groups Task Group of the SAM Governance structure has set out discussion documents that deal with the calculation of the group Solvency

[19] Deduction & aggregation is an approach where the capital position for the group is calculated by adding together all the capital positions of the entities within the group and deducting the intragroup exposures to avoid double-counting of capital.

[20] Accounting consolidation approach is an approach where the SAM requirements are applied to the consolidated balance sheet of the whole group.

Position. The following discussion documents are currently available on the FSB website:

- Discussion Document 92: Assessment of Group Solvency;
- Discussion Document 27: Group Own Funds;
- Position Paper 85: Treatment of insurance operations (in "non-equivalent" jurisdictions) under the final measures to regulate the solvency of South African insurance groups.

The consultation period for all the above documents ended on 31 January 2013. However, stakeholders are urged to read through these documents, and also to provide comments on the subsequent position papers.

The current position put forward in Discussion Document 92 is that the deduction and aggregation approach should be used, and that the group may apply to the Registrar if it wants to use the accounting consolidation approach.

- *Participation*

Given the volume of data requested for groups under SA QIS2, the FSB is pleased with the participation from insurance groups. In total there were 26 group submissions, with differing levels of calculations completed. Whereas all submissions included the Current and the SAM Alternative 1 calculations, not all groups completed the remaining SAM alternative calculations. The following table sets out how many groups completed all of the different calculations.

Table 12.1: Number of groups completing the various calculation methods requested for SA QIS2

Method	Description of method	Groups completing this method
Current	Deduction & Aggregation approach applied to the current regulatory requirements	26
SAM Alternative 1	Deduction & Aggregation approach using SAM basis for South African insurers and local regulatory requirements for non-South African insurers	26
SAM Alternative 2	Deduction & Aggregation approach using SAM basis for both South African insurers and non-South African insurers	19
SAM Alternative 3	Deduction & Aggregation approach using an internal model for South African insurers and local regulatory requirements for non-South African insurers	6
SAM Alternative 4	Accounting and consolidation method	19
SAM Alternative 5	Accounting and consolidation applied to a part of the group with Deduction & Aggregation (as used in D&A: Alternative 1) applied to a remainder of the group	6

The groups participation in SA QIS2 is a significant proportion of the overall percentage of insurance groups within the South African market. The table below compares the participation in the groups part of the SA QIS2 exercise compared to the data which was gathered from the compulsory groups information letter sent out for completion.

Table 12.2: Number of entities included in the SA QIS2 groups submission, compared to the groups information letter[21]

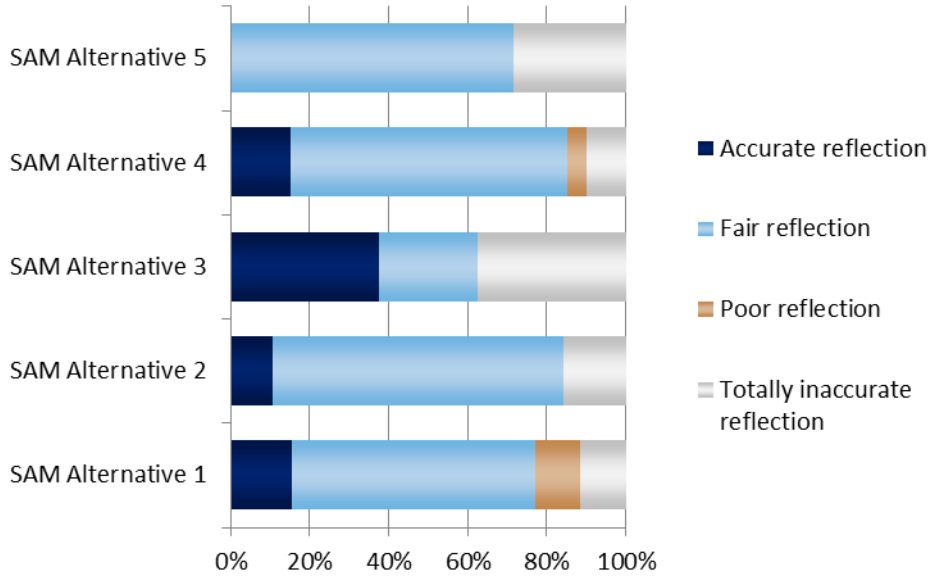
Insurance Group Entities per type	From groups information letter	SA QIS2	
		Reported	*Included in calculation*
Ultimate Holding Company	70	23	23
SA Regulated Insurance	159	90	78
SA Regulated Banking	5	2	2
SA Other financial regulated entity	309	171	101
SA Other unregulated entity	1124	470	241
Non-SA Regulated Insurance	68	67	59
Non-SA Regulated Banking	8	1	1
Non-SA Other financial regulated entity	75	39	25
Non-SA Other unregulated entity	505	80	39
Total	**2323**	**943**	**569**

- *Preference of methodology*

The graph below sets out the extent to which groups believe the various calculations provide a fair reflection of the financial position of the group.

[21] In Table 12.2 only 23 groups have been counted as reported under SA QIS2 to be consistent with the way in which groups have been defined for the purpose of the group information letter.

Figure 12.1: Self-assessment results of the extent to which the various calculation methods provide a fair reflection of the financial position[22]



Please note that the figure above includes the responses from all groups, regardless of whether the method was completed or not.

SAM Alternative 3 was ranked highest by respondents in terms of providing an accurate reflection of the financial position of the group. This was mostly driven by the insurers who completed this calculation.

It is also interesting to note that 85% of groups who responded, believed that SAM Alternative 4 provides either an accurate or a fair position of the group.

The table below sets out which method was most favoured by respondents.

[22] Please note that figure 12.1includes the responses from all groups, regardless of whether the method was completed or not

Table 12.3: Preferences for the various calculation methods by number of groups

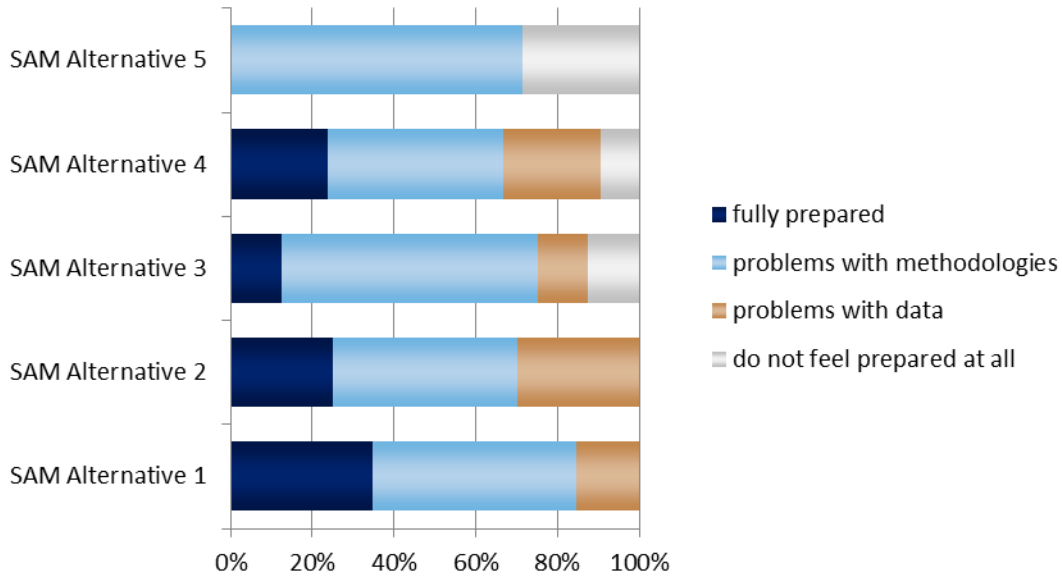
Alternative Preferred	No of grps
SAM Alternative 1	7
SAM Alternative 2	3
SAM Alternative 3	2
SAM Alternative 4	10
SAM Alternative 5	4

Fourteen groups have highlighted either the accounting consolidation or combination method as their favoured method, once again highlighting the preference for some sort of diversification between the legal entities within a group. There remains some debate however as to the rationale for allowing a diversification benefit between legal entities.

- *Preparedness*

The graph below sets out the level of preparedness for the groups that provided submissions.

Figure 12.2: Self-assessment of the extent to which groups are prepared for the provision of information as required by the various calculation methods



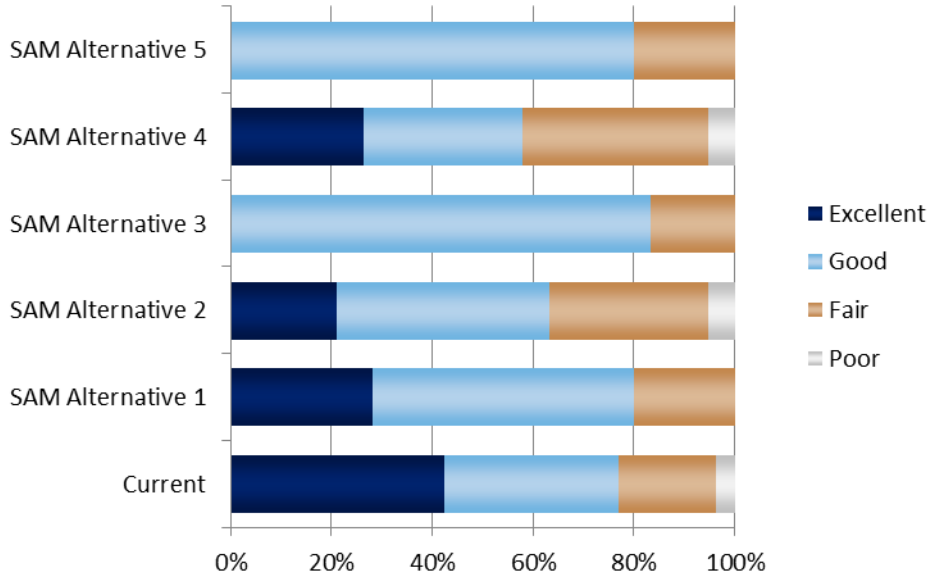
From this graph it is clear that insurance groups still have work to do, either with their methodologies, data or both in order to conduct the calculations.

SAM Alternative 1, which follows the deduction and aggregation approach, is the method for which correspondents feel the most prepared, with 35% of the groups feeling fully prepared for the calculations.

- *Reliability*

The ratings which groups have given for the reliability of their results are given in the table below.

Figure 12.3: Self-assessment of the reliability of information provided for each of the calculation methods



The majority of the groups have reported that their results are reliable, with most methods achieving approximately 80% “Excellent” or “Good” ratings.

The two exceptions to the above are SAM Alternative 2, where the SA QIS2 calculations are applied to non-South African insurers, and SAM Alternative 4, where the accounting consolidation method is applied. For these methods there was a higher proportion of groups indicating that the reliability of their results is either “Fair” or “Poor”.

- *Data*

The following graphs set out the ratings that groups have given to the data which they have used in the calculations, with respect to the appropriateness, completeness and accuracy of the data.

Figure 12.4: Self-assessment of the appropriateness of data used for each of the calculation methods

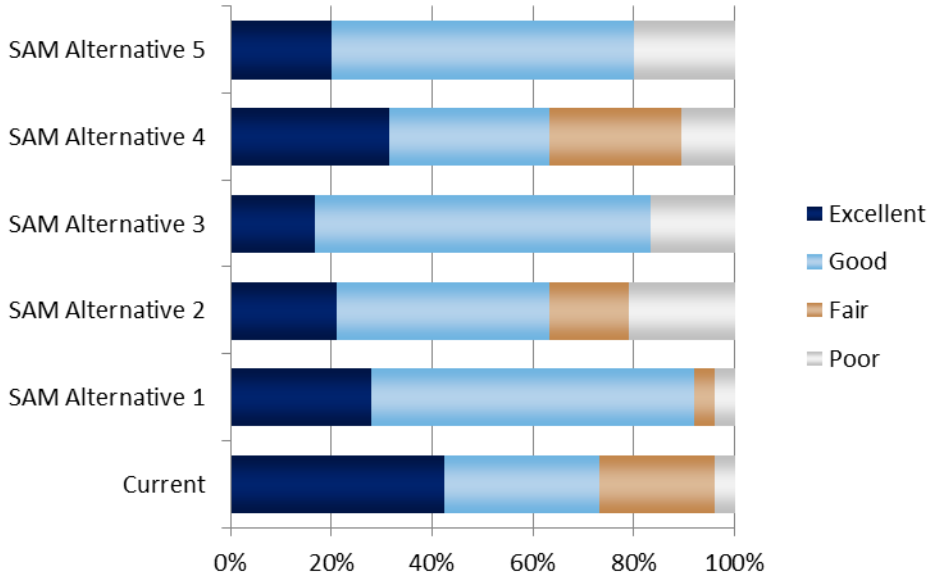


Figure 12.5: Self-assessment of the completeness of data used for each of the calculation methods

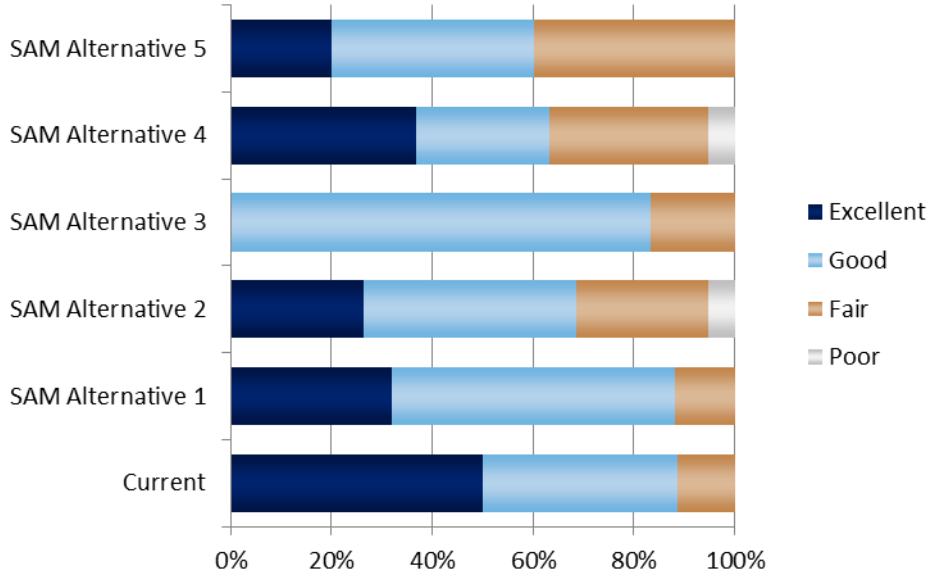
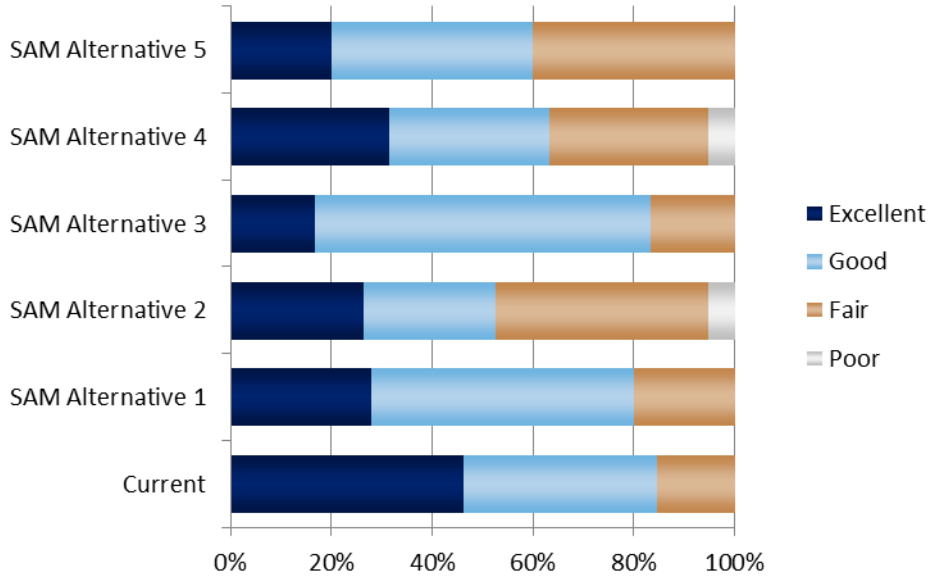


Figure 12.6: Self-assessment of the completeness of data used for each of the calculation methods



The majority of the ratings given by the groups seem to indicate that the groups have "Excellent" or "Good" quality data.

Where there are data issues, these seem to be mostly in relation to SAM Alternative 2, where there are presumably issues in obtaining the necessary data required to apply the SA QIS2 calculations to non-South African insurance entities.

In addition, there also seem to be more data issues with SAM Alternative 4 and SAM Alternative 5, compared to the data required for SAM Alternative 1, which uses the deduction and aggregation approach.

- *Results of the calculations*

Under the Current calculation, there were two out of the 26 groups that did not have sufficient available capital to meet the capital requirements. These two groups were not able to meet the capital requirement under any of the SAM alternative calculations that were submitted.

In addition to the two groups above, there were three groups that met the Current capital requirement, but not the capital requirement as prescribed by the SAM Alternative 1 calculation. The ability to meet the capital requirement is set out in the table below.

Table 12.4: Results for groups which do not meet the capital requirement under one or more of the calculation methods

	Group 1	Group 2	Group 3	Group 4	Group 5
Current	Does not meet capital requirement	Meets capital requirement	Meets capital requirement	Does not meet capital requirement	Meets capital requirement
SAM Alternative 1	Does not meet capital requirement	Does not meet capital requirement	Does not meet capital requirement	Does not meet capital requirement	Does not meet capital requirement
SAM Alternative 2	Does not meet capital requirement	Not calculated	Not calculated	Does not meet capital requirement	Not calculated
SAM Alternative 3	Does not meet capital requirement	Not calculated	Not calculated	Does not meet capital requirement	Not calculated
SAM Alternative 4	Does not meet capital requirement	Not calculated	Meets capital requirement	Not calculated	Meets capital requirement
SAM Alternative 5	Does not meet capital requirement	Not calculated	Not calculated	Not calculated	Not calculated

Please note that the groups above have been randomly ordered.

All other groups had sufficient group capital to meet the group capital requirement for all the different calculations that were conducted.

In order to draw a meaningful comparison between the results of the different calculations, the results should only be compared where groups have completed the same calculations. The following sections consider the results of the different calculations.

- *Results of the calculations – SAM Alternative 1*

All groups completed both the Current calculation as well as the SAM Alternative 1 calculation under SA QIS2. The aggregate position of the 26 groups is shown in the table below.

Table 12.5: Aggregate results of group solvency position under Current position and SAM Alternative 1

All Groups	Current	SAM Alternative 1
Available Capital	177.0	253.2
Capital Requirement	89.8	162.3
Surplus Capital	87.2	90.9
Capital Adequacy Ratio	1.97	1.56

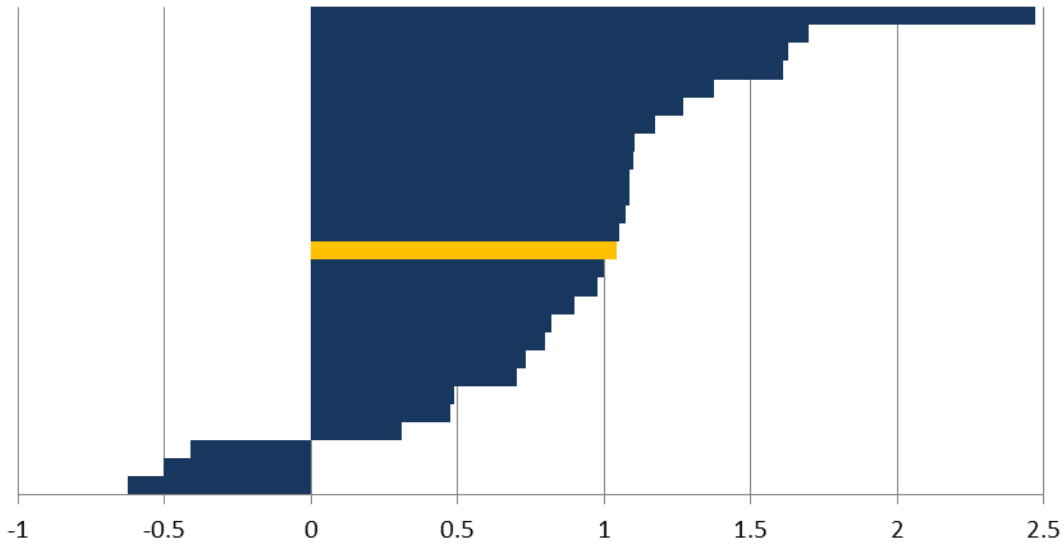
It should be noted that both the available capital as well as the capital requirement have increased significantly from the Current calculation to the SAM Alternative 1 calculation. This is largely driven by the groups with large life insurance subsidiaries. As set out earlier in the report, life insurers have generally experienced an increase in own funds, due to the release of margins in the technical provisions. However, this has largely been offset by an increased SCR.

With regard to the surplus capital, there is very little change between the current calculation and the SAM Alternative 1 calculation.

Care should be taken when considering the decrease in the capital adequacy ratio. Even though the decrease appears considerable, there is very little change to the surplus capital. The large decrease in the capital adequacy ratio is due to both the available capital and capital requirement increasing, as explained above.

Even though there was not a great change in the overall surplus from the Current calculation to the SAM Alternative 1 calculation, the position for individual groups differed significantly. The following graph shows the ratio of the surplus capital under SAM Alternative 1 over the surplus capital under the Current calculation, ordered from highest to lowest.

Figure 12.7: Ratio of surplus capital under SAM Alternative 1 to surplus capital under the Current basis



The yellow bar above gives the aggregate ratio, taking into account all group submissions.

- *Results of the calculations – SAM Alternative 2*

As set out earlier, there were 19 groups that submitted results for the SAM Alternative 2 calculation. However, of the 19 groups, eight showed exactly the same results between SAM Alternative 1 and SAM Alternative 2. On closer inspection, the reason for this was due to:

- Groups not having non-South African regulated insurers;
- Groups that have non-South African regulated insurers, but where these were not included in the results due to materiality;
- Groups that have non-South African regulated insurers included in the calculation, but where the results given for these entities are exactly the same for both SAM Alternative 1 and SAM Alternative 2.

In order to aid our analysis, the eight groups where the results are exactly the same between SAM Alternative 1 and SAM Alternative 2 have been excluded from this section. The table below shows the aggregate position of the remaining 11 groups.

Table 12.6: Aggregate results of group solvency position under Current position, SAM Alternative 1 and SAM Alternative 2

Groups who completed Alternative 2			
	Current	SAM Alternative 1	SAM Alternative 2
Available Capital	138.5	193.6	195.8
Capital Requirement	74.6	126.8	129.5
Surplus Capital	63.9	66.8	66.3
Capital Adequacy Ratio	1.86	1.53	1.51

From this table we can see that the application of the SA QIS2 technical specification on the non-South African groups has resulted in a negligible change in the surplus capital. This is largely due to an increase in the capital requirement, offset by an increase in the capital resources available.

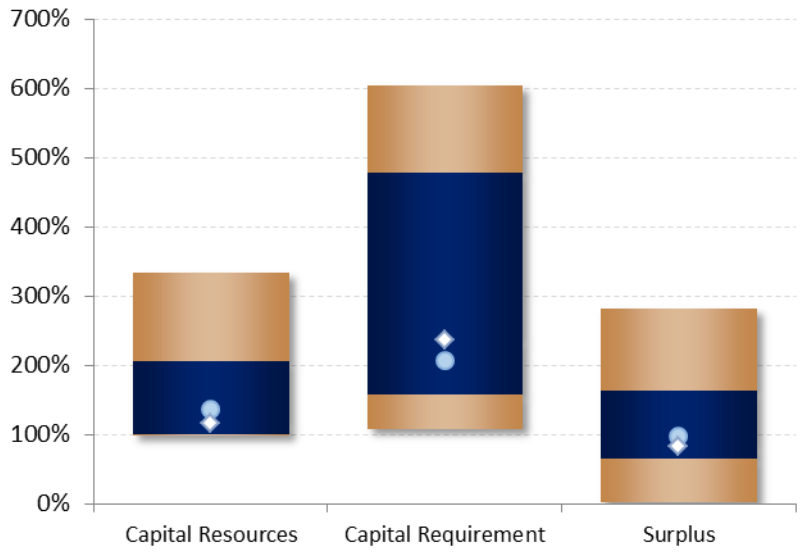
In total there were 69 non-South African insurers listed by groups, 39 of which were included in the SAM Alternative 2 calculation. A breakdown of the insurers by jurisdiction is included in the table below.

Table 12.7: Split of non-South African insurers by jurisdiction

	Included in calculations	Excluded from calculations	Total
Australia	1	0	1
Botswana	7	3	10
China	1	0	1
Ghana	1	2	3
Guernsey	1	0	1
India	0	1	1
Ireland	0	2	2
Jersey	1	0	1
Kenya	3	1	4
Lesotho	3	0	3
Malawi	0	1	1
Mauritius	2	5	7
Mozambique	1	0	1
Namibia	7	6	13
Nigeria	1	2	3
Swaziland	3	1	4
Tanzania	3	1	4
Uganda	1	1	2
United Kingdom	3	1	4
Zambia	0	3	3
Total	**39**	**30**	**69**

Although the results at an aggregate level did not show much difference between SAM Alternative 1 and SAM Alternative 2, when considering the impact at an individual entity level, the difference between applying the local and SA QIS2 requirements to non-South African entities can be significant. This is illustrated in the following graph which gives the distribution for the ratio of the results of SAM Alternative 2 over SAM Alternative 1 for the capital resources, capital requirements and the surplus capital.

Figure 12.8: Ratio of results under SAM Alternative 2 to results derived from SAM Alternative 1



Please note that the above figure uses the numbers for entities before any adjustments for percentage ownership and intragroup transactions were taken into account.

It should also be noted that significant simplifications were applied in obtaining some of the figures, and this should be taken into account when interpreting the results for this calculation.

In addition, the results submitted by respondents have been used without being verified by the FSB. Some of the responses may not show an appropriate reflection between the local and SA QIS2 requirements, as:

- In some cases, groups have set the surplus of foreign subsidiaries to zero, due to the concern of capital fungibility.
- In other cases, it appears that groups have applied the current South African regulatory requirements to foreign subsidiaries instead of applying the local regulatory requirements.

- *Results of the calculations – SAM Alternative 3*

There were six groups that provided information using SAM Alternative 3, where the use of internal models was used to calculate the capital requirement for individual insurance entities. The results for these groups are given in the table below.

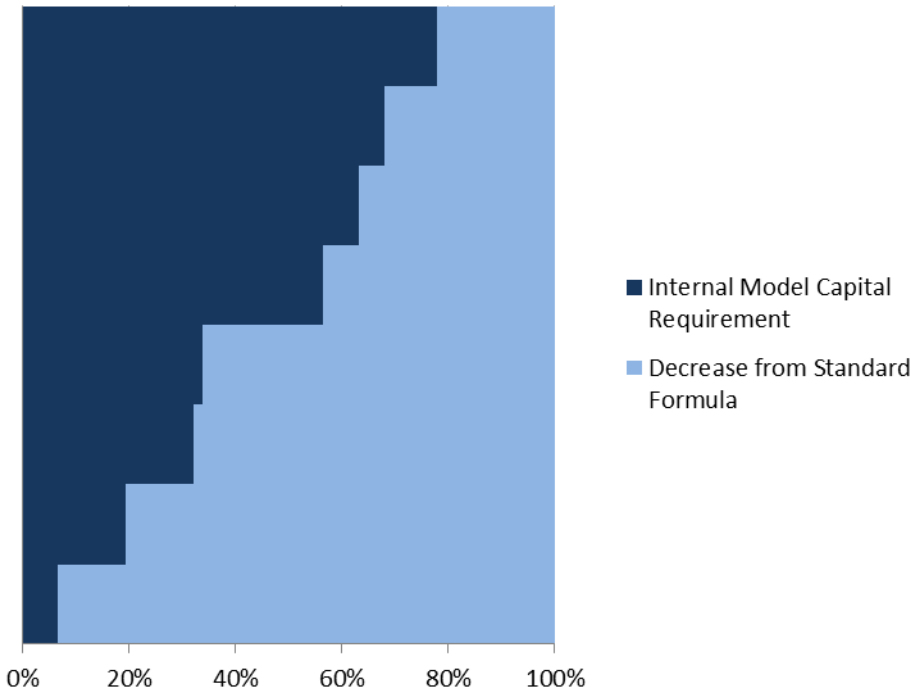
Table 12.8: Aggregate results of group solvency position under Current position, SAM Alternative 1 and SAM Alternative 3

Groups who completed Alternative 3	Current	SAM Alternative 1	SAM Alternative 3
Available Capital	100.2	138.9	138.3
Capital Requirement	51.0	81.6	67.8
Surplus Capital	49.3	57.3	70.5
Capital Adequacy Ratio	1.97	1.70	2.04

As can be seen from the table, the use of internal models has led to a significant decrease in the amount of the capital requirement, compared to the standard formula which was used in SAM Alternative 1. Across the six groups, there were a total of eight insurance entities for which an internal model was used to calculate the capital requirement.

The graph below illustrates the extent to which the capital requirement has been decreased for these eight insurance groups compared to the results given in SAM Alternative 1 where the standard formula was used to calculate the capital requirement for the entities.

Figure 12.9: The extent to which the group capital requirement decreases as a result of the application of SAM Alternative 3 relative SAM Alternative 1



It should also be noted that for one of the groups, the use of internal models also led to a decrease in the available capital. This was strange given that the

internal model should only be used for the calculation of the capital requirement, and thus should not have an impact on the available capital.

Further information on the results from internal models can be found in section 11 of this report.

- *Results of the calculations – SAM Alternative 4*

The SAM Alternative 4 calculation uses the accounting consolidation approach to determine the solvency position of the group. With this approach, the whole balance sheet of the group is consolidated, with the various stresses applied to the whole group to determine the overall group capital requirement. In this approach diversification between entities is automatically allowed for, compared to the deduction and aggregation approach as tested in some of the other alternatives.

For the 19 groups who completed the calculation, the results are given in the table below.

Table 12.9: Aggregate results of group solvency position under Current position, SAM Alternative 1 and SAM Alternative 4

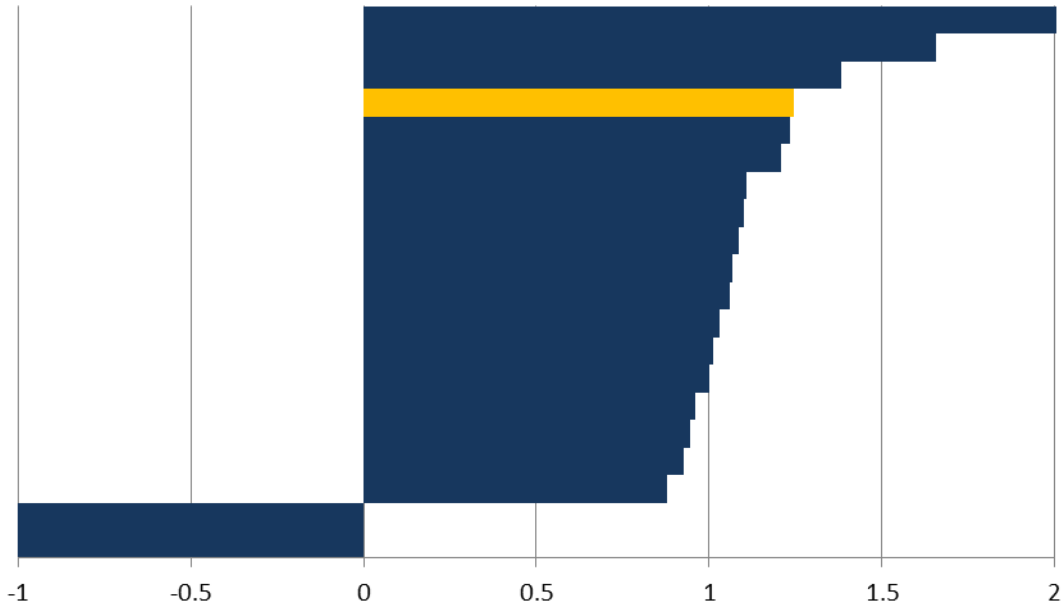
Groups who completed Alternative 4

	Current	SAM Alternative 1	SAM Alternative 4
Available Capital	68.8	96.8	99.5
Capital Requirement	36.7	69.9	66.0
Surplus Capital	32.2	26.9	33.5
Capital Adequacy Ratio	1.88	1.38	1.51

From the table above we can see that the diversification benefit has resulted in an increase in surplus capital from R26.9bn to R33.5bn. Please note that the accounting consolidation approach requires all insurance entities to be viewed on a SA QIS2 basis. For this reason, the true diversification benefit would be obtained from comparing SAM Alternative 4 to SAM Alternative 2. However this is not possible as not all insurers who completed SAM Alternative 4 also completed SAM Alternative 2.

The extent to which the results differ between groups is set out in the following graph, which shows the distribution of the surplus capital of SAM Alternative 4 over SAM Alternative 1.

Figure 12.10: Ratio of surplus capital under SAM Alternative 4 to surplus capital under SAM Alternative 1



Groups primarily commented that diversification benefits should be allowed for between different entities, primarily due to different risk drivers underlying the different entities and/or different jurisdictions.

However, there were also some groups who mentioned that diversification should either not be allowed for, or should only be allowed for within jurisdictions, due to potential issues relating to the lack of fungibility or transferability of capital between jurisdictions.

The proponents of diversification between entities suggested that this could be achieved either through the accounting consolidation or combination method, or it could be achieved by applying a correlation matrix when aggregating the results.

- *Results of the calculations – SAM Alternative 5*

SAM Alternative 5 uses a combination of the accounting consolidation approach and the deduction and aggregation approach in order to determine the group solvency position. The results of the 6 groups who completed this calculation are given in the table below.

Table 12.10: Aggregate results of group solvency position under Current position, SAM Alternative 1 and SAM Alternative 5

Groups who completed Alternative 5	Current	SAM Alternative 1	SAM Alternative 5
Available Capital	67.8	105.6	107.7
Capital Requirement	27.8	66.9	65.6
Surplus Capital	40.0	38.7	42.1
Capital Adequacy Ratio	2.44	1.58	1.64

As can be seen from the table, there is a decrease in the capital requirement, probably due to the diversification benefit for the portion of the calculation for which the accounting consolidation was applied.

From the submissions provided, it appears that the accounting consolidation part of the approach was applied mainly to aggregate the South African insurance entities, with the remainder of the entities aggregated using the deduction and aggregation technique.

- *Scope of the calculation*

There was general agreement with the scope of the group as defined in the SA QIS2 technical specification. However, there were some concerns raised in the determination of the scope of the group, most notably the extent to which the calculation should proceed within the holding of the group. A view was put forward that the group should be scoped at the first overarching holding company that controls all the regulated insurance entities, and that any holdings above this level should be excluded from the group.

Other comments made included:

- Non-South African insurance operations should be excluded from the group calculation if they show a surplus under current local regulatory requirements and if they are not significant.
- Participations below 50% should be excluded from the calculation as this does not necessarily result in control over those entities.
- Only South African-regulated insurers, as well as the subsidiaries of these entities, should be included in the group calculation.
- There was a concern raised that groups with only one regulated insurer should not be treated as groups.

Various suggestions were made on how to determine materiality, in order to determine whether or not entities should be included in the group calculation. These were mostly related to the extent to which the entity contributes to the group solvency position. There were also suggestions to take into account various qualitative considerations, such as the riskiness of the entity, the possible extent of losses within the entity and the strategic nature of the entity.

A number of groups also suggested considering the existing IFRS guidance on materiality.

- *Intragroup transactions*

The completion of the intragroup transactions varied widely by groups. Four of the groups did not provide any details of their intragroup transactions. For the remaining 22 groups, the number of intragroup transactions detailed ranged from one to 411.

The table below sets out a summary of all the intragroup transactions which were reported, as well as whether or not the intragroup transactions were taken into account in determining the group capital position.

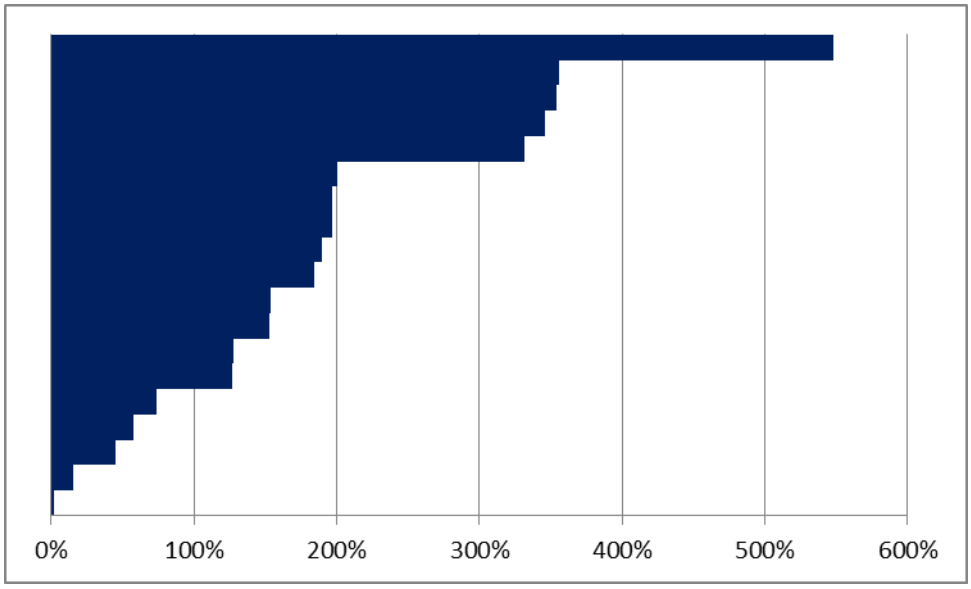
Table 12.11: Intragroup transactions by type and the extent of inclusion in the SA QIS2 group calculations

	Number of transactions reported	Number included in the group solvency calculation
Debt/Loan	350	334
Equity	8	8
Holding	296	271
Intragroup reinsurance	32	20
Other	165	109
Total	851	742

There are still uncertainties on the treatment of intragroup reinsurance transactions, and as such further work is required to understand the full impact of intragroup reinsurance transactions on the group solvency position.

In order to understand the impact of intragroup transactions on the group solvency position, it is useful to consider the ratio of intragroup transactions to net group capital. The figure below provides the distribution of this ratio on the current basis.

Figure 12.11: Ratio of net intragroup transactions to group capital under the Current method [23]



From the figure, we can see that the ratio varies widely, implying that the extent to which intragroup transactions are taken into account varies widely between groups. It is also clear that the ratio is quite high for some of the groups, so this is likely to be something that the FSB will need to monitor closely in the future.

[23] Please note that the figure above excludes groups who have not given information for intragroup transactions, and groups that had a negative net group capital position.

13. Conclusion

At the time of writing this report, implementation of the SAM framework on 1 January 2015 is less than two years away. Although much progress has been made in developing the SAM framework, there is still some considerable work to do before the framework is fully developed.

The FSB would like to thank all insurers who have participated in the SA QIS2 exercise and provided the information that will be used to help further develop the new SAM framework. SA QIS2 has provided valuable information that will be used to assist in making decisions towards the final phase of developing the SAM framework. In this phase of development, the following areas need further consideration:

- What simplifications to use and when it would be appropriate to use such simplifications;
- Transitional measures that can be applied to facilitate a smooth transition from the current framework to the SAM framework;
- Calibrations of stresses and parameters.

In terms of next steps, SA QIS3 will be conducted in 2013 and will be compulsory for all insurers to complete. As such, insurers who have not completed SA QIS2 are advised to work through the SA QIS2 technical specification to get an idea of the volume of work required in completing such an exercise. As opposed to SA QIS2, SA QIS3 will include fewer alternatives and sensitivities, and will instead focus on the expected calculations under the final framework.

Looking further ahead, a parallel run is planned for 2014. The specification for the parallel run calculations will be developed from the SA QIS3 exercise.

The FSB would like to thank the working groups and task groups that actively participated in the SAM governance structures to help with the SA QIS2 exercise – the SA QIS2 exercise would not have been possible without their continued input.

Annexure 1: Acronyms

BN	Board Notice
BSCR	Basic Solvency Capital Requirement
DAC	Deferred Acquisition Costs
EIOPA	European Insurance and Occupational Pensions Authority
EPIFC	Expected Profits Included in Future Cash Flows
IFRS	International Financial Reporting Standards
ILAB	Insurance Laws Amendment Bill
IT	Information Technology
MCR	Minimum Capital Requirement
NRR	Negative Rand Reserve
SAM	Solvency Assessment and Management
SCR	Solvency Capital Requirement
SES	Single Equivalent Scenario
SLT	Similar to Life Technique

Annexure 2: Changes from SA QIS1 to SA QIS2

The list below summarises the various changes from the SA QIS1 to the SA QIS2 technical specification. It should be noted that the list is not intended to be exhaustive of all the changes made, but rather a summary of the key changes and sensitivities tested in SA QIS2.

The following changes were made to the SA QIS1 technical specification for the SA QIS2 exercise:

- The tax basis was changed from the current (statutory) basis to an adjusted IFRS basis.
- Segmentation was updated.
- The illiquidity premium on the risk free rate was replaced by a matching premium.
- Insurers were allowed to use an alternative approach to determine the SCR which includes the change in risk margin under stressed events.
- Removal of the loss absorbing capacity of deferred taxes from the calculation of the risk margin.
- The removal of the gross SCR calculation, i.e. management actions, risk mitigation and counterparty default were to be taken into account within each risk sub-module of the SCR. To avoid double-counting of management actions, a single equivalent scenario adjustment was introduced into the market risk component of the SCR.
- A standardised approach and a company specific approach were tested for management actions in the calculation of the loss absorbing capacity of technical provisions.
- Two alternative approaches were tested with regards to policyholder behaviour in the market risk module along with the base case which requires no dynamic policyholder behaviour.
- The testing of alternative twist and inflection shocks to the yield curves for the calculation of interest rate risk (principal component analysis), as well as the testing of nominal and real shocks to the interest rate.
- Revised countercyclical adjustment for equity risk.
- The counterparty default module was removed. The counterparty default risk associated with risk mitigation is allowed for within each sub-module where the counterparty is used to mitigate risk. All other counterparty default is allowed for within the default and spread risk module within market risk.
- Strategic participations shock was removed from the equity risk sub-module into a new participations risk module.
- The health underwriting risk module was removed from the SCR and allowed for within the life underwriting risk module.
- Commission to be excluded from expenses when calculating the operational risk charge for unit-linked policies.

- Alternatives were tested with respect to mortality levels and mortality improvements for longevity risk.
- A separate calculation was required for medical expense disability risk.
- Policies were required to be grouped into homogenous groups for the determination of life lapse risk.
- Increase in parameters for the mass lapse event in the life underwriting module. There were also higher mass lapse stresses applied for unit linked and group policies compared to other policies.
- The introduction of a retrenchment risk sub-module within the life underwriting risk module of the SCR.
- The non-life underwriting risk module was changed to allow for the specific reinsurance arrangements of the insurer. A new workbook was developed in order to assist non-life insurers in calculating their non-life underwriting risk capital.
- The testing of the impact of applying ring-fencing to with-profits funds and cell arrangements to the solvency position of the insurer.
- The minimum level of the MCR for insurers was increased from R10m to R15m.
- Group solvency calculations were requested for insurance groups, with six different methodologies being tested.

Annexure 3: Results by Insurer Categories

The below is a repetition of selected graphs in this report at an insurer category level, i.e. by assistance, captive, cell captive, linked investment, niche, reinsurer and typical insurer level.

Table A3.1: Aggregate impact of SA QIS2 on insurers split by insurer category[24]

Typical insurers	*Life insurers*			*Non-life insurers*				
	Current position (QIS2)	QIS2	Higher under QIS2	Current position (QIS2) (pre-BN169)	Current position (QIS2) (post-BN169)	QIS2	Higher under QIS2 (pre-BN169)	Higher under QIS2 (post-BN169)
Available capital	R 114	R 188	96%	R 22	R 23.7	R 29	74%	65%
Capital requirement	R 34	R 109	92%	R 11.2	R 12.3	R 19	100%	100%
Free surplus	R 80	R 79	79%	R 10.8	R 11.4	R 10	22%	26%
Capital coverage ratio	R 3.4	R 1.7	8%	R 2	R 1.9	R 1.5	9%	9%

Reinsurers	*Life reinsurers*			*Non-life reinsurers*				
	Current position (QIS2)	QIS2	Higher under QIS2	Current position (QIS2) (pre-BN169)	Current position (QIS2) (post-BN169)	QIS2	Higher under QIS2 (pre-BN169)	Higher under QIS2 (post-BN169)
Available capital	R 1.81	R 4.14	83%	R 2.32	R 2.28	R 3.01	80%	80%
Capital requirement	R 0.57	R 3.49	83%	R 0.58	R 0.86	R 1.59	100%	100%
Free surplus	R 1.23	R 0.66	50%	R 1.74	R 1.42	R 1.42	40%	60%
Capital coverage ratio	R 3.15	R 1.19	17%	R 4.02	R 2.64	R 1.90	0%	40%

Niche insurers	*Life insurers*			*Non-life insurers*				
	Current position (QIS2)	QIS2	Higher under QIS2	Current position (QIS2) (pre-BN169)	Current position (QIS2) (post-BN169)	QIS2	Higher under QIS2 (pre-BN169)	Higher under QIS2 (post-BN169)
Available capital	R 0.64	R 1.10	100%	R 11.5	R 11.7	R 13.1	70%	70%
Capital requirement	R 0.15	R 0.60	83%	R 1.72	R 2.35	R 8.09	100%	96%
Free surplus	R 0.48	R 0.50	67%	R 9.75	R 9.33	R 5.01	9%	17%
Capital coverage ratio	R 4.13	R 1.84	33%	R 6.67	R 4.97	R 1.62	9%	9%

Linked investment insurers	*Life insurers*		
	Current position (QIS2)	QIS2	Higher under QIS2
Available capital	R 5.07	R 5.10	33%
Capital requirement	R 0.97	R 2.03	27%
Free surplus	R 4.11	R 3.07	73%
Capital coverage ratio	R 5.26	R 2.51	73%

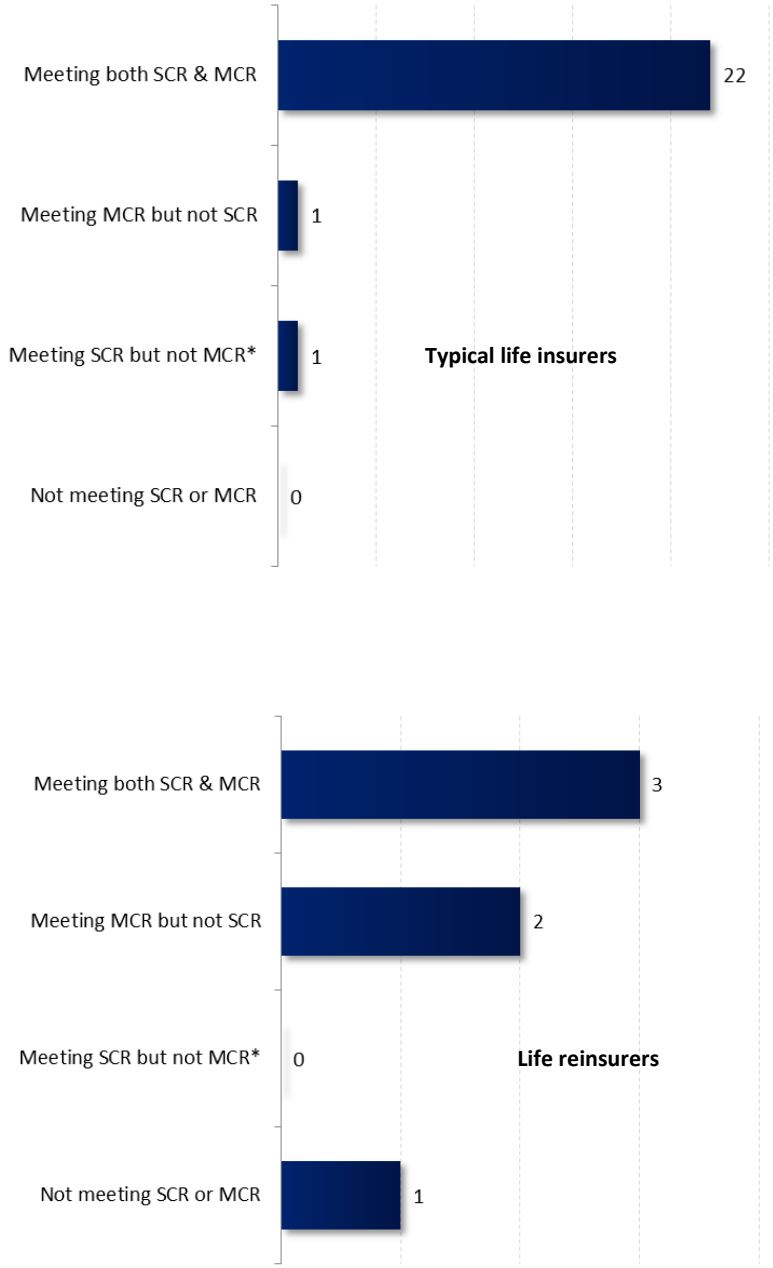
[24] Refer to tables 2.1 and 2.2 in the main body of the report.

Cell captive insurers	*Life insurers*			*Non-life insurers*				
	Current position (QIS2)	QIS2	Higher under QIS2	Current position (QIS2) (pre-BN169)	Current position (QIS2) (post-BN169)	QIS2	Higher under QIS2 (pre-BN169)	Higher under QIS2 (post-BN169)
Available capital	R 0.73	R 1.85	67%	R 4.79	R 4.40	R 4.75	33%	50%
Capital requirement	R 0.11	R 0.88	100%	R 1.80	R 2.29	R 4.00	100%	100%
Free surplus	R 0.62	R 0.97	67%	R 2.99	R 2.10	R 0.75	33%	33%
Capital coverage ratio	R 6.52	R 2.11	33%	R 2.66	R 1.92	R 1.19	33%	33%

Captive insurers	*Non-life insurers*				
	Current position (QIS2) (pre-BN169)	Current position (QIS2) (post-BN169)	QIS2	Higher under QIS2 (pre-BN169)	Higher under QIS2 (post-BN169)
Available capital	R 0.81	R 0.78	R 0.78	17%	33%
Capital requirement	R 0.09	R 0.11	R 0.57	100%	100%
Free surplus	R 0.72	R 0.67	R 0.21	0%	0%
Capital coverage ratio	R 8.90	R 7.09	R 1.37	0%	0%

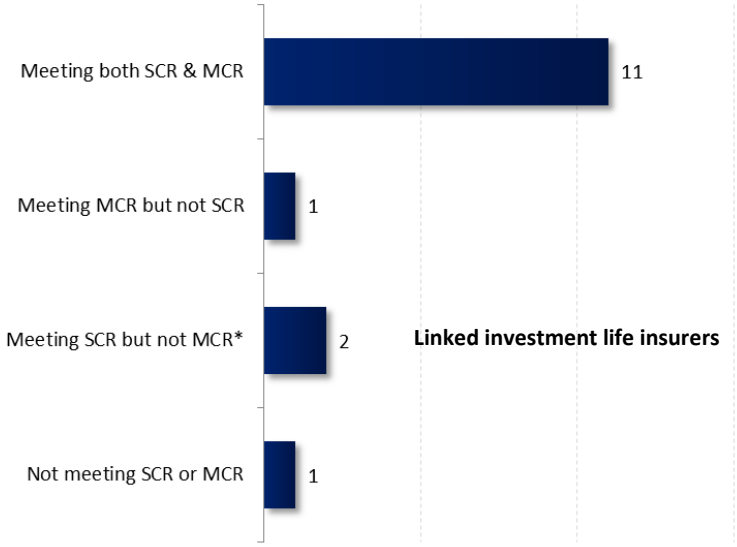
Assistance insurers	*Life insurers*		
	Current position (QIS2)	QIS2	Higher under QIS2
Available capital	R 0.21	R 0.33	100%
Capital requirement	R 0.07	R 0.28	100%
Free surplus	R 0.14	R 0.04	50%
Capital coverage ratio	R 2.90	R 1.16	0%

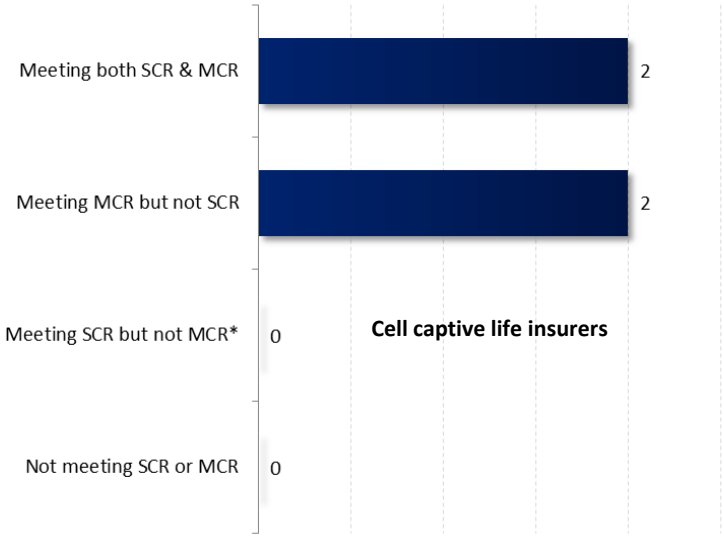
Figure A3.1: Life Insurers not meeting their SA QIS 2 capital requirements split by insurer category[25]



[25] Refer to figure 2.3 in the main body of this report.


Meeting both SCR & MCR
6
Meeting MCR but not SCR
0
Meeting SCR but not MCR*
0
Niche life insurers
Not meeting SCR or MCR
0


Meeting both SCR & MCR
11
Meeting MCR but not SCR
1
Meeting SCR but not MCR*
2
Linked investment life insurers
Not meeting SCR or MCR
1


Meeting both SCR & MCR
2
Meeting MCR but not SCR
2
Meeting SCR but not MCR*
0
Not meeting SCR or MCR
0
Cell captive life insurers

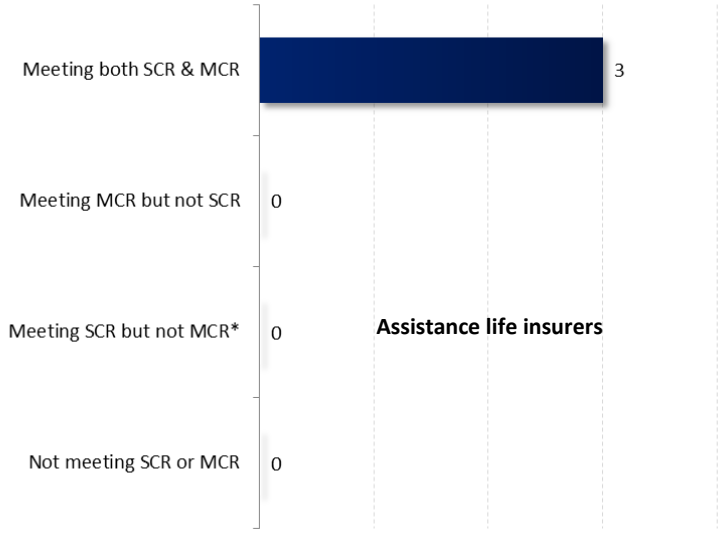
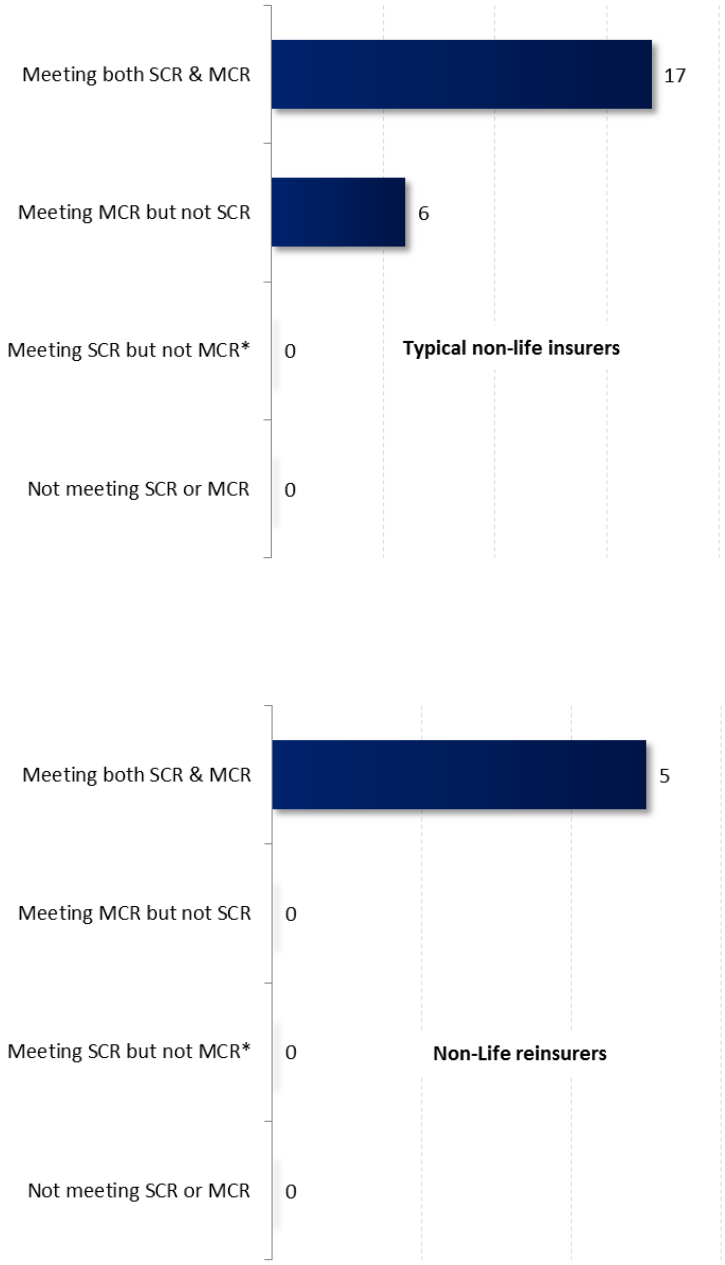
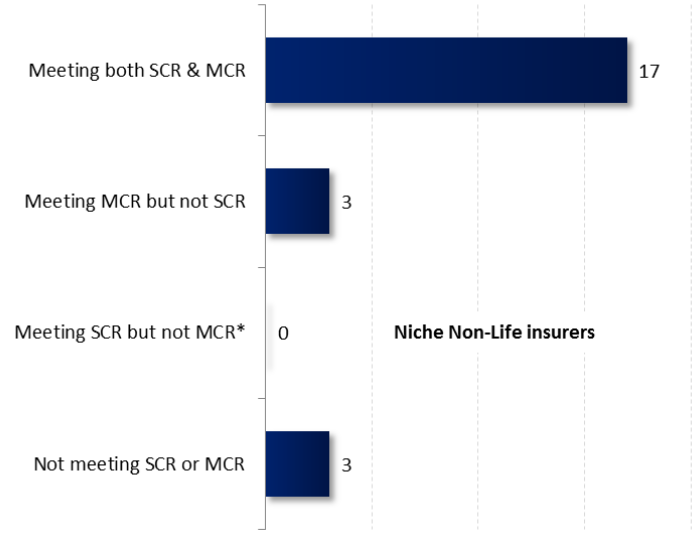
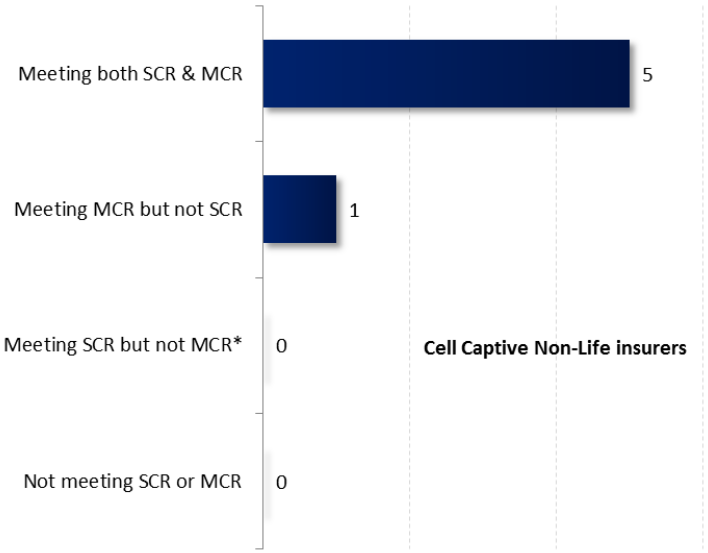

Meeting both SCR & MCR
3
Meeting MCR but not SCR
0
Meeting SCR but not MCR*
0
Not meeting SCR or MCR
0
Assistance life insurers

Figure A3.2: Non-Life Insurers not meeting their SA QIS2 capital requirements split by insurer category[26]



[26] Refer to figure 2.4 in the main body of this report.


Meeting both SCR & MCR
17
Meeting MCR but not SCR
3
Meeting SCR but not MCR*
0
Niche Non-Life insurers
Not meeting SCR or MCR
3


Meeting both SCR & MCR
5
Meeting MCR but not SCR
1
Meeting SCR but not MCR*
0
Cell Captive Non-Life insurers
Not meeting SCR or MCR
0

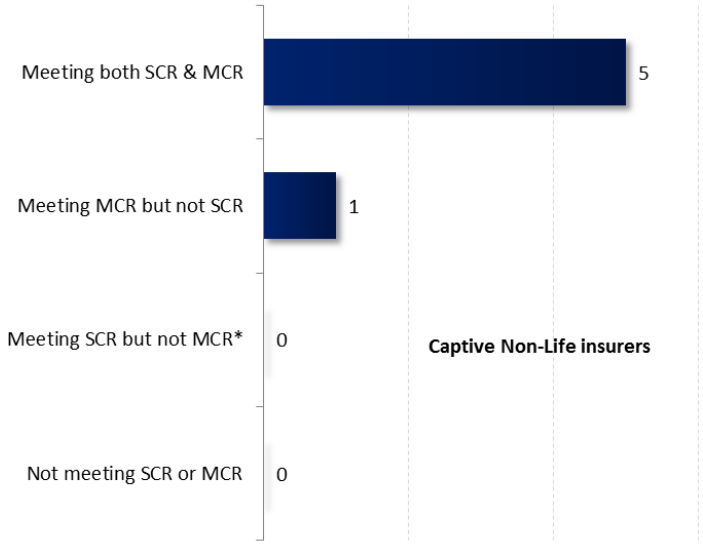

Meeting both SCR & MCR
5
Meeting MCR but not SCR
1
Meeting SCR but not MCR*
0
Not meeting SCR or MCR
0
Captive Non-Life insurers

Table A3.2: Estimated SAM implementation and on-going costs (R'm) split by insurer category[27]

Typical insurers	*Pillar 1*		*Pillar 2*		*Pillar 3*	
	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs
Life insurers	*465*	80	341	76	468	43
Non-life insurers	*116*	43	74	25	64	17
Total	*582*	123	414	100	532	60

Niche insurers	*Pillar 1*		*Pillar 2*		*Pillar 3*	
	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs
Life insurers	*10*	2	12	2	9	2
Non-life insurers	*64*	13	41	9	26	7
Total	*74*	15	52	11	35	9

Reinsurers	*Pillar 1*		*Pillar 2*		*Pillar 3*	
	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs
Life reinsurers	*4*	136	3	135	1	134
Non-life reinsurers	*6*	5	4	3	2	3
Total	*10*	141	7	138	3	137

Linked investment insurers	*Pillar 1*		*Pillar 2*		*Pillar 3*	
	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs
Life insurers	*8*	3	10	19	8	3

Cell captive insurers	*Pillar 1*		*Pillar 2*		*Pillar 3*	
	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs
Life insurers	*8*	7	6	1	12	2
Non-life insurers	*21*	15	6	3	6	7
Total	*29*	22	12	4	18	9

[27] Refer to table 3.2 in the main body of this report.

Captive insurers	*Pillar 1*		*Pillar 2*		*Pillar 3*	
	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs
Non-life insurers	*4*	2	7	1	6	2

Assistance insurers	*Pillar 1*		*Pillar 2*		*Pillar 3*	
	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs	Incremental implementation costs	Incremental annual on-going costs
Life insurers	*4*	1	2	3	2	1

Table A3.3: Self-reported level of preparedness for SAM of SA QIS2 participants (% of respondents)[28]

Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	*Typical life insurers*			
	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	46%	17%	29%	8%
SCR	17%	33%	42%	8%
MCR	67%	4%	21%	8%
Own funds	67%	13%	13%	8%

Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	*Typical non-life insurers*			
	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	39%	9%	43%	9%
SCR	35%	9%	57%	0%
MCR	70%	4%	26%	0%
Own funds	82%	5%	14%	0%

Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	*Life reinsurers*			
	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	50%	0%	50%	0%
SCR	0%	50%	50%	0%
MCR	75%	25%	0%	0%
Own funds	100%	0%	0%	0%

[28] Refer to table 3.4 in the main body of this report.

Non-life reinsurers

Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	75%	0%	25%	0%
SCR	25%	25%	50%	0%
MCR	75%	0%	25%	0%
Own funds	100%	0%	0%	0%

Niche life insurers

Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	50%	17%	33%	0%
SCR	0%	67%	33%	0%
MCR	33%	33%	33%	0%
Own funds	50%	17%	33%	0%

Niche non-life insurers

Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	26%	30%	43%	0%
SCR	26%	22%	52%	0%
MCR	78%	4%	17%	0%
Own funds	78%	9%	13%	0%

Linked investment life insurers

Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	47%	27%	20%	7%
SCR	27%	33%	33%	7%
MCR	73%	13%	7%	7%
Own funds	53%	40%	0%	7%

Cell captive life insurers

Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	33%	0%	67%	0%
SCR	33%	0%	67%	0%
MCR	33%	0%	67%	0%
Own funds	33%	0%	67%	0%

Cell captive non-life insurers

Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	33%	17%	50%	0%
SCR	17%	0%	83%	0%
MCR	67%	0%	33%	0%
Own funds	67%	0%	33%	0%

Captive non-life insurers				
Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	17%	33%	50%	0%
SCR	17%	17%	50%	17%
MCR	83%	17%	0%	0%
Own funds	50%	17%	33%	0%

Assistance life insurers				
Please describe and assess your company's overall preparedness for Pillar I of SAM with regard to the calculation of :	Fully prepared, all data available and no problems with methodologies.	No problems with data, but problems with methodologies.	No problems with methodologies, but problems with data.	Do not feel prepared at all.
Technical provisions	50%	25%	0%	25%
SCR	50%	0%	25%	25%
MCR	75%	0%	25%	0%
Own funds	100%	0%	0%	0%

Table A3.4: Self-reported reliability of results in SA QIS2 submissions (number of respondents)[29]

	Typical life insurers			
	Poor	Fair	Good	Excellent
Technical provisions	0	3	13	8
Best estimate	0	3	13	8
Risk margin	1	5	13	5
Valuation of assets and liabilities other than tech. prov.	0	3	13	8
User specific parameters	0	0	3	4
SCR standard formula market risk	0	4	15	5
SCR standard formula counterparty default risk	1	3	6	5
SCR standard formula life underwriting risk	1	4	3	3
SCR standard formula health underwriting risk	2	3	14	5
SCR standard formula non-life underwriting risk	0	3	9	12
SCR standard formula overall	0	1	11	12
MCR	0	3	14	7
Own funds	0	3	13	8

[29] Refer to table 3.5 in the main body of this report.

	Typical non-life insurers			
	Poor	Fair	Good	Excellent
Technical provisions	2	4	11	5
Best estimate	2	3	13	4
Risk margin	2	6	12	2
Valuation of assets and liabilities other than tech. prov.	0	1	11	10
User specific parameters	1	0	3	2
SCR standard formula market risk	1	4	10	7
SCR standard formula counterparty default risk	0	2	5	3
SCR standard formula life underwriting risk	0	6	8	3
SCR standard formula health underwriting risk	0	4	14	4
SCR standard formula non-life underwriting risk	0	2	8	12
SCR standard formula overall	0	2	6	13
MCR	3	1	14	4
Own funds	3	1	14	4

	Life reinsurers			
	Poor	Fair	Good	Excellent
Technical provisions	0	1	2	1
Best estimate	0	1	2	1
Risk margin	0	3	0	1
Valuation of assets and liabilities other than tech. prov.	0	0	2	2
User specific parameters	0	0	0	1
SCR standard formula market risk	0	0	2	2
SCR standard formula counterparty default risk	1	2	0	1
SCR standard formula life underwriting risk	0	1	0	0
SCR standard formula health underwriting risk	1	2	0	1
SCR standard formula non-life underwriting risk	0	1	1	1
SCR standard formula overall	0	0	3	1
MCR	0	0	3	1
Own funds	0	0	3	1

	Non-life reinsurers			
	Poor	Fair	Good	Excellent
Technical provisions	0	0	2	2
Best estimate	0	0	2	2
Risk margin	1	0	3	0
Valuation of assets and liabilities other than tech. prov.	0	0	1	2
User specific parameters	0	1	0	0
SCR standard formula market risk	0	0	1	2
SCR standard formula counterparty default risk	0	0	2	0
SCR standard formula life underwriting risk	0	1	1	0
SCR standard formula health underwriting risk	0	0	3	0
SCR standard formula non-life underwriting risk	0	0	1	2
SCR standard formula overall	0	0	2	1
MCR	0	0	2	2
Own funds	0	0	2	2

	Niche life insurers			
	Poor	Fair	Good	Excellent
Technical provisions	0	0	3	3
Best estimate	0	0	4	2
Risk margin	0	2	3	0
Valuation of assets and liabilities other than tech. prov.	0	1	3	2
User specific parameters	0	1	1	0
SCR standard formula market risk	0	0	4	1
SCR standard formula counterparty default risk	0	0	1	2
SCR standard formula life underwriting risk	0	0	2	2
SCR standard formula health underwriting risk	0	1	4	0
SCR standard formula non-life underwriting risk	0	0	4	2
SCR standard formula overall	0	0	5	1
MCR	0	0	3	3
Own funds	0	0	4	2

	Niche non-life insurers			
	Poor	Fair	Good	Excellent
Technical provisions	0	4	16	3
Best estimate	0	4	15	4
Risk margin	0	4	15	4
Valuation of assets and liabilities other than tech. prov.	0	0	10	13
User specific parameters	0	0	4	3
SCR standard formula market risk	0	5	14	4
SCR standard formula counterparty default risk	0	0	7	6
SCR standard formula life underwriting risk	0	4	6	3
SCR standard formula health underwriting risk	0	2	19	2
SCR standard formula non-life underwriting risk	0	0	8	15
SCR standard formula overall	0	1	6	16
MCR	1	3	12	7
Own funds	1	3	12	7

	Linked investment life insurers			
	Poor	Fair	Good	Excellent
Technical provisions	0	2	10	3
Best estimate	0	1	11	3
Risk margin	0	4	8	2
Valuation of assets and liabilities other than tech. prov.	0	1	8	6
User specific parameters	0	0	4	1
SCR standard formula market risk	0	4	9	2
SCR standard formula counterparty default risk	0	1	4	2
SCR standard formula life underwriting risk	0	3	3	2
SCR standard formula health underwriting risk	0	1	12	2
SCR standard formula non-life underwriting risk	0	1	7	7
SCR standard formula overall	0	2	3	10
MCR	0	1	11	3
Own funds	0	1	11	3

	Cell captive life insurers			
	Poor	Fair	Good	Excellent
Technical provisions	0	1	1	1
Best estimate	0	0	2	1
Risk margin	0	2	0	1
Valuation of assets and liabilities other than tech. prov.	0	0	1	1
User specific parameters	0	0	1	0
SCR standard formula market risk	0	1	2	0
SCR standard formula counterparty default risk	0	0	1	1
SCR standard formula life underwriting risk	0	0	1	0
SCR standard formula health underwriting risk	0	0	2	1
SCR standard formula non-life underwriting risk	0	1	1	1
SCR standard formula overall	0	0	0	2
MCR	0	1	1	1
Own funds	0	0	2	1

	Cell captive non-life insurers			
	Poor	Fair	Good	Excellent
Technical provisions	0	1	3	1
Best estimate	0	1	2	2
Risk margin	0	0	4	1
Valuation of assets and liabilities other than tech. prov.	0	0	1	4
User specific parameters	0	0	1	0
SCR standard formula market risk	0	0	5	0
SCR standard formula counterparty default risk	0	0	1	3
SCR standard formula life underwriting risk	0	0	0	1
SCR standard formula health underwriting risk	0	0	3	2
SCR standard formula non-life underwriting risk	0	0	1	4
SCR standard formula overall	0	0	1	4
MCR	0	0	3	2
Own funds	0	0	2	3

	Captive non-life insurers			
	Poor	Fair	Good	Excellent
Technical provisions	0	1	5	0
Best estimate	0	1	5	0
Risk margin	2	1	3	0
Valuation of assets and liabilities other than tech. prov.	0	0	5	1
User specific parameters	1	0	1	0
SCR standard formula market risk	1	1	3	1
SCR standard formula counterparty default risk	0	0	1	0
SCR standard formula life underwriting risk	1	1	3	0
SCR standard formula health underwriting risk	1	1	4	0
SCR standard formula non-life underwriting risk	1	0	3	2
SCR standard formula overall	0	0	5	1
MCR	0	2	3	1
Own funds	0	1	4	1

	Assistance life insurers			
	Poor	Fair	Good	Excellent
Technical provisions	0	1	1	2
Best estimate	0	1	2	1
Risk margin	0	1	3	0
Valuation of assets and liabilities other than tech. prov.	0	0	2	2
User specific parameters	0	0	0	0
SCR standard formula market risk	0	1	2	1
SCR standard formula counterparty default risk	0	1	1	1
SCR standard formula life underwriting risk	0	0	2	1
SCR standard formula health underwriting risk	1	1	2	0
SCR standard formula non-life underwriting risk	0	1	1	2
SCR standard formula overall	0	0	0	4
MCR	0	1	2	1
Own funds	0	1	2	1

Table A3.5: Number of insurers using the various approaches to calculate the risk margin[30]

Risk margin methodology	Typical life insurers
SCR approximation	12
% BE	1
Risks approximation	9
Duration approach	1
Full calculation	1
Other	1

Risk margin methodology	Typical non-life insurers
SCR approximation	16
% BE	0
Risks approximation	2
Duration approach	0
Full calculation	1
Other	0

Risk margin methodology	Life reinsurers
SCR approximation	4
% BE	1
Risks approximation	1
Duration approach	0
Full calculation	0
Other	0

[30] Refer to table 4.1 in the main body of this report.

Risk margin methodology	Non-life reinsurers
SCR approximation	3
% BE	1
Risks approximation	0
Duration approach	0
Full calculation	0
Other	1

Risk margin methodology	Niche life insurers
SCR approximation	4
% BE	0
Risks approximation	1
Duration approach	1
Full calculation	0
Other	0

Risk margin methodology	Niche non-life insurers
SCR approximation	10
% BE	13
Risks approximation	0
Duration approach	0
Full calculation	0
Other	0

Risk margin methodology	Life linked investment insurers
SCR approximation	4
% BE	1
Risks approximation	1
Duration approach	1
Full calculation	1
Other	0

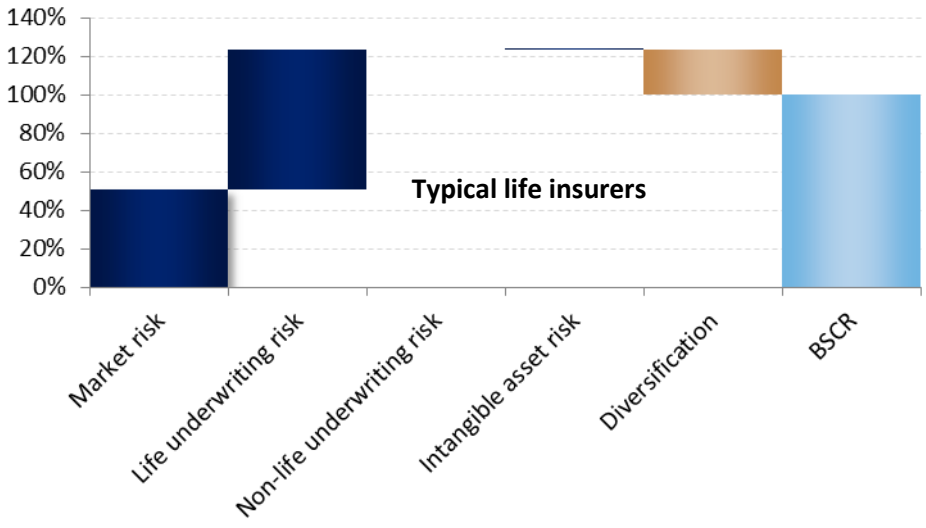
Risk margin methodology	Cell captive life Insurers
SCR approximation	2
% BE	1
Risks approximation	1
Duration approach	0
Full calculation	0
Other	0

Risk margin methodology	Cell Captive non-life Insurers
SCR approximation	3
% BE	3
Risks approximation	0
Duration approach	0
Full calculation	0
Other	0

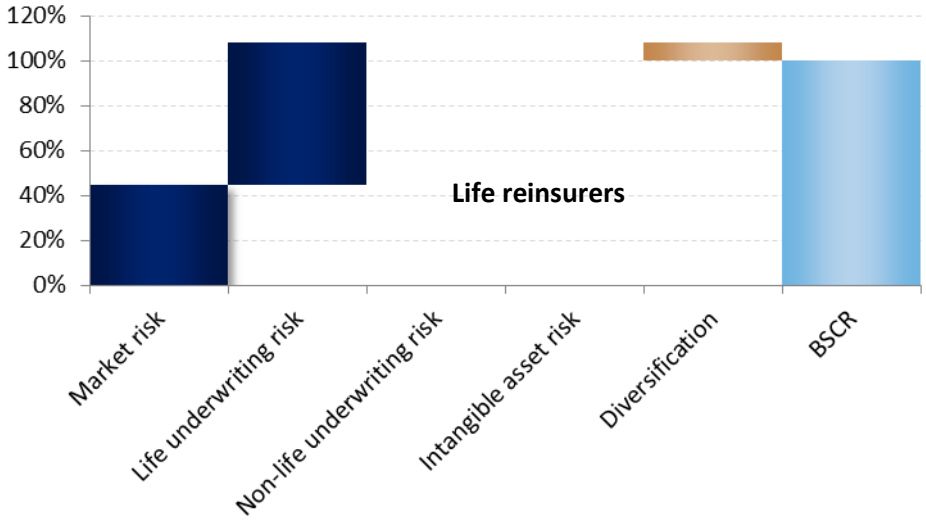
Risk margin methodology	Captive non-life insurers
SCR approximation	0
% BE	6
Risks approximation	0
Duration approach	0
Full calculation	0
Other	0

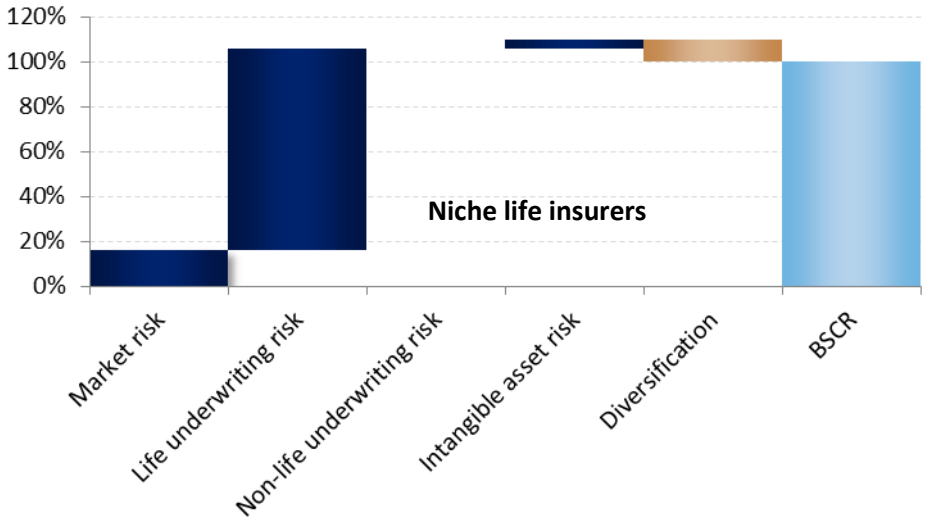
Risk Margin Methodology	Assistance life insurers
SCR approximation	2
% BE	0
Risks approximation	1
Duration approach	1
Full calculation	0
Other	0

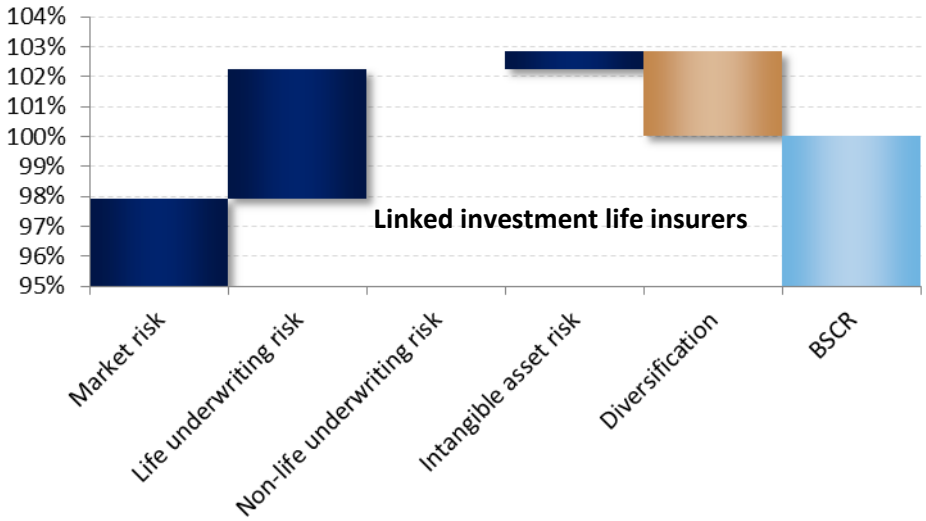
Figure A3.3: Contribution of risk components to BSCR (%) – life insurers[31]

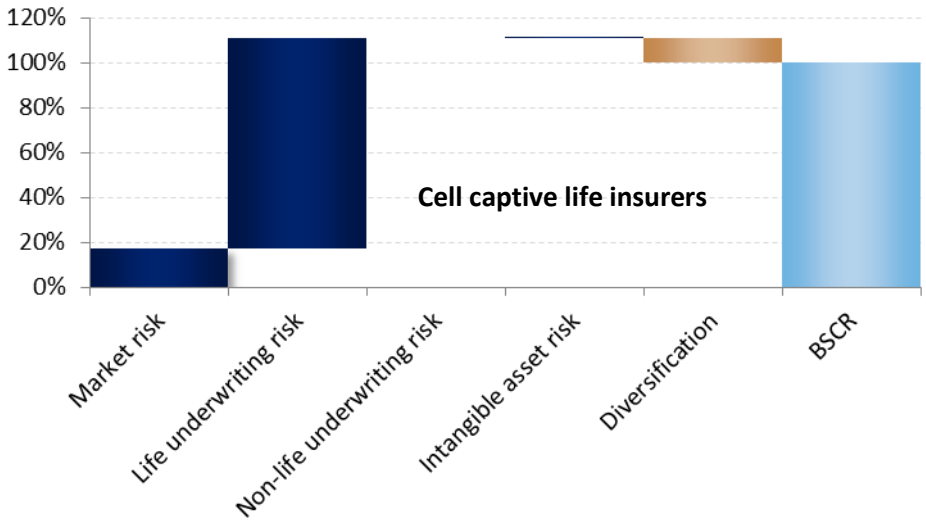


[31] Refer to figure 6.4 in the main body of this report.


120%
100%
80%
60%
40%
20%
0%
Life reinsurers
Market risk
Life underwriting risk
Non-life underwriting risk
Intangible asset risk
Diversification
BSCR


120%
100%
80%
60%
40%
20%
0%
Niche life insurers
Market risk
Life underwriting risk
Non-life underwriting risk
Intangible asset risk
Diversification
BSCR


104%
103%
102%
101%
100%
99%
98%
97%
96%
95%
Linked investment life insurers
Market risk
Life underwriting risk
Non-life underwriting risk
Intangible asset risk
Diversification
BSCR


120%
100%
80%
60%
40%
20%
0%
Cell captive life insurers
Market risk
Life underwriting risk
Non-life underwriting risk
Intangible asset risk
Diversification
BSCR

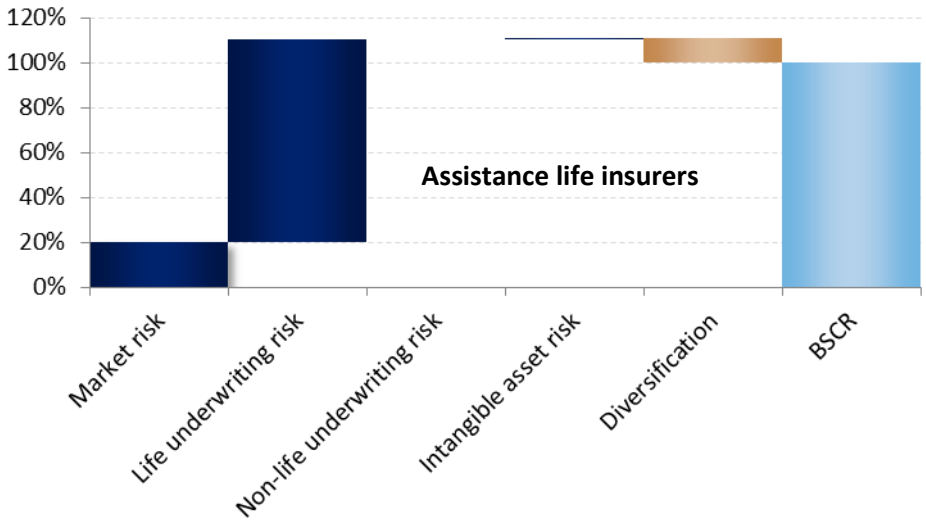
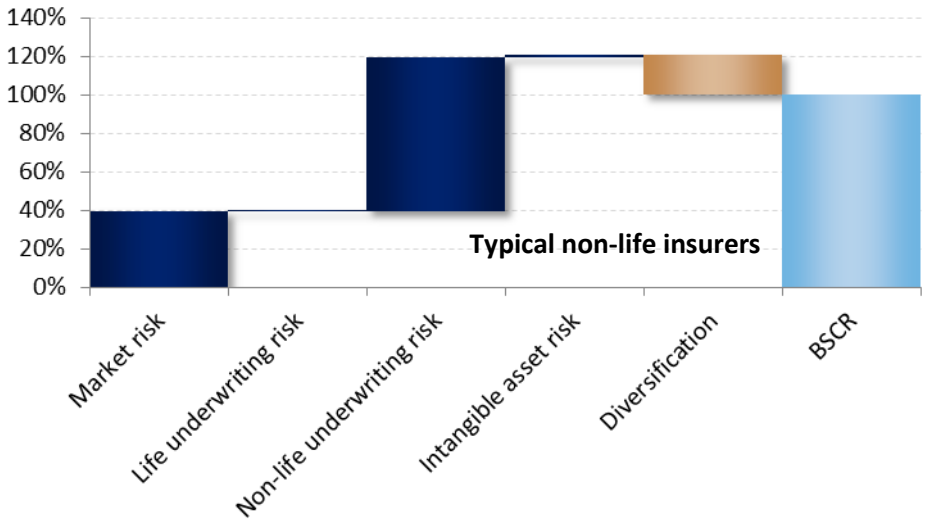
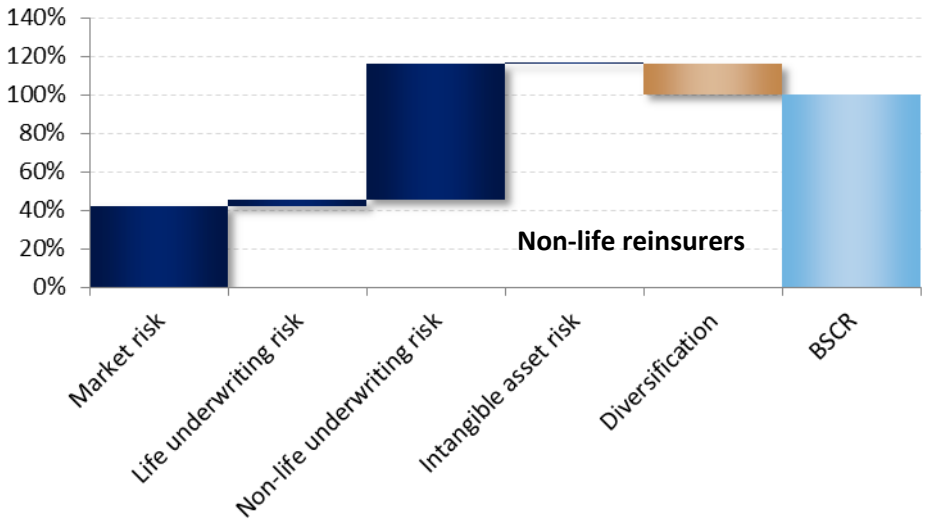
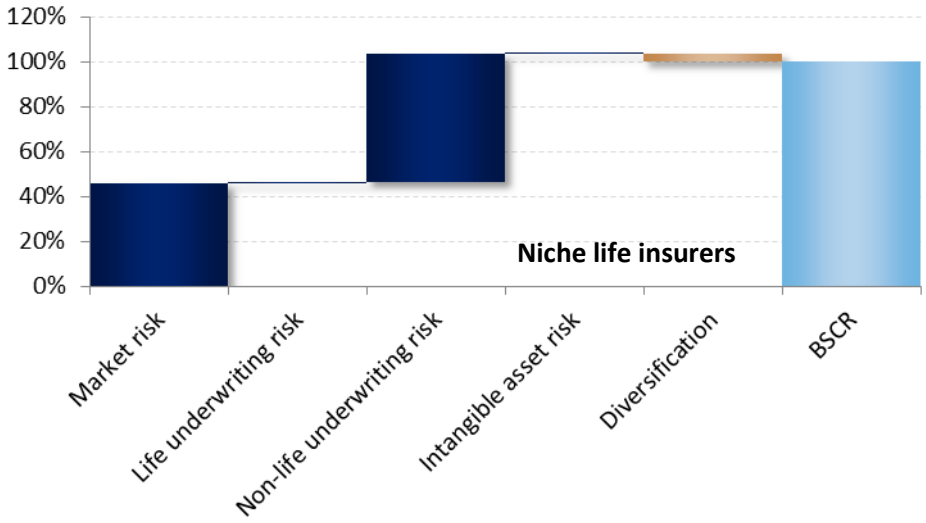

120%
100%
80%
60%
40%
20%
0%
Assistance life insurers
Market risk
Life underwriting risk
Non-life underwriting risk
Intangible asset risk
Diversification
BSCR

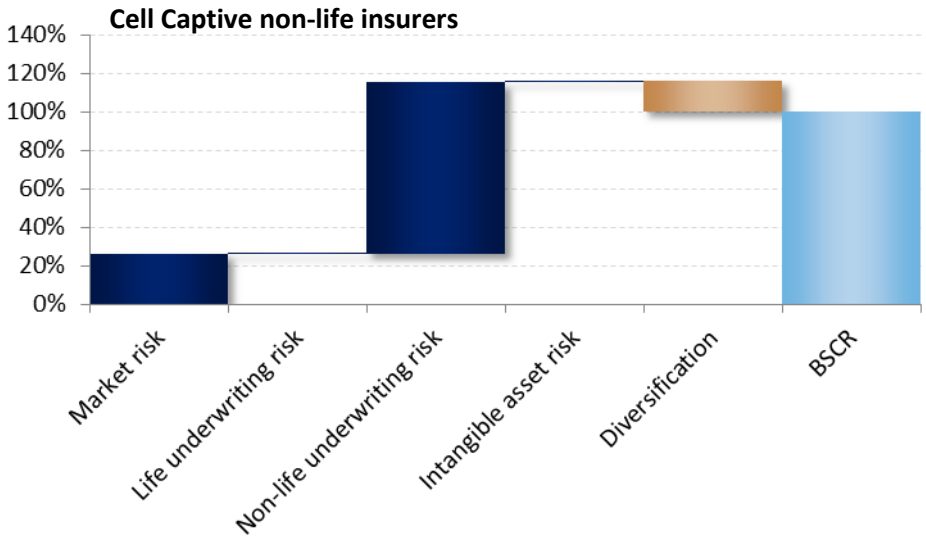
Figure A3.4: Contribution of risk components to BSCR (%) – non-life insurers[32]



[32] Refer to figure 6.6 in the main body of this report.


140%
120%
100%
80%
60%
40%
20%
0%
Non-life reinsurers
Market risk
Life underwriting risk
Non-life underwriting risk
Intangible asset risk
Diversification
BSCR


120%
100%
80%
60%
40%
20%
0%
Niche life insurers
Market risk
Life underwriting risk
Non-life underwriting risk
Intangible asset risk
Diversification
BSCR


Cell Captive non-life insurers
140%
120%
100%
80%
60%
40%
20%
0%
Market risk
Life underwriting risk
Non-life underwriting risk
Intangible asset risk
Diversification
BSCR

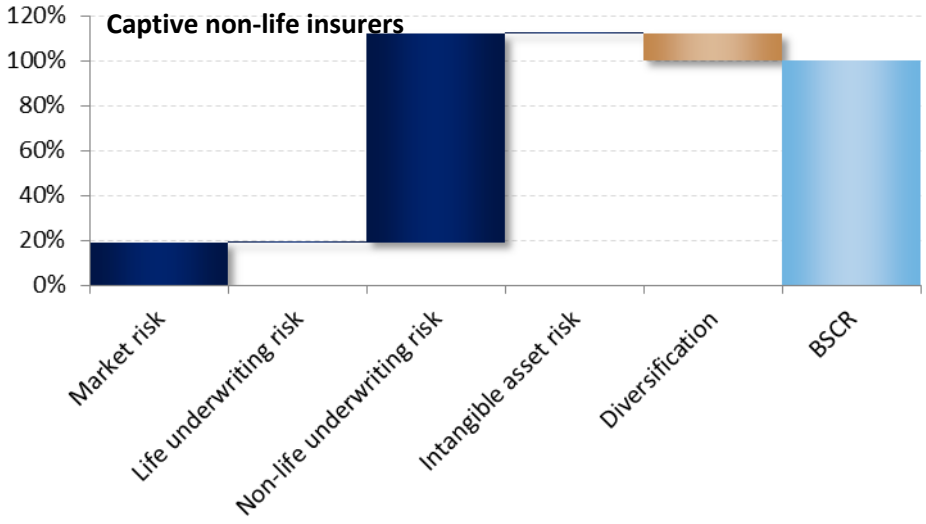
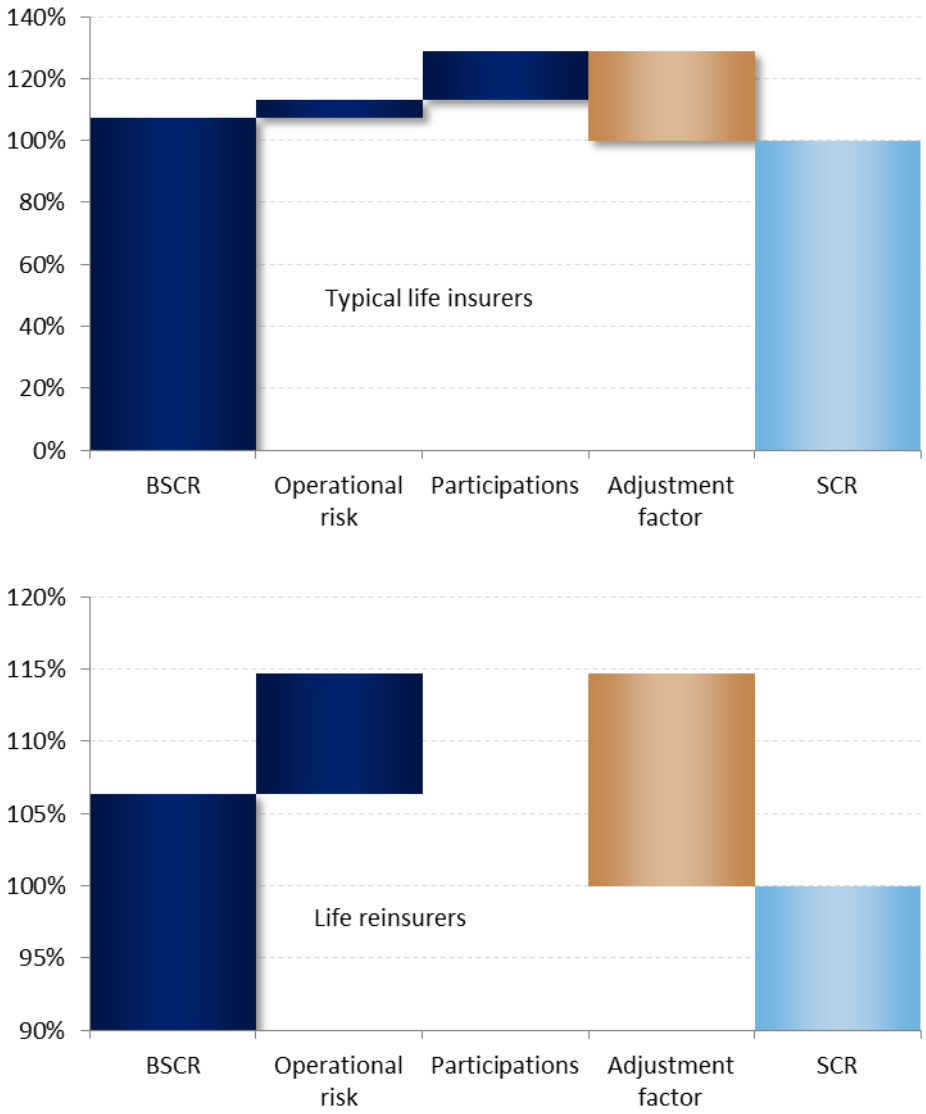
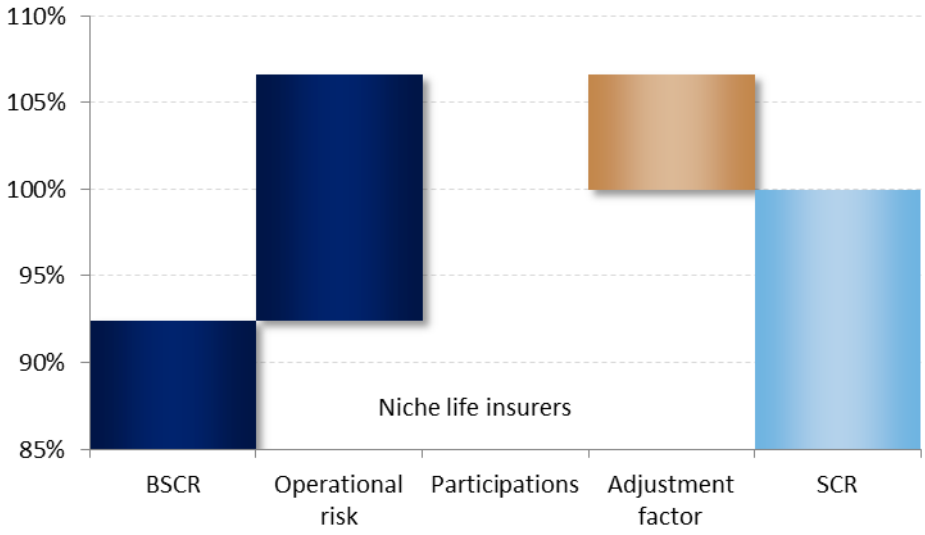
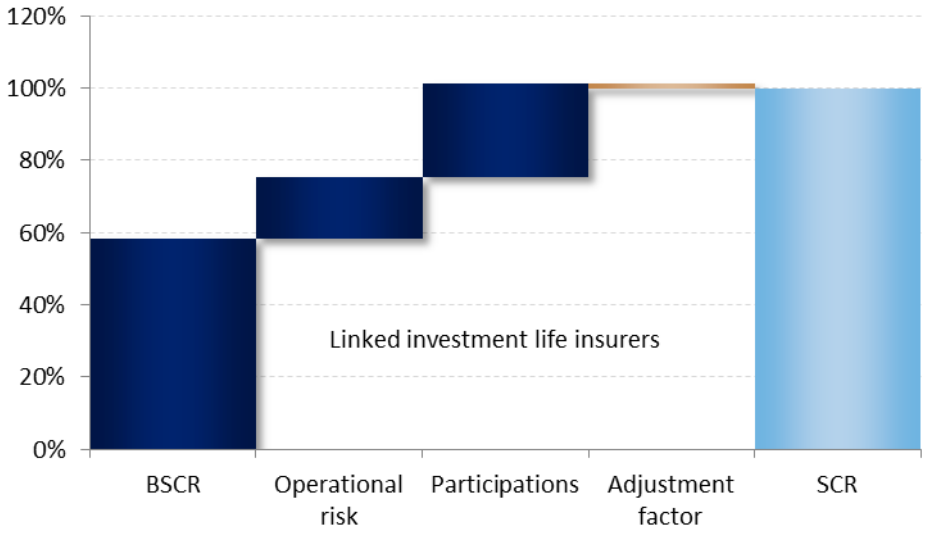

Captive non-life insurers
120%
100%
80%
60%
40%
20%
0%
Market risk
Life underwriting risk
Non-life underwriting risk
Intangible asset risk
Diversification
BSCR

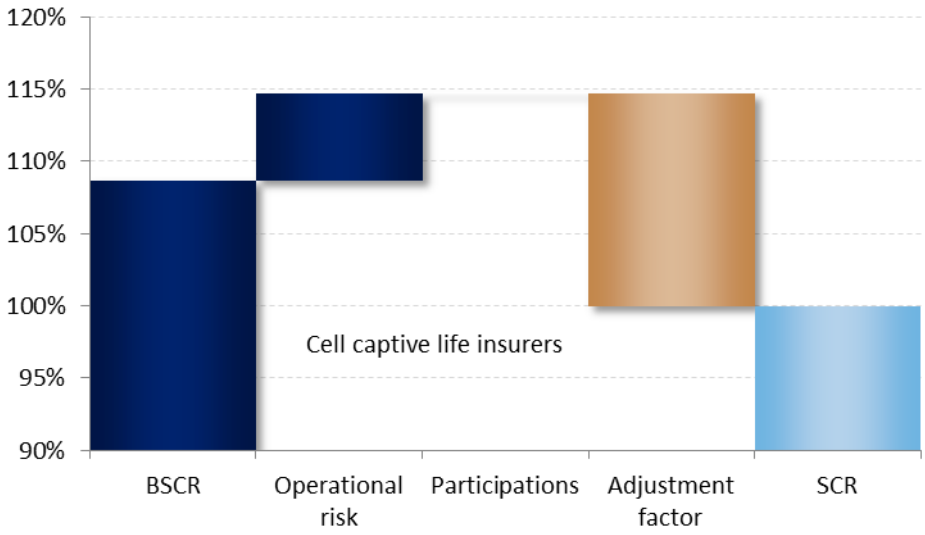
Figure A3.5: Movement from the BSCR to the total SCR for life Insurers[33]



[33] Refer to figure 6.5 in the main body of this report.


110%
105%
100%
95%
90%
85%
Niche life insurers
BSCR
Operational risk
Participations
Adjustment factor
SCR


120%
100%
80%
60%
40%
20%
0%
Linked investment life insurers
BSCR
Operational risk
Participations
Adjustment factor
SCR


120%
115%
110%
105%
100%
95%
90%
Cell captive life insurers
BSCR
Operational risk
Participations
Adjustment factor
SCR

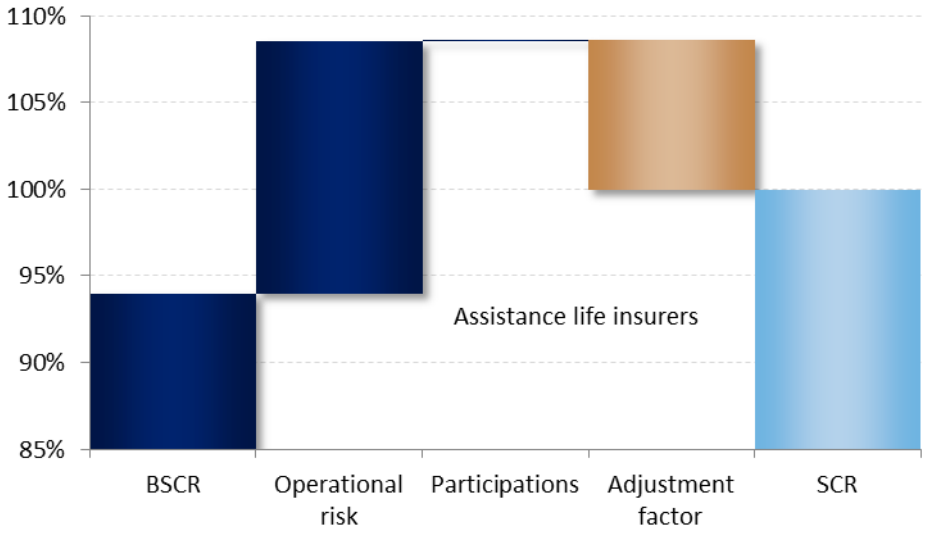
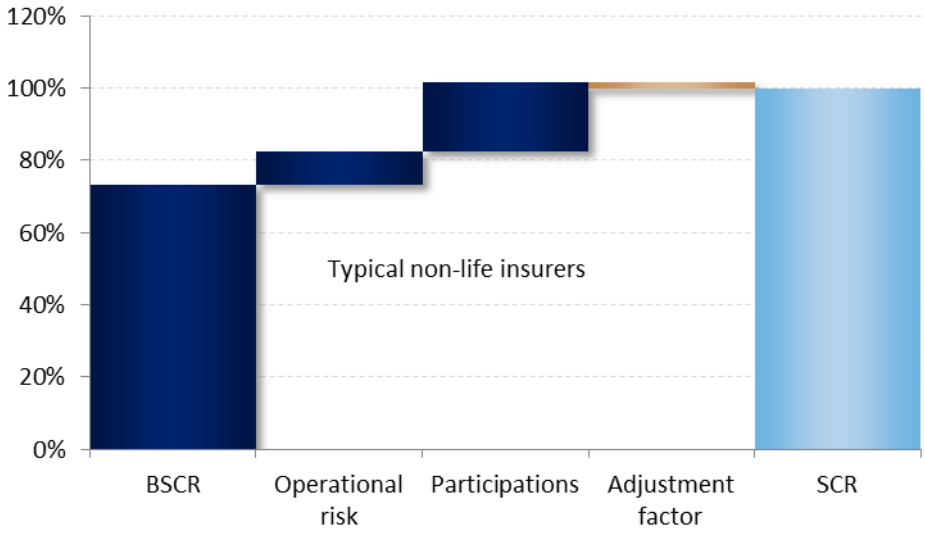
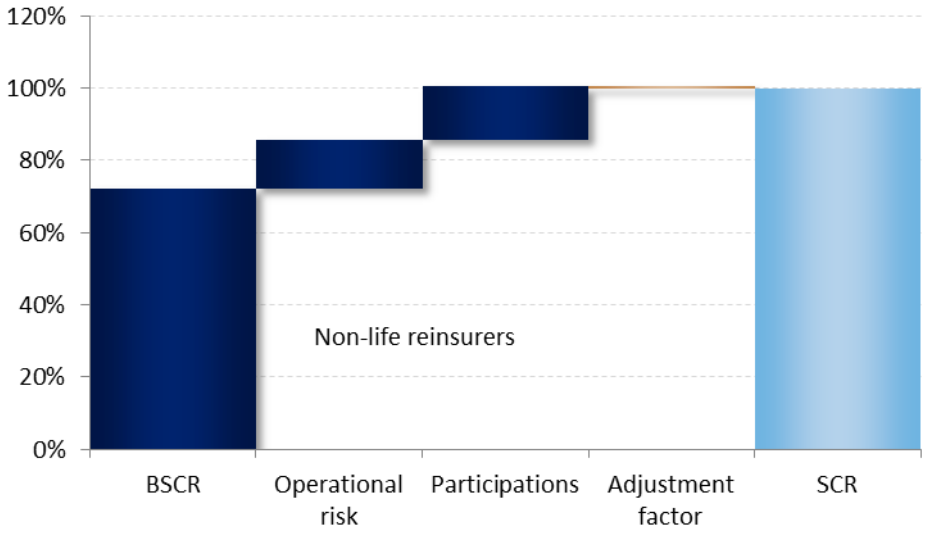
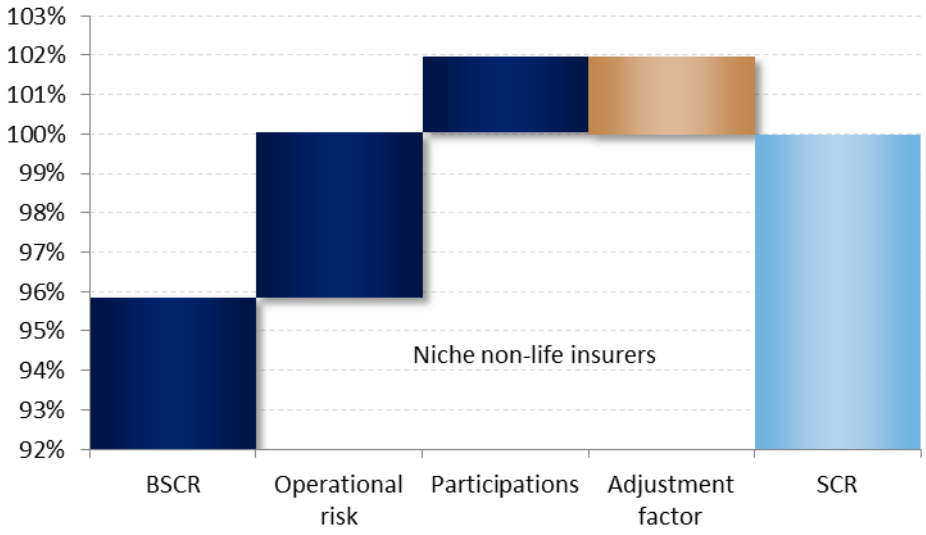


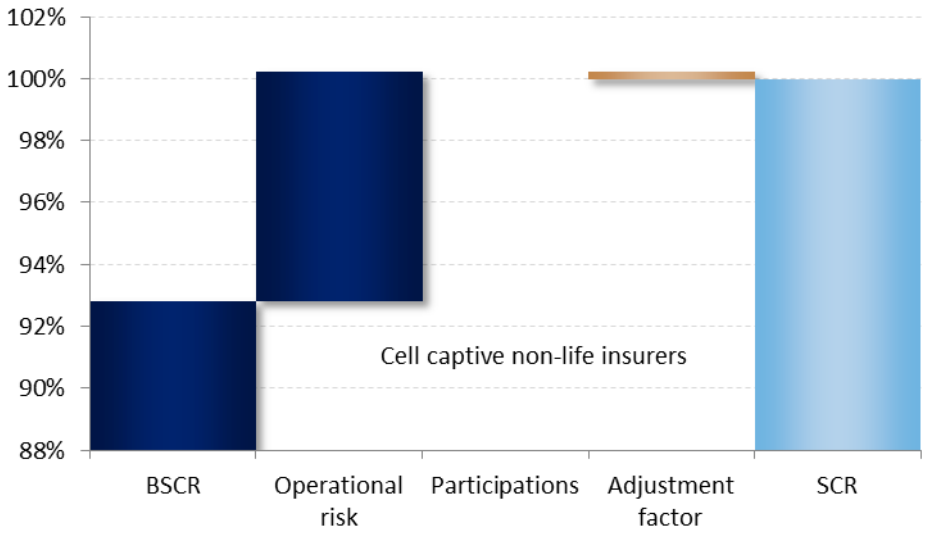
Figure A3.6: Movement from the BSCR to the total SCR for non-life Insurers[34]



[34] Refer to figure 6.7 in the main body of this report.


120%
100%
80%
60%
40%
20%
0%
Non-life reinsurers
BSCR
Operational risk
Participations
Adjustment factor
SCR


103%
102%
101%
100%
99%
98%
97%
96%
95%
94%
93%
92%
Niche non-life insurers
BSCR
Operational risk
Participations
Adjustment factor
SCR


102%
100%
98%
96%
94%
92%
90%
88%
Cell captive non-life insurers
BSCR
Operational risk
Participations
Adjustment factor
SCR

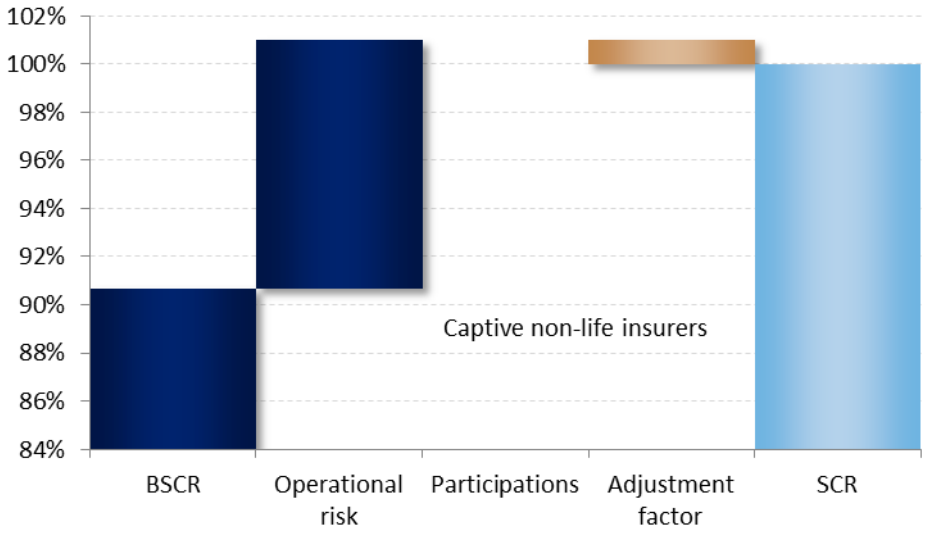
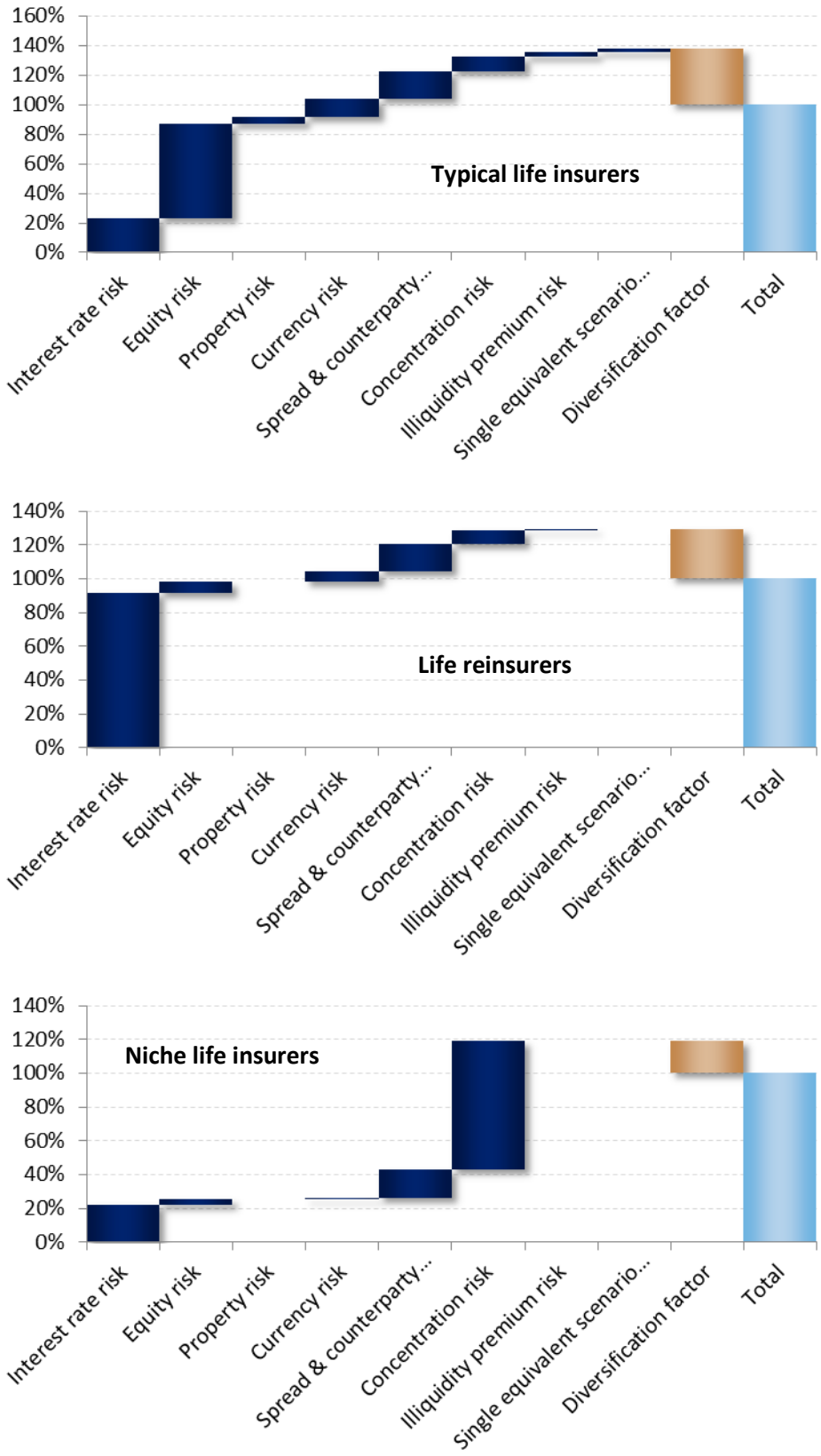
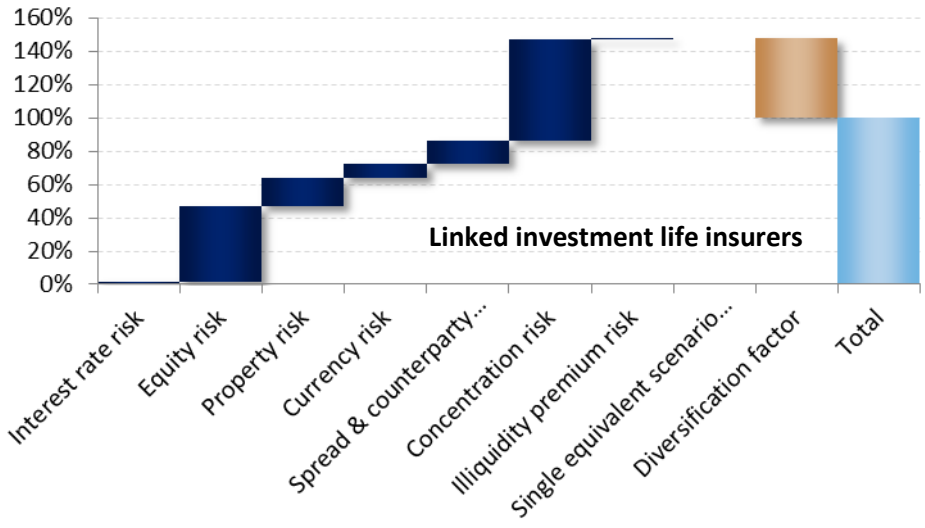
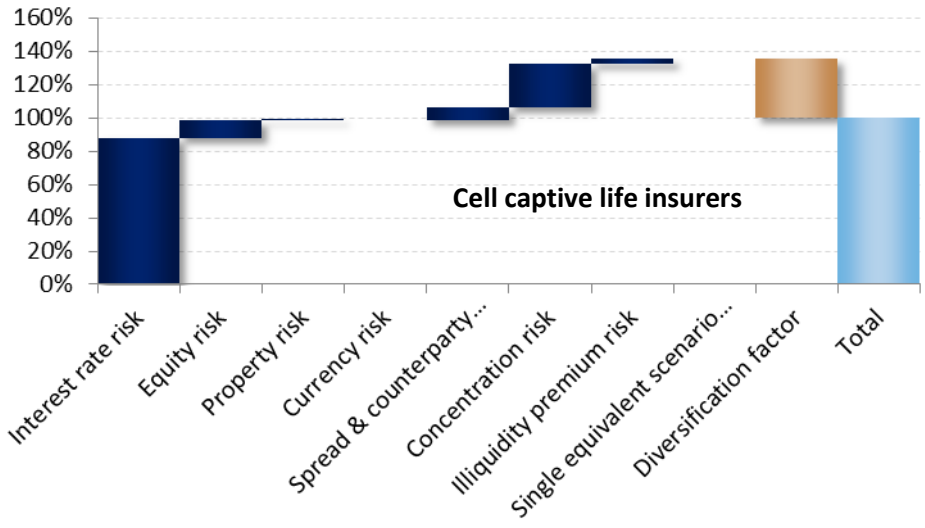

102%
100%
98%
96%
94%
92%
90%
88%
86%
84%
Captive non-life insurers
BSCR
Operational risk
Participations
Adjustment factor
SCR

Figure A3.7: Market risk components for life insurers split by insurer category[35]



[35] Refer to figure 6.9 in the main body of this report.


160%
140%
120%
100%
80%
60%
40%
20%
0%
Linked investment life insurers
Interest rate risk
Equity risk
Property risk
Currency risk
Spread & counterparty...
Concentration risk
Illiquidity premium risk
Single equivalent scenario...
Diversification factor
Total


160%
140%
120%
100%
80%
60%
40%
20%
0%
Cell captive life insurers
Interest rate risk
Equity risk
Property risk
Currency risk
Spread & counterparty...
Concentration risk
Illiquidity premium risk
Single equivalent scenario...
Diversification factor
Total

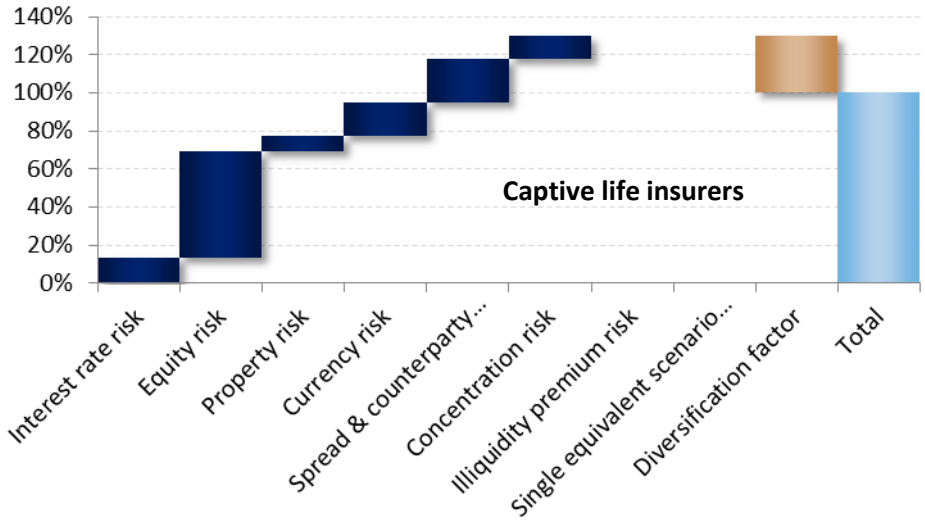
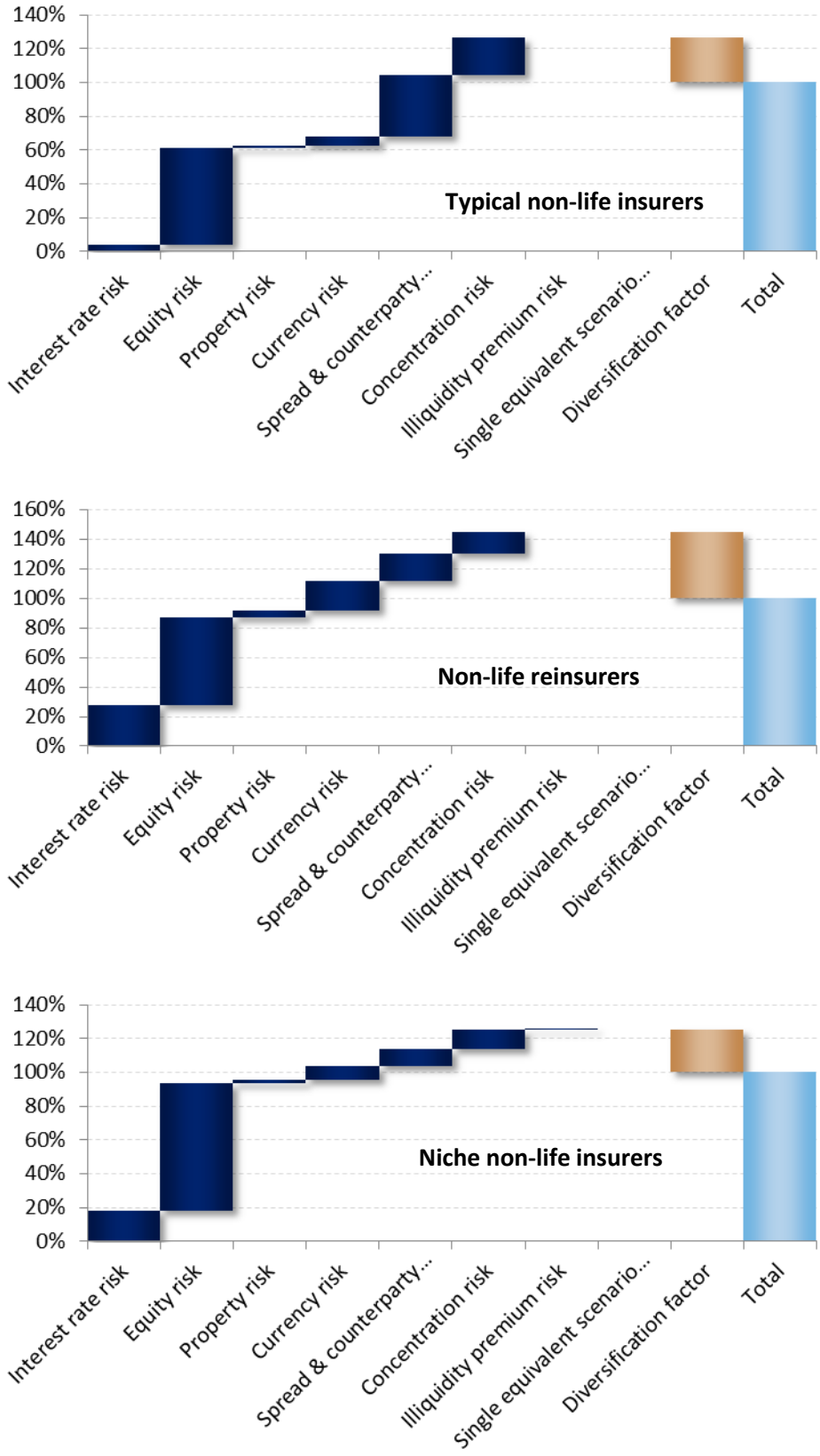
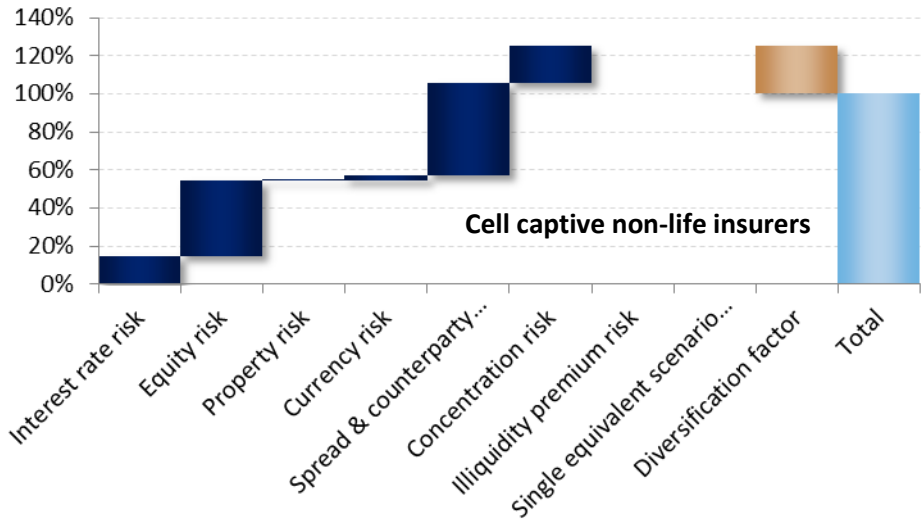

140%
120%
100%
80%
60%
40%
20%
0%
Captive life insurers
Interest rate risk
Equity risk
Property risk
Currency risk
Spread & counterparty...
Concentration risk
Illiquidity premium risk
Single equivalent scenario...
Diversification factor
Total

Figure A3.8: Market risk components for non-life insurers split by insurer category[36]



[36] Refer to figure 6.10 in the main body of this report.


140%
120%
100%
80%
60%
40%
20%
0%
Cell captive non-life insurers
Interest rate risk
Equity risk
Property risk
Currency risk
Spread & counterparty...
Concentration risk
Illiquidity premium risk
Single equivalent scenario...
Diversification factor
Total

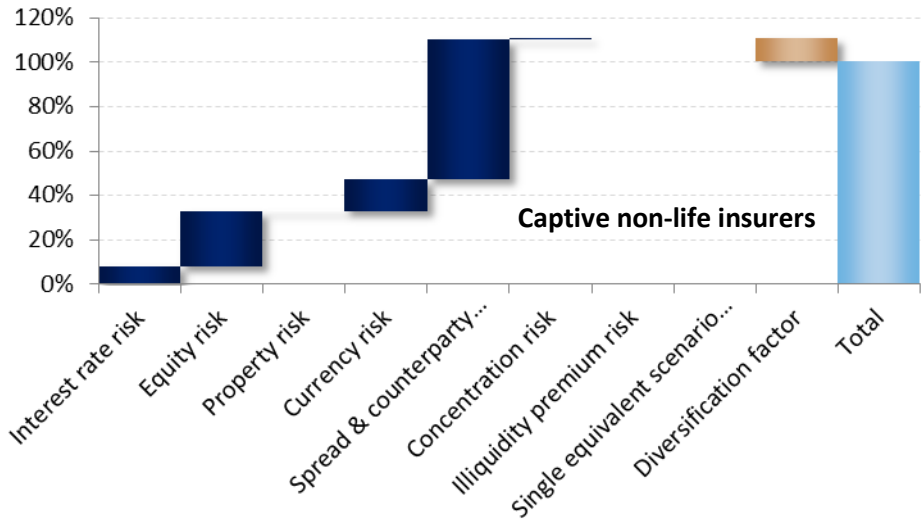
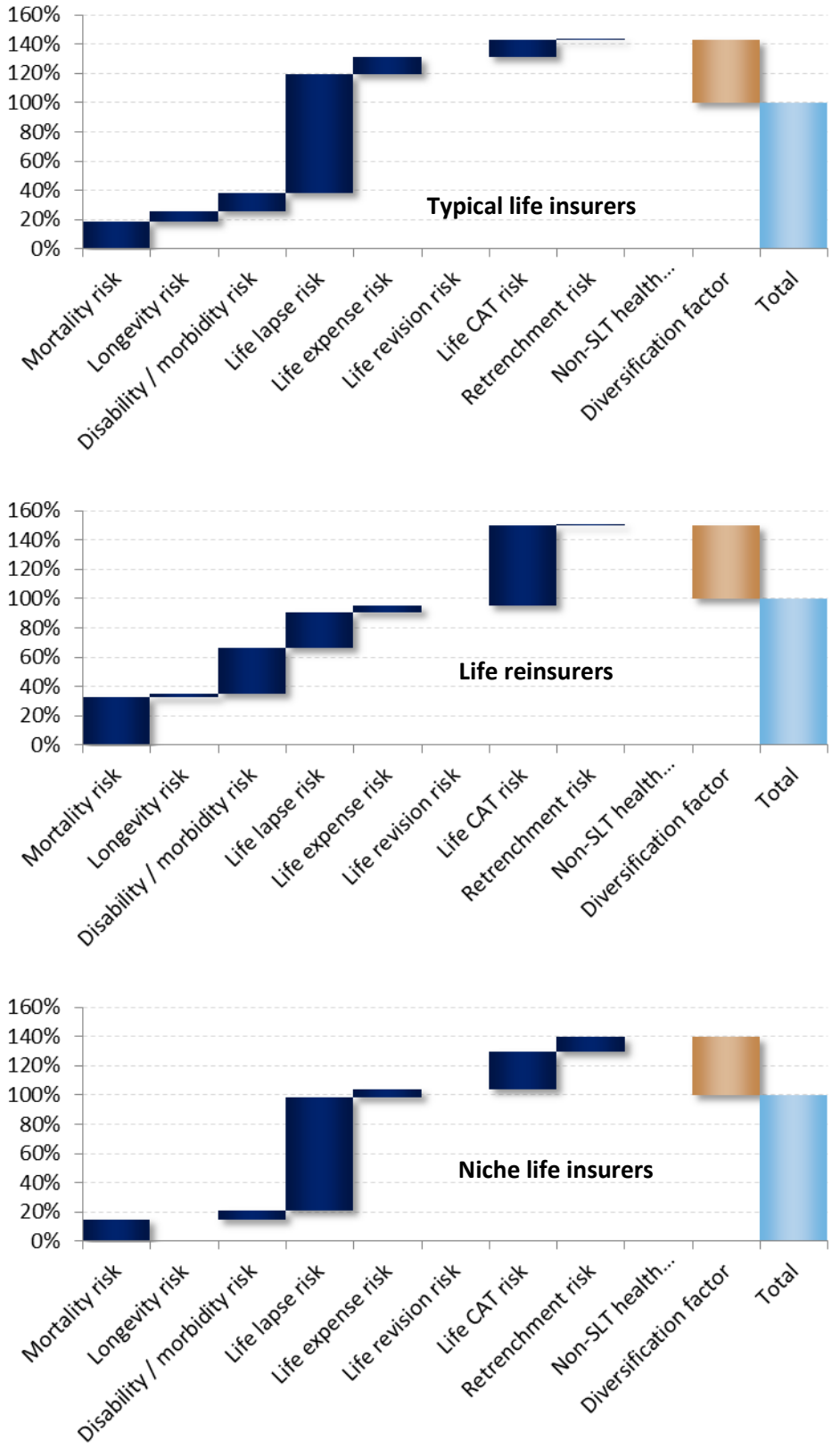
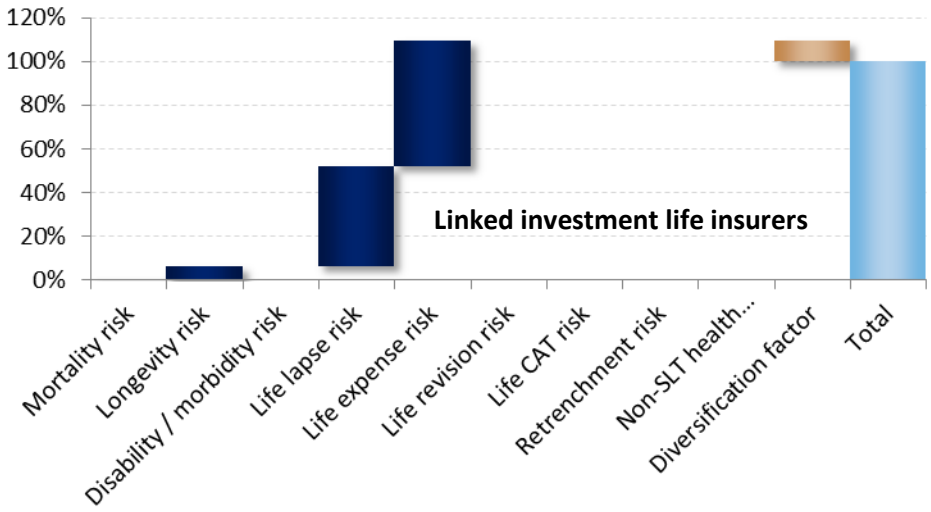
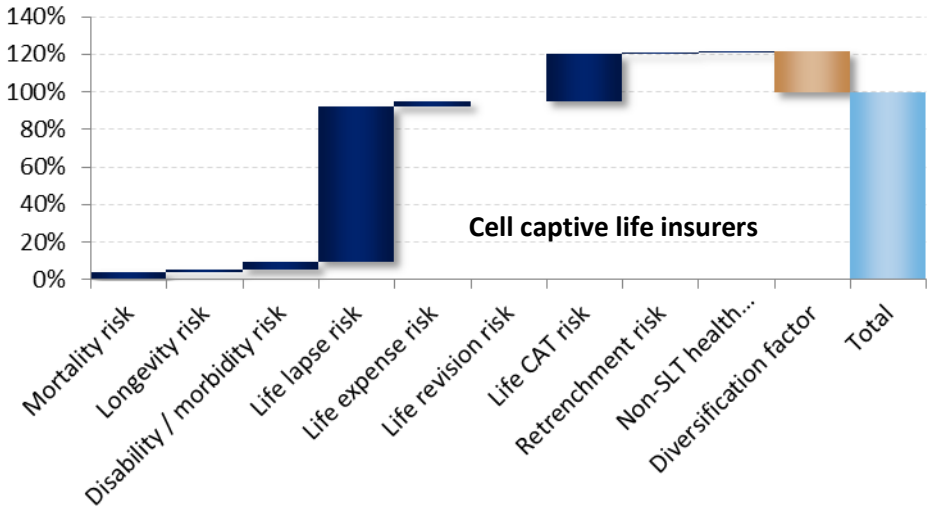

120%
100%
80%
60%
40%
20%
0%
Captive non-life insurers
Interest rate risk
Equity risk
Property risk
Currency risk
Spread & counterparty...
Concentration risk
Illiquidity premium risk
Single equivalent scenario...
Diversification factor
Total

Figure A3.9: Life underwriting risk components for life insurers split by insurer category[37]



[37] Refer to figure 6.17 of the main body of this report.


120%
100%
80%
60%
40%
20%
0%
Linked investment life insurers
Mortality risk
Longevity risk
Disability / morbidity risk
Life lapse risk
Life expense risk
Life revision risk
Life CAT risk
Retrenchment risk
Non-SLT health...
Diversification factor
Total


140%
120%
100%
80%
60%
40%
20%
0%
Cell captive life insurers
Mortality risk
Longevity risk
Disability / morbidity risk
Life lapse risk
Life expense risk
Life revision risk
Life CAT risk
Retrenchment risk
Non-SLT health...
Diversification factor
Total

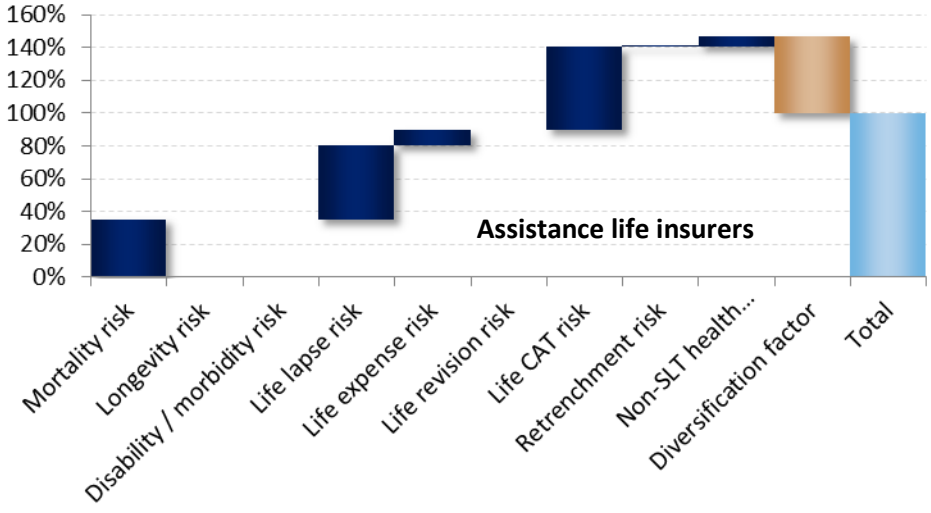
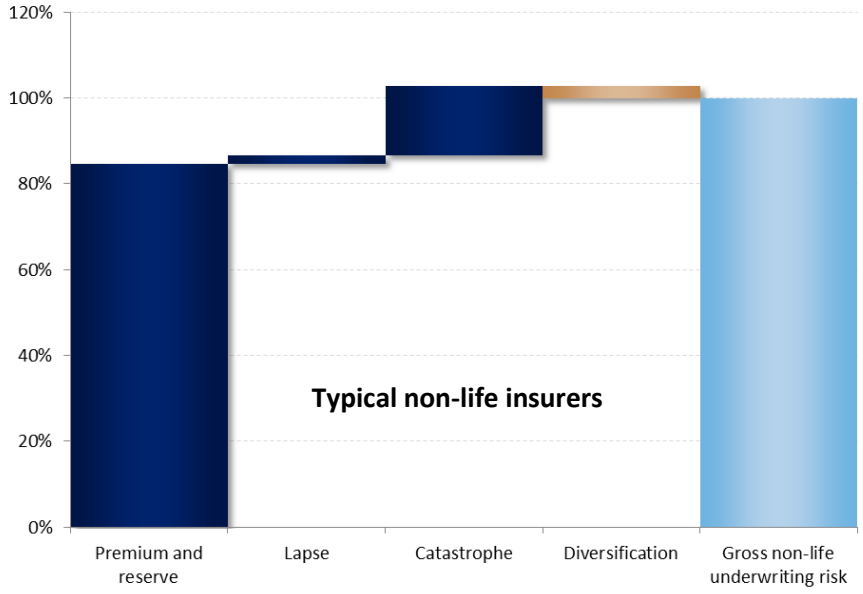
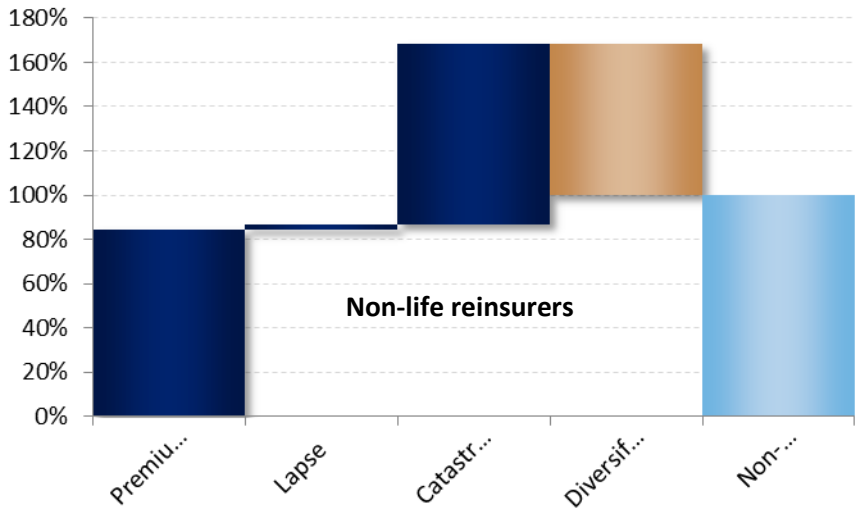
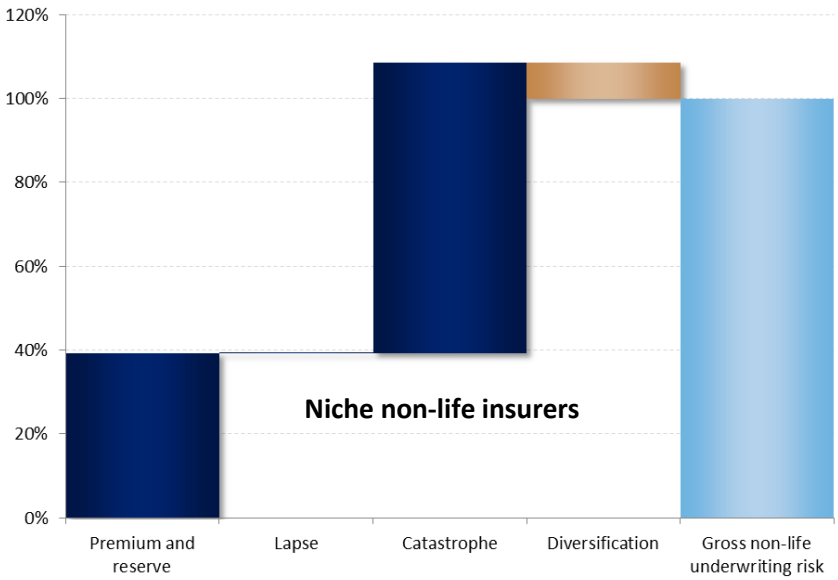

160%
140%
120%
100%
80%
60%
40%
20%
0%
Assistance life insurers
Mortality risk
Longevity risk
Disability / morbidity risk
Life lapse risk
Life expense risk
Life revision risk
Life CAT risk
Retrenchment risk
Non-SLT health...
Diversification factor
Total

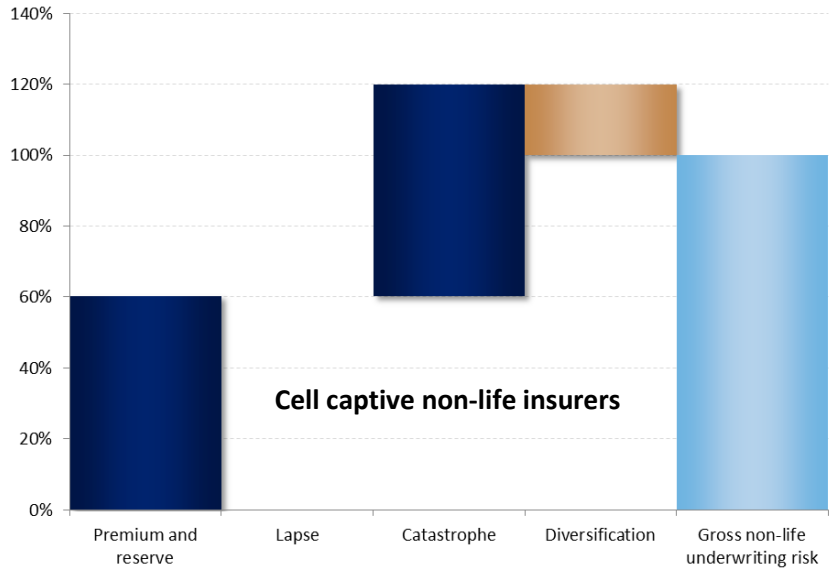
Figure A3.10: Contribution of non-life underwriting risk components to non-life underwriting risk SCR (%) split by insurer category[38]





[38] Refer to figure 6.20 in the main body of this report.


120%
100%
80%
60%
40%
20%
0%
Niche non-life insurers
Premium and reserve
Lapse
Catastrophe
Diversification
Gross non-life underwriting risk


140%
120%
100%
80%
60%
40%
20%
0%
Cell captive non-life insurers
Premium and reserve
Lapse
Catastrophe
Diversification
Gross non-life underwriting risk

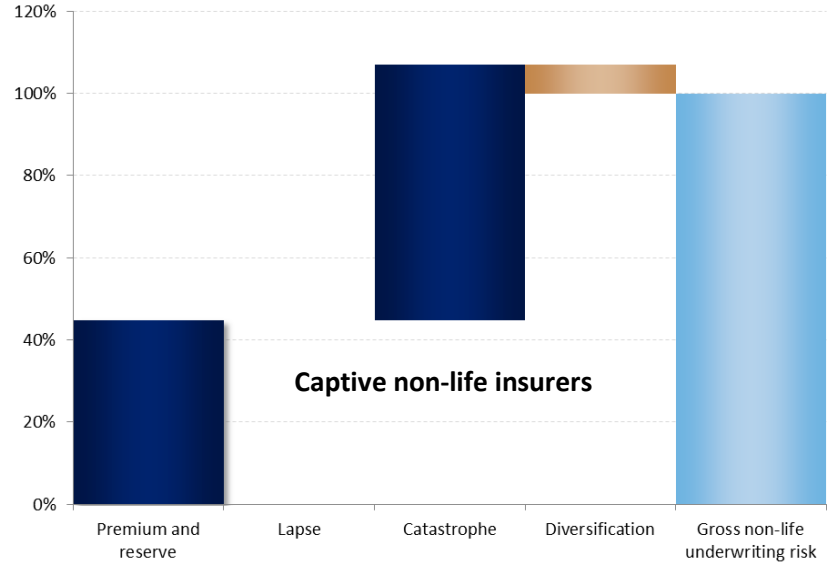

120%
100%
80%
60%
40%
20%
0%
Captive non-life insurers
Premium and reserve
Lapse
Catastrophe
Diversification
Gross non-life underwriting risk

Table A3.6: Split of insurers' solvency positions in relation to the MCR by insurer category[39]

	Typical insurers		
	Life	Non-life	Total
Absolute minimum applicable	2	3	5
MCR is 25% of SCR	17	5	22
MCR between 25% and 45% of SCR	3	14	17
MCR is 45% of SCR	2	1	3

	Reinsurers		
	Life	Non-life	Total
Absolute minimum applicable	1	0	1
MCR is 25% of SCR	0	2	2
MCR between 25% and 45% of SCR	1	2	3
MCR is 45% of SCR	4	1	5

	Niche insurers		
	Life	Non-life	Total
Absolute minimum applicable	2	3	5
MCR is 25% of SCR	4	9	13
MCR between 25% and 45% of SCR	0	9	9
MCR is 45% of SCR	0	2	2

[39] Refer to table 7.1 in the main body of this report.

	Linked Investment insurers		
	Life	Non-life	Total
Absolute minimum applicable	10	0	10
MCR is 25% of SCR	1	0	1
MCR between 25% and 45% of SCR	0	0	0
MCR is 45% of SCR	4	0	4

	Cell Captive insurers		
	Life	Non-life	Total
Absolute minimum applicable	1	1	2
MCR is 25% of SCR	1	0	1
MCR between 25% and 45% of SCR	0	4	4
MCR is 45% of SCR	1	1	2

	Captive insurers		
	Life	Non-life	Total
Absolute minimum applicable	0	2	2
MCR is 25% of SCR	0	4	4
MCR between 25% and 45% of SCR	0	0	0
MCR is 45% of SCR	0	0	0

	Assistance insurers		
	Life	Non-life	Total
Absolute minimum applicable	2	0	2
MCR is 25% of SCR	1	0	1
MCR between 25% and 45% of SCR	0	0	0
MCR is 45% of SCR	1	0	1