

Solvency Assessment and Management

**Report on the results of 1st South
African Quantitative Impact Study
("SA QIS1")**



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1. Introduction

The Solvency Assessment and Management (SAM) framework is currently being developed to put in place a risk-based regime for the prudential regulation of both life and non-life insurers¹ in South Africa. This development will bring a significant change to the prudential requirements applied to insurers, as well to as the way in which South African insurers are regulated. The new SAM framework² will not only focus on the quantitative requirements that insurers need to meet, but also on revised governance and control functions as well as appropriate risk management processes to facilitate the financial soundness of insurers. Steps towards the new SAM regulatory framework will be put in place through interim measures which will be introduced in 2012. In addition, the Financial Services Board (FSB) has already started supervising the insurance industry using a risk-based framework³.

As with any profound change in the insurance regulatory framework, it is important to understand the impact on the stakeholders involved. This report sets out a summary of the findings of the first South African quantitative impact study (SA QIS 1) for the SAM project. SA QIS 1 aims to measure the direct impact that the new proposed rules may have on insurers. As the SAM framework is primarily based on the principles of the Solvency II framework currently being developed in Europe, the SA QIS 1 study is primarily based on the Solvency II QIS 5 study completed by the European insurance industry in 2010.

The results of SA QIS 1 and subsequent quantitative impact studies will also feed into a broader SAM Economic Impact Study to be undertaken in 2012. The Economic Impact Study will deal with the wider implications of the SAM framework, such as access to the insurance market for both insurers and policyholders, growth of the insurance industry, potential impact on policyholders and the wider impact on the stability of the financial system.

Furthermore, it is also important to note that SA QIS 1 focuses on the quantitative impact relating to the proposed quantitative requirements of the regime. The FSB will launch other initiatives to consider the impact and preparedness of insurers in relation to the proposed qualitative requirements of the SAM regime, such as governance, risk management and internal control requirements.

The report assumes a working knowledge of the requirements proposed by the SAM framework and some knowledge of the technical specification of the SA QIS 1 study. As such, concepts defined in the technical specification will not be defined in this report.

¹ Throughout the report any reference to insurers will be to both insurers and reinsurers unless specifically otherwise stated.

² For more information on the SAM framework, please refer to the SAM Roadmap available on the FSB website.

³ For more information on the Prudential Risk Based Supervisory Framework, please refer to the FSB website under “insurance” where a draft has been published.

2. Executive Summary

The participation in SA QIS 1 by the insurance industry has been tremendous, especially taking into account that this is the first quantitative impact study. By number of insurance licences, participation has been approximately 50%. However, this represents more than 90% of the South African insurance industry by volume of premium.

■ Overall Impact

The overall capital impact of SA QIS 1 on the insurance industry is summarised in table 2.1 below:

Table 2.1: Aggregate capital impact of SA QIS 1 on respondents (R'bn)

	Life insurers		Non-life insurers		All insurers	
	<i>Current position</i>	<i>SA QIS 1</i>	<i>Current position</i>	<i>SA QIS 1</i>	<i>Current position</i>	<i>SA QIS 1</i>
Available Capital	105.5	157.4	33.7	39.1	139.1	196.5
Capital Requirement	31.7	89.8	13.6	25.9	45.3	115.6
Free Surplus	73.8	67.7	20.0	13.2	93.8	80.8
Capital Coverage Ratio	3.3	1.8	2.5	1.5	3.1	1.7

Although the above table shows that both the life and the non-life insurance industry has lower free surplus under SA QIS 1, there are specific issues that have a significant impact on the overall result. Specifically, the exclusion of all participations in financial and credit institutions from own funds under SA QIS 1 (whereas these participations are mostly taken into account in the calculation of available capital under the current regime) has had a very significant impact given the relatively concentrated nature of the South African financial sector and the presence of large financial conglomerates. There is a total of R27.6bn of participations in financial and credit institutions which has been excluded from own funds for SA QIS 1 purposes – if these participations were included in own funds, SA QIS 1 would have resulted in an overall increase in free surplus for the insurance industry in general and the life insurance industry in particular.

When considering the impact of SA QIS 1 at an individual insurer level, it is apparent that the majority of both life and non-life insurers have shown an increase in both the available capital as well as the capital requirement in moving from the current position to the SA QIS 1 position.

For life insurers, the increase in available capital is mostly due to the removal of prudential margins currently held in the statutory liability valuation, leading to a decrease in the value of the liabilities. For two thirds of the life insurers, this increase in available capital is more than the increase in the capital requirement, leading to a larger free surplus.

For the non-life insurers the change in available capital is not that big, and the key driver is the increase in the capital requirement. Almost all non-life insurers have shown an increase from the current capital requirement⁴ to the SCR calculated for SA QIS 1.

Table 2.2: Capital impact of SA QIS 1 relative to current requirements (Number of participants)

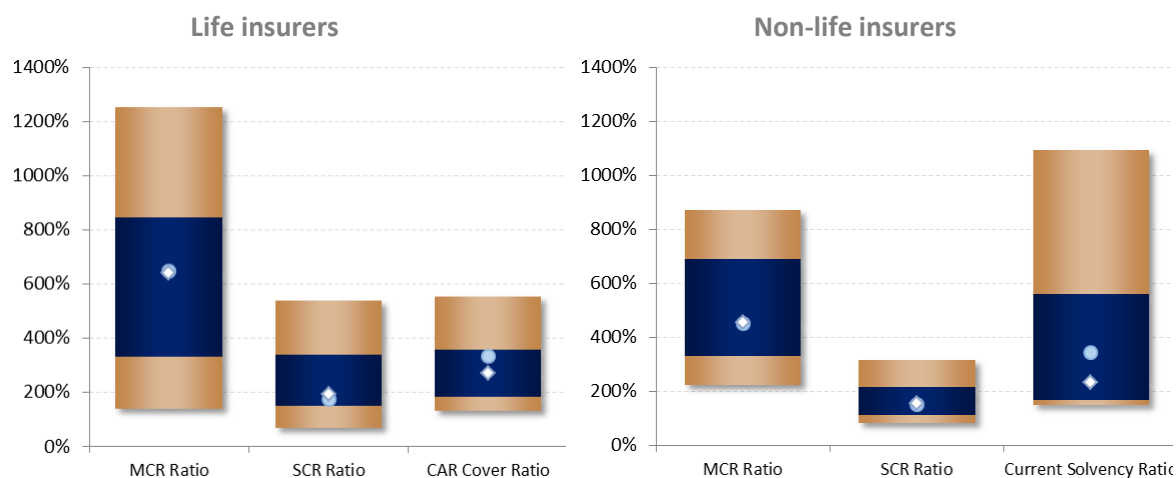
	Life insurers		Non-life insurers		All insurers	
	<i>Higher under SA QIS 1</i>	<i>Lower under SA QIS 1</i>	<i>Higher under SA QIS 1</i>	<i>Lower under SA QIS 1</i>	<i>Higher under SA QIS 1</i>	<i>Lower under SA QIS 1</i>
Available Capital	36	4	37	18	73	22
Capital Requirement	34	6	53	2	87	8
Free Surplus	27	13	16	39	43	52
Capital Coverage Ratio	13	27	7	48	20	75

It is interesting to note from Table 2.2 that many insurers showed a decrease in their capital coverage ratio, even though the amount of free surplus increased. Care needs to be taken when comparing the ratio between the current regime and the SA QIS 1 regime. Due to a general increase in both the available capital as well as the capital requirement, the capital coverage ratio can decrease even where the actual amount of free surplus has remained the same or has increased.

Nevertheless, the movement in the capital coverage ratio does provide insight into the impact of the SA QIS 1 calculation. The graph below shows how the coverage ratios compare between the coverage of the MCR and the SCR under SA QIS 1, as well as the current capital coverage ratios.

⁴ For the purpose of this report, the contingency reserve is treated as part of the capital requirement, and not as a liability.

Figure 2.1: Coverage of MCR, SCR, and current capital requirements



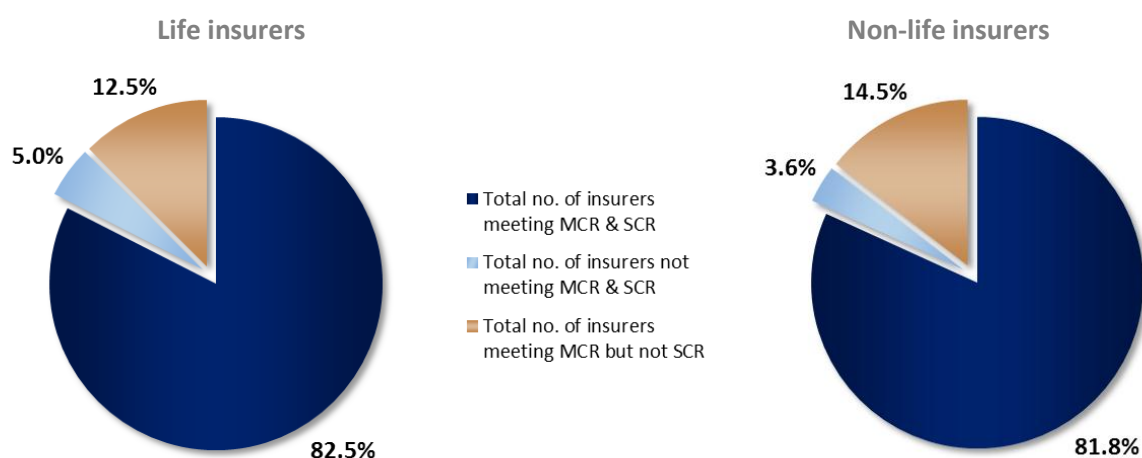
Bar charts of this nature are utilised throughout the report. These are intended to show the spread of responses across respondents rather than simply showing an industry total or average which will largely depict the responses of the largest insurers. The beige bar shows the range between the 10th percentile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

From Figure 2.1, it is apparent that the median capital coverage ratio for life insurers has decreased from 270% under the current CAR regime to 194% under the SA QIS 1 results. However, as described above, the decrease in the coverage ratio actually masks the general increase in free surplus under the SA QIS 1 for life insurers, compared to the free surplus available under the CAR regime.

For non-life insurers, there has also been a decrease in the median capital coverage ratio from 234% under the current regulatory regime to 156% under the SA QIS 1 calculation. It is also evident from Figure 2.1 that there is a large variation in the current capital coverage ratio, compared to a much narrower distribution of capital coverage ratios for the SA QIS 1 results.

In total there were 17 insurers that did not meet the SCR, with four of these insurers not meeting the MCR either. The four insurers not meeting the MCR consisted of two life insurers and two non-life insurers. The additional 13 insurers that met their MCR, but not their SCR, consisted of five life insurers and eight non-life insurers.

Figure 2.2: Number of respondents not meeting prescribed capital requirements



■ Technical Provisions

In the calculation of technical provisions under SA QIS 1, specific areas that were highlighted included:

Contract Boundaries:

The choice of contract boundary determines what cash flows should be assumed to be included when valuing insurance contracts. This has a direct impact on the calculation of the technical provisions, but would also have a knock-on impact on how the SCR is calculated. SA QIS 1 assumed a short contract boundary for investment products without any guarantees, and insurers were asked to indicate the impact of using a longer contract boundary for these products. Although only a few insurers gave an indication of the size, it is clear that this is a very significant issue with a potential impact in the region of tens of billions of Rands.

Illiquidity Premium:

In SA QIS 1, an illiquidity premium was assumed to be included in the risk free discount rate used to value the liabilities for products where the policyholder is unable to surrender the policy. Two options were tested in SA QIS 1 in relation to the illiquidity premium, with the following results:

- Removal of the illiquidity premium resulted in a R2.5bn increase in liabilities.
- Extending the illiquidity premium to a wider set of products resulted in a R15bn decrease in liabilities.

Risk Margin:

There were a few life insurers that reported negative best estimate liabilities, and this led to some anomalies in the calculation of the risk margin.

■ *Liabilities other than Technical Provisions*

The treatment of tax in the responses varied from insurer to insurer, as the treatment of tax under the SAM regime is still unclear. Especially among life insurers where there was a big release in technical provisions due to the removal of margins, some insurers recognised a corresponding creation of a large deferred tax liability. In total, the increase in deferred tax liability calculated by life insurers is approximately R20bn.

■ *Solvency Capital Requirement*

The key component of the SCR for life insurers was market risk capital, especially in relation to exposure to falls in equity markets. Management actions have been used by life insurers to decrease their exposure to market risks, especially in the context of with-profit policies. Apart from market risk, life underwriting risk was also significant with lapse risk contributing the most risk capital to the life underwriting risk component.

For non-life insurers, the key risk was non-life underwriting risk, split fairly evenly between premium and reserving risk, and catastrophe risk. The most significant exposure to market risk for non-life insurers was also due to equity exposure.

Figures 2.3 and 2.4 show the components of the Basic Solvency Capital Requirement (BSCR) for life and non-life insurers respectively.

Figure 2.3: Contribution of risk components to BSCR (%) – life insurers

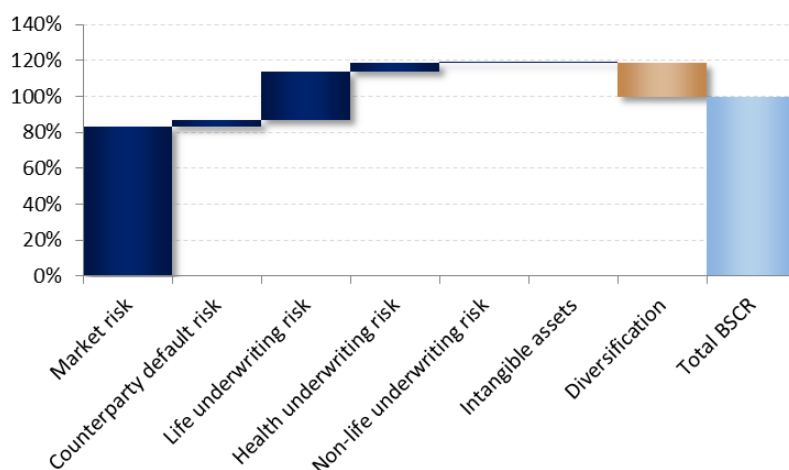
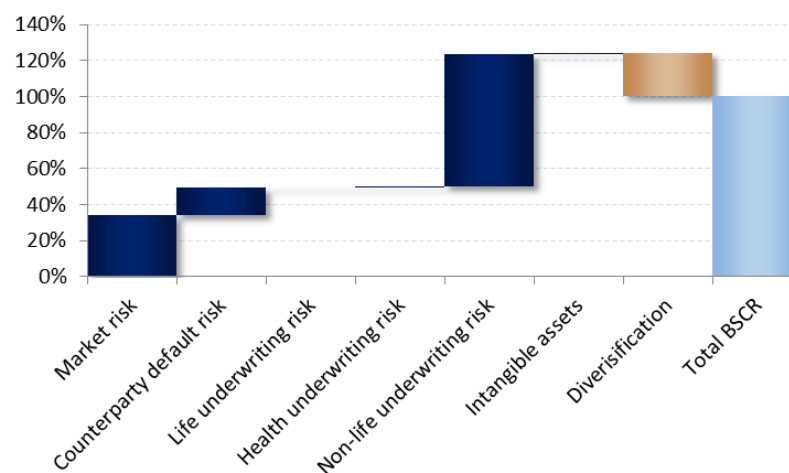


Figure 2.4: Contribution of risk components to BSCR (%) – non-life insurers



■ *Own Funds*

Most insurers reported that their capital structure consists either entirely or mostly of Tier 1 capital. There were, however, a number of respondents that did not allocate their capital structure to the various tiers.

3. Scope and limitations

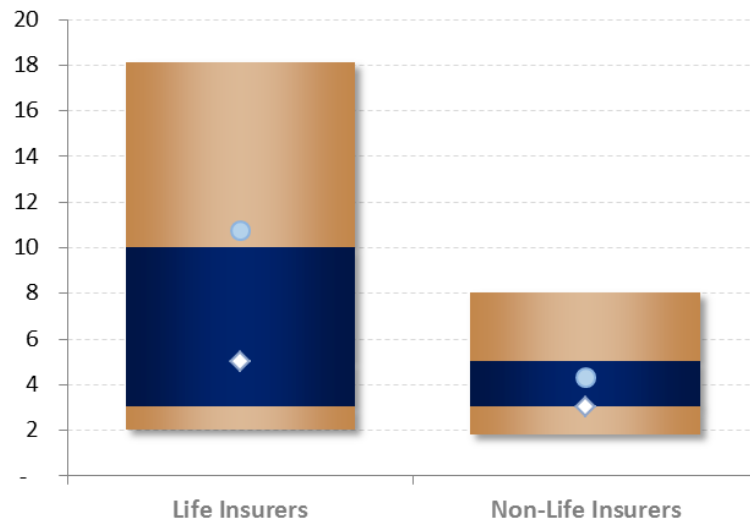
- **SAM SA QIS 1 Participation** As previously indicated, there has been widespread participation in the SA QIS 1 with approximately 50% of insurers representing more than 90% of the South African insurance industry by volume of premium submitting results. This participation includes representation from a broad range of insurance categories, as set out in the table 3.1:

Table 3.1: Number of insurers that submitted SA QIS1

Insurer Category	Life	Non-Life	Total
Assistance	2		2
Captive		8	8
Cell Captive	2	6	8
Linked Investment	7		7
Niche	3	16	19
Reinsurers	5	5	10
Typical	21	20	41
Grand Total	40	55	95

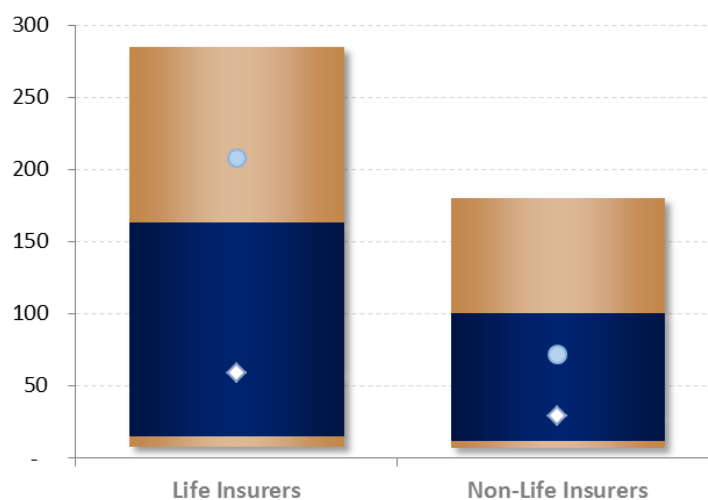
- **Impact on Resources** The industry has made a concerted effort to participate in the SA QIS 1 exercise – in total more than 600 skilled person months have been used for this exercise, with approximately two-thirds representing actuarial time. The resources allocated to the SA QIS 1 exercise varied widely by insurer, ranging from one month to more than 100 months to complete the exercise. The FSB appreciates the volume of work carried out by industry participants in submitting the SA QIS 1 results.

Figure 3.1: Amount of time in skilled person months used in the SA QIS 1 exercise



The total human resource commitment for the implementation of the SAM project across the industry is estimated at just under 10,000 skilled person months. However, it should be noted that some insurers (8 in total), including large insurers, have not been able to provide an estimate of the total resource requirement and are thus excluded from the number. 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 size of life insurers compared to non-life insurers.

■ *Quality / Limitations*

Participation in the SA QIS 1 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, as it was the first impact study, there were bound to be many areas of the calculations that would have been difficult to complete with current data, or areas needing further guidance or explanation. Taking this into account, it was foreseen that some of the results submitted to the FSB would need 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:

- Numbers being inconsistently entered as rands and thousands of rands.
- Balance sheets not balancing.
- Inability to tie back the “current situation” numbers to the existing statutory or quarterly returns. As the numbers were not reconcilable, it was decided to use the submitted statutory and quarterly returns, rather than the “current situation” numbers reported in the SA QIS 1 submissions.
- No tiering of own funds items to the various tiers. Where the own funds had not been allocated to tiers, the default assumption applied was that the own funds should be allocated to Tier 1.
- Not including all the information required to calculate the Minimum Capital Requirement (MCR).

In addition, there were many submissions where the built-in checks did not balance, with many examples of significant imbalances.

Insurers have highlighted some of the practical difficulties interpreting the technical specification as well 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 funds. Further asset data issues reported 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 QIS 1 technical specification. There was also difficulty in

unbundling contracts, especially contracts that had both life and health benefits.

- In general, there were concerns about obtaining the data from third parties, such as clients, brokers, and reinsurers. There were also concerns that the data from third parties were not in the correct format.
- 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 a number of non-life insurers that struggled with using a discounted cash-flow approach to calculate the best estimate. There were also some difficulties in relating the current Incurred But Not Reported (IBNR) and Outstanding Claims Reserves (OCR) provisions to the discounted cash-flow calculations. Non-life insurers were also uncertain as to how to include cash back bonuses in the technical provisions.
 - There were also some difficulties reported in interpreting the contract boundaries.
 - Both life and non-life insurers reported difficulties in the methodology used to calculate the risk margin.
 - There were a few insurers that struggled to derive the best estimate, due to the implicit assumptions currently included in the reserving process.
- Methodology to calculate the SCR:
 - There were some concerns that the methodology used to calculate the SCR was too complex.
 - There were difficulties in calculating the adjustment for the loss absorbency under stressed positions, especially in relation to knowing what management actions to take account of and the allowance for risk mitigation techniques.
 - Some life insurers highlighted difficulties in interpreting the application of the lapse risk calculation.
 - 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.
- Methodology issues other than technical provisions and SCR:
 - Many insurers reported difficulties in the treatment of tax throughout the calculation, in particular with what assumptions to make relating to the 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 deferred tax liabilities.

- There was some uncertainty as to how to treat new business, especially under the stressed scenarios.
 - There were some difficulties in interpreting the classification of own funds. A number of insurers also reported difficulties in performing the calculation of the Expected Profits in Future Premiums (EPIFP).
 - There were difficulties in mapping the SA QIS 1 balance sheet to the classification used in the current statutory returns.
 - There was a concern from life insurers selling only linked insurance contracts that the overall methodology was too complex and that separate guidance was required.
- 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.
 - There were also some problems reported by insurers in obtaining the necessary input from departments across the company.

Two submissions have been excluded from the investigation:

- One submission used the incorrect version of the SA QIS 1 spreadsheet and therefore the data could not be aggregated in the overall database.
- One insurer submitted two sets of results, setting out the results under different business models. One of the submissions was excluded from the analysis to avoid double-counting.

The SA QIS 1 exercise was conducted as at 31 December 2010. However, not all insurers were able to use 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 3.2: Reporting dates used by insurers submitting SA QIS1 results

Year-end	Number of insurers
Jun-10	5
Aug-10	2
Sep-10	2
Nov-10	2
Dec-10	63
Feb-11	2
Mar-11	14
Jun-11	5

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 QIS 1. 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.

Table 3.3: Self-reported level of preparedness for SAM of SA QIS1 participants (# of respondents)

Overall preparedness 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	35	25	25	5
SCR	19	34	30	6
MCR	57	15	13	4
Own Funds	66	15	4	2

■ *Reliability of Results*

Participants were asked to assess the reliability of their results on a 4-point scale, across various dimensions of the SA QIS 1 submission.

Given the comments made on the issues with understanding the technical specifications and the availability of data, it was also surprising that the insurers generally reported that their reliability of results were good, as shown in Table 3.4.

Participants were asked to assess the reliability of their results on a 4-point Likert scale, across various dimensions of the SA QIS 1 submission. Table 1.4 shows the results thereof:

**Table 3.4: Self-reported reliability of results in SA QIS 1 submissions
(# of respondents)**

	Poor	Fair	Good	Excellent
Technical provisions	2	17	56	10
Best estimate	3	15	61	10
Risk Margin	6	32	45	6
Valuation of assets and liabilities other than technical provisions	1	6	42	40
User specific parameters	1	4	17	3
SCR standard formula market risk	0	21	48	17
SCR standard formula Counterparty default risk	2	21	57	9
SCR standard formula Life underwriting risk	0	6	22	11
SCR standard formula Health underwriting risk	3	8	10	6
SCR standard formula Non-Life underwriting risk	0	14	32	8
SCR standard formula overall	0	22	55	11
MCR	1	18	45	24
Own funds	0	6	36	45

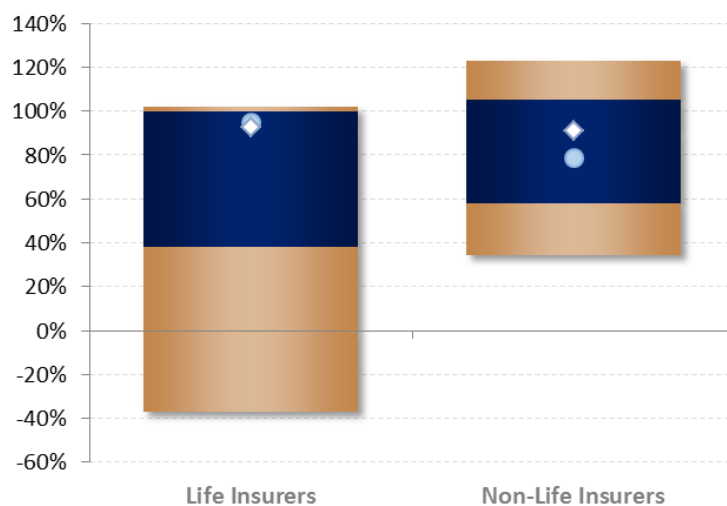
It should be noted that not all participants scored each element of the submission.

It is noteworthy that only 60% of responses for the reliability of risk margins were good or excellent, with more than a third falling into the “fair” category. In light of the small number of respondents indicating that they regard the reliability of the submitted results as poor, a question arises whether the results are deemed sufficiently reliable that the insurers would be comfortable including them in their financial reporting.

4. Technical Provisions

The economic balance sheet approach underpinning SAM facilitates a greater level of comparability across insurers. As a result, overall technical provisions will change with the shift to the SA QIS 1 basis, and the degree of change will depend on the individual insurer. The adoption of the economic balance sheet approach implies valuing liabilities on a best estimate basis excluding any current margins. The best estimate liabilities together with the risk margin as specified in SA QIS 1, form technical provisions. This move towards best estimate valuation has significant implications for insurers who have historically zeroised negative liabilities, resulting in significantly lower (and in some cases negative) technical provisions.

Figure 4.1: Technical Provisions on SA QIS 1 basis as a percentage of the current basis



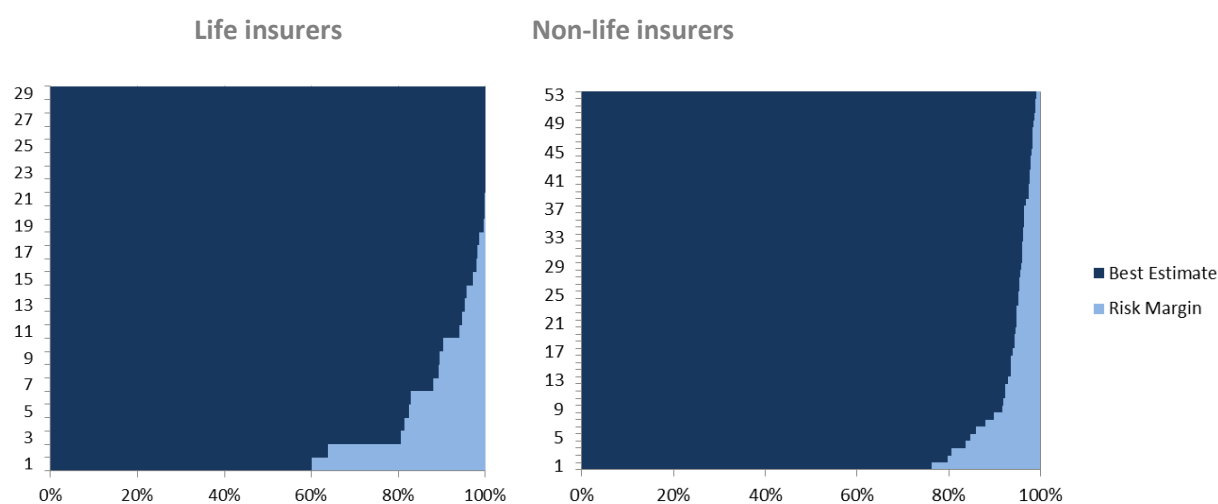
The greatest change to technical provisions is seen in the life industry, mainly due to the removal under SAM of the prudential margins contained in the current calculation. This is exacerbated by the long-term nature of life insurers' liabilities – where the margins are removed for all future years. This leads to a large movement in the present value of future cash flows.

The technical provision of the median insurer is in a similar position on a SA QIS 1 basis as compared to the current basis (92% for life, 91% for non-life). The average for non-life insurers is also similar (94%), while the average for life insurers is lower at 72%. This is as a result of some life insurers exhibiting significant negative best estimate liabilities on a market-consistent basis, which have been zeroised on the current basis.

- 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.

Figure 4.2: Proportions of technical provisions comprising best-estimate valuation and risk margin



Respondents that have negative best-estimate liabilities (eight life insurers) and those that only calculated technical provisions as a whole (three life insurers and one non-life insurer) have been excluded from the above graph. Because of the nature of the calculation of risk margins, it is difficult for insurers with negative best-estimate liabilities to calculate sensible risk margins. Various attempts have been made by certain respondents, but this is an area which requires more attention.

The largest risk margin reported for a life insurer comprised 40% of their technical provision, and the largest for a non-life insurer was 24%. For close to 60% of both life and non-life respondents the risk margin comprises less than 5% of overall technical provisions.

- Best estimates**

A number of issues in calculating best estimates were raised with respect to contract boundaries.

Investment policies are currently valued on a mark-to-market basis under PGN104 and the contract boundary is the end of the term. Most insurers do not agree with the potential approach under SAM of limiting contract boundaries of pure investment policies to a single year; the general preference is to increase

the boundary to the full term of the policy. The impact of extending the contract boundary to a full projection would be a decrease in technical provisions, and a corresponding increase in the SCR and the deferred tax liability.

Insurers also mentioned complications with monthly contracts which offer a cash-back bonus after a number of years – the monthly contract boundary under SAM means that no reserve is held for the cash-back bonus. Loyalty bonuses were included at a zero value due to the definition of the contract boundary under technical provisions, and the liability was not otherwise considered a contingent liability. There is a preference among insurers for including cash-back reserves falling outside the contract boundary. Some insurers included these reserves in “other liabilities”, making comparison among insurers difficult.

One respondents expressed the opinion that, for contracts with financial guarantees, the current SA QIS 1 approach is inconsistent in that it requires a ‘short contract boundary’ to be applied for the underlying part of the contract, while the impact of financial guarantees needs to be calculated taking into account the full contract term.

In terms of boundaries of existing (re)insurance contracts, most insurers agree with the SA QIS 1 definition. Some propose that it be aligned to IFRS4.

■ *Risk Margin*

In calculating the risk margin, five possible approaches were provided, and respondents were asked to indicate what percentage of each approach they utilised. The following observations were made:

- Only one insurer used the “Full calculation for all future SCR values without using approximations” approach for 100% of the calculation.
- Some insurers indicated that 50% of the calculation was based on the “Calculation of future SCR values using approximate methods for individual risks or sub-risks” approach.
- About 40% of respondents indicated that the calculation was wholly based on the “Approximate method for whole SCR for future years (proportional approach)” method, with a few indicating that this was used for 50% of the calculation.
- Eight respondents indicated that the calculation was wholly based on the “Estimate all future SCRs at once (duration approach)” method.

The following commentary was received regarding unavoidable market risk in the risk margin:

- It was noted that this was potentially more applicable to life insurers; due to the volatile nature of non-life liabilities (in terms of frequency, timing and amount of cash flows) the assets held to back the technical provisions are mostly invested in cash.
- One participant held the view that the market-consistent value for unavoidable market risk should be captured by extrapolating market-observable assumptions (e.g. extension of the yield curve or volatility

surfaces) rather than allowing for an explicit risk margin (i.e. allow for it as a whole). The risk margin could then incorporate such “theoretically avoidable, yet practically unavoidable” market risk.

- Another suggestion was to increase the cost of capital rate. This could be done by including the residual tail mismatching risk beyond a given term (i.e. after 20 years) in the market risk portion of SCR.
- One pragmatic approach suggested was a simple scaling-up approach based on the market risk content of the initial SCR, adjusted to reflect avoidable market risks.
- A further approach suggested was a recalculation of the SCR interest module, on the assumption that all the assets are sold and then invested in bonds only, and possibly with a spread on corporate bond index above the benchmark government bond over same term.

Most insurers either did not calculate “SCR unavoidable market risk”, or assumed it to be zero.

- *Simplifications* Insurers applied various simplifications for the calculation of claims provisions, premium provisions, reinsurance recoverables, risk margins, and counterparty default risk.

Most insurers stated that the principle of proportionality is sufficiently clear, while others indicated that further guidance is required.

Some stated that “the Risk Margins were calculated based on “risk approximation”, where a 99.5th percentile shock was determined, and this was used as the approximate “SCR” to apply the 6% cost of capital to.”

Participants indicated that the following further simplifications may be helpful:

- A simplification guide pertaining to modelling management actions.
- Treatment of reinsurance contracts, especially in terms of boundary conditions.
- The treatment of sliding-scale ceding commission and profit commission from reinsurers.
- Treatment of technical provisions for insurers without adequate history.

- *Comments from participants*

Most insurers expressed the opinion that the risk of reinsurance repricing in light of policyholder guarantees should be catered for in the SCR as opposed to technical provisions, and that all material guarantees have been identified.

Insurers also indicated that a variety of approaches had been utilised in order to establish the reliability of assumptions used, including reconciliation to financial accounts and on analysis of relevant experience.

In terms of methods used to calculate best-estimate liabilities, most non-life insurers indicated the Chain Ladder, BF, and Loss Ratio run-off methods. Life

insurers mentioned using discounted cash-flows to determine the best-estimate liabilities, while best-estimate reinsurance recoverables were determined by assessing the difference in the best-estimate technical provisions of the net and gross of reinsurance runs.

Most insurers indicated that unbundling of riders from the main benefits is difficult; this made the segmentation into Life and Health very difficult. Challenges exist in terms of separating out retrenchment (non-life) from dread disease and disability benefits (health).

Most respondents mentioned that the requirements of calculating technical provisions will impact the way the business is run in terms of data collection and maintenance, asset liability matching, product pricing, risk mitigation strategies, tax liability, capacity/appetite to sell investment business with guarantees, application of the boundary conditions, review of exposure to catastrophic risk, and asset selection.

Other general comments received on aspects of SAM impacting the calculation of technical provisions include:

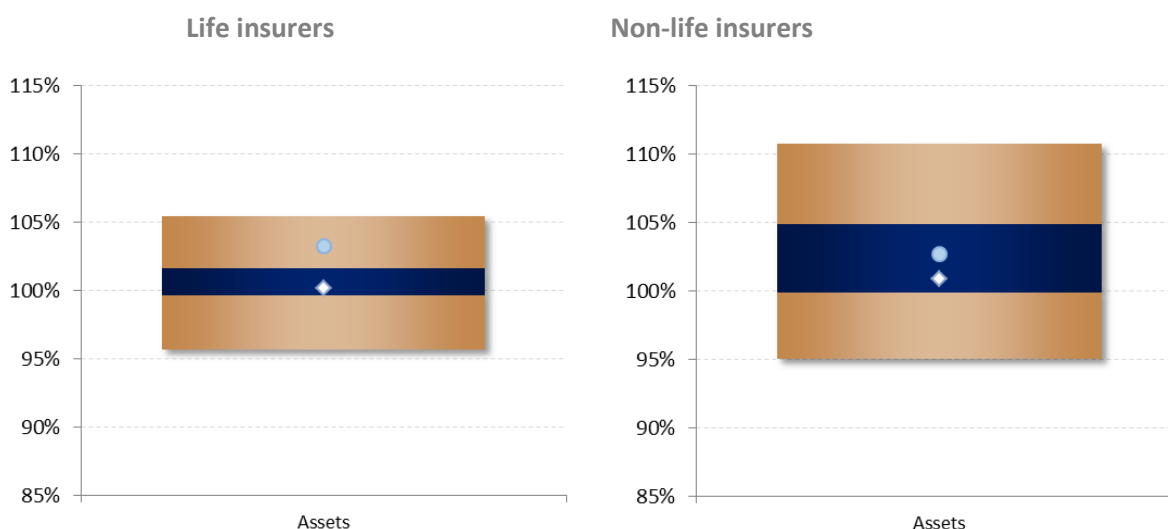
- Under the current solvency regime an insurer can achieve solvency relief by purchasing more proportional reinsurance. Under SAM this strategy will reduce the underwriting risk loading but will increase the counterparty default risk. It will therefore be very difficult for insurers to reduce their capital strain.
- Using discounted cash-flow projections to calculate technical provisions for short-tailed non-life business adds a great deal of complexity. Simplifications should be kept easy to understand and apply.
- Cash-back bonuses form a large part of technical provisions. A standardised approach for the treatment of these provisions might ensure greater consistency throughout the industry.

5. Valuation of assets and other liabilities

- Valuation of assets**

The valuation of assets under SA QIS 1 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 QIS 1 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 QIS 1 basis over current FSB basis (ratio)



Note that in these graphs the reinsurance recoverables have been removed from the SA QIS 1 valuation, so that both the SA QIS 1 and the current FSB approach are shown on a comparable basis.

The key reasons for differences in the valuation of assets 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 under the SA QIS 1 basis. This will lead to an increase in the valuation of assets under the SA QIS 1 basis.

Participations – Different valuation principles are applied for participations under SA QIS 1 compared to the current FSB basis. The exact implication varies depending on the different types of participations.

Deferred Tax assets – There was no uniformity of the treatment of deferred tax assets on the SA QIS 1 balance sheet. Some of the treatments included:

- Using the same as is required under IFRS.

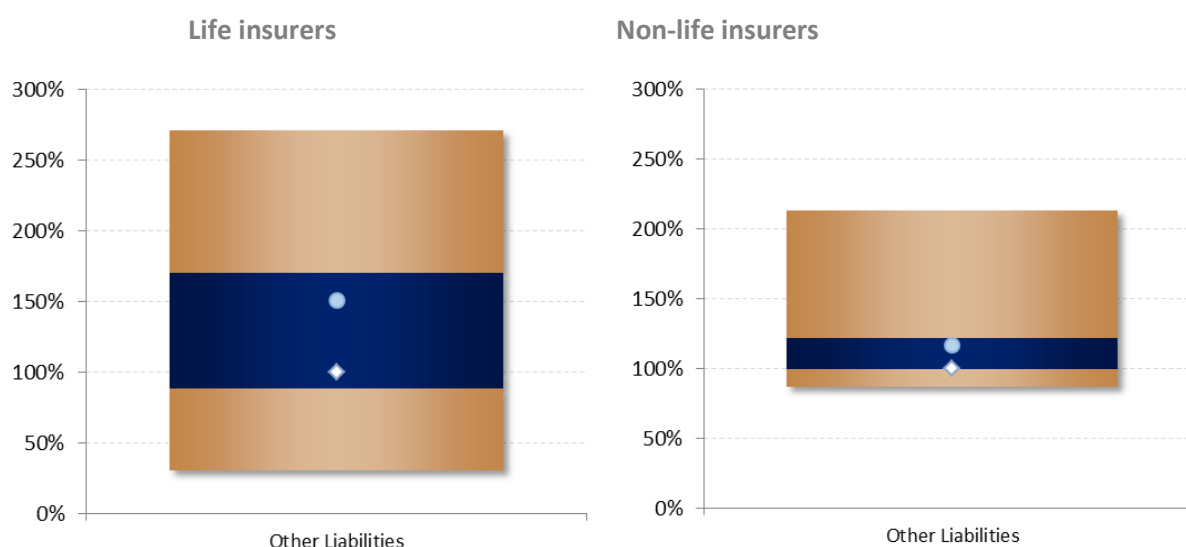
- Recalculating the deferred tax asset based on the decreased technical provisions resulting from the removal of current statutory margins.
- Ignoring the deferred tax asset.

The deferred tax asset has been one of the areas where insurers have asked for more guidance on how the calculation should be applied. The uncertainty relating to the tax treatment under the SAM regime has also added to the uncertainty of how deferred tax assets should be calculated.

■ *Valuation of liabilities other than Technical Provisions*

Figure 5.2 shows the distribution of the ratio of the SA QIS 1 valuation of other liabilities compared to the current FSB valuation of other liabilities.

Figure 5.2: Valuation of other liabilities on SA QIS 1 basis over current FSB basis (ratio)



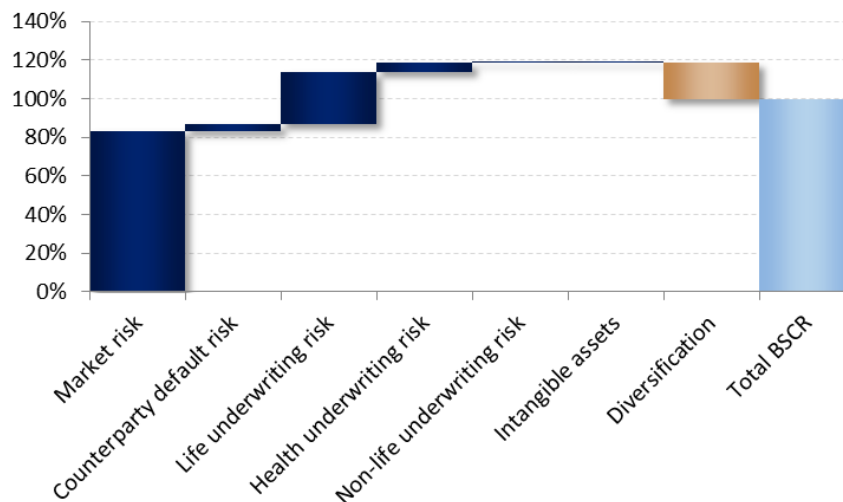
For life insurers, the main driver for the increase in the valuation of other liabilities under SA QIS 1 is the increased deferred tax liability on the balance sheet. Many life insurers have shown a significant increase in the deferred tax liability – this seems to be due to the removal of margins from technical provisions, resulting in the realisation of a profit. The impact of the increase in deferred tax liabilities throughout the life industry is approximately R20bn. As set out above, the eventual treatment of tax under the SAM regime is still being discussed. This result highlights the significant implications of the discussions currently underway.

The graph for non-life insurers shows that, although most of the ratios are close to 100%, there are a few non-life insurers for which the ratio has moved significantly above 100%. The reasons for this move varied by insurer, with one of the drivers being an increase in the deferred tax liability. However, the valuation of other liabilities is generally not significant to the overall balance sheet of the insurer.

6. Solvency Capital Requirement (SCR)

Figure 6.1 shows the risk components of the Basic Solvency Capital Requirement (BSCR) for life insurers.

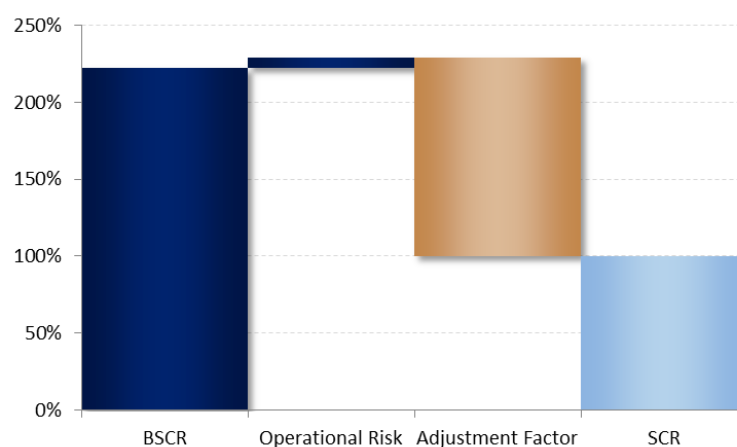
Figure 6.1: Contribution of risk components to BSCR (%) – life insurers



It is clear that the greatest component of the BSCR for life insurers is market risk, with life underwriting risk the second greatest component. None of the other risk categories contribute significantly to the BSCR, although many insurers combined their exposure to health underwriting risks with the life underwriting risk component.

Figure 6.2 shows the contributions of the BSCR, operational risk, and the adjustment factor to overall SCR for life insurers.

Figure 6.2: Contribution of BSCR, operational risk, and the adjustment factor to SCR (%) – life insurers



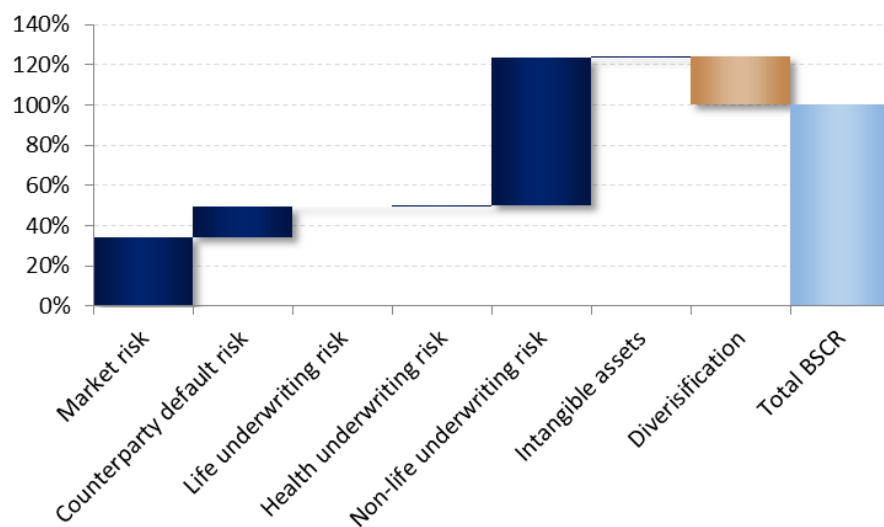
For life insurers, the adjustment factor is very significant, resulting in more than a 50% decrease from the gross BSCR. The adjustment factor shows the impact of

the decrease in the SCR due to management actions taken under the stress conditions, as well as the impact of loss absorption due to the change in the value of deferred taxes under the stressed scenarios.

The adjustment factor is considered in more detail at the end of this section.

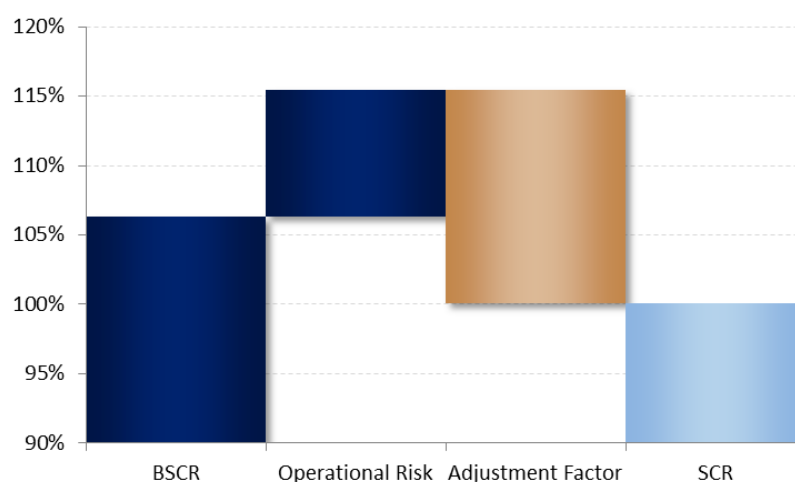
Figure 6.3 shows the risk components of the BSCR for non-life insurers.

Figure 6.3: Contribution of risk components to BSCR (%) – non-life insurers



For non-life insurers, the largest component of the BSCR is non-life underwriting risk, followed by market risk. Counterparty default risk is the other main component of the BSCR, with no significant exposure from any of the other risk components.

Figure 6.4: Contribution of BSCR, operational risk, and the adjustment factor to SCR (%) – non-life insurers



Compared to life insurers, non-life insurers have a much smaller adjustment factor, mainly due to a much smaller impact of management actions. The main impact of the adjustment factor for non-life insurers is the effect of the loss absorption of deferred taxes.

■ *Operational Risk*

For life insurers, operational risk accounted for 5% of the SCR, whereas operational risk accounted for 9% of the SCR for non-life insurers.

Many insurers were concerned about the formula used for the calculation of the operational risk capital. The main concern pointed out was that the formula was not risk-sensitive, and that it does not take into account the business specificities of each insurer. Linked insurers were also concerned that asset management fees were included in the expenses used in the calculation, arguably leading to an excessive operational risk charge. An additional concern was raised that the formula penalised insurers in their first year of operation, as the formula doubles the capital charge for that year. Some insurers were also concerned that there was no diversification of operational risk capital with any other risk capital.

Suggestions were put forward that the operational risk calculation could be made more complex to capture a more risk-sensitive approach. These suggestions included using specific scenarios in the calculation and using different parameters to reflect the varying levels of operational risk for different classes of business.

Linked insurers made the suggestion that the expenses used in the calculation should only be applied to fixed expenses and not variable expenses. A separate suggestion was made that the parameter used should decrease as the level of funds under management increases. Some insurers agreed that expenses should be split out between base asset management fees / performance fees /

brokerage fees, with parameters applied to the different types of expenses. However some insurers thought that this would make the formula too complex.

Roughly two-thirds of life insurers and one-third of non-life insurers are collecting operational risk data, although the extent of the data collection varies widely by insurer. Approximately one-third of life and non-life insurers are currently performing forward-looking risk assessments for operational risk on a quantitative basis.

■ *Market Risk*

Figures 6.5 and 6.6 depict the contributions of the various risk components of market risk to overall market risk SCR.

Figure 6.5: Contribution of market risk components to market risk SCR (%) – life insurers

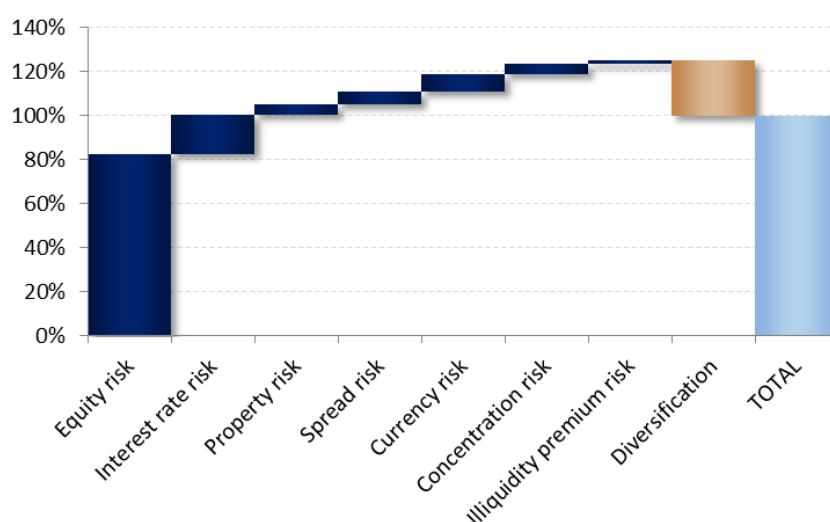
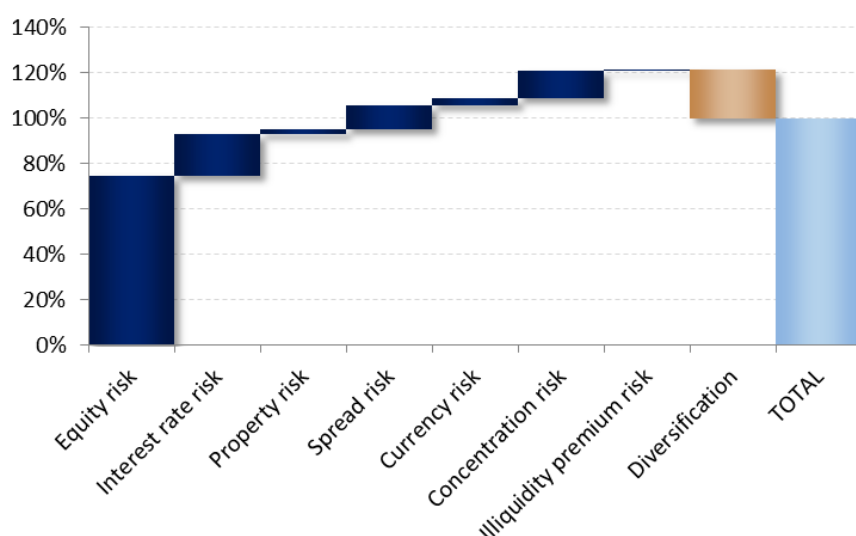


Figure 6.6: Contribution of market risk components to market risk SCR (%) – non-life insurers

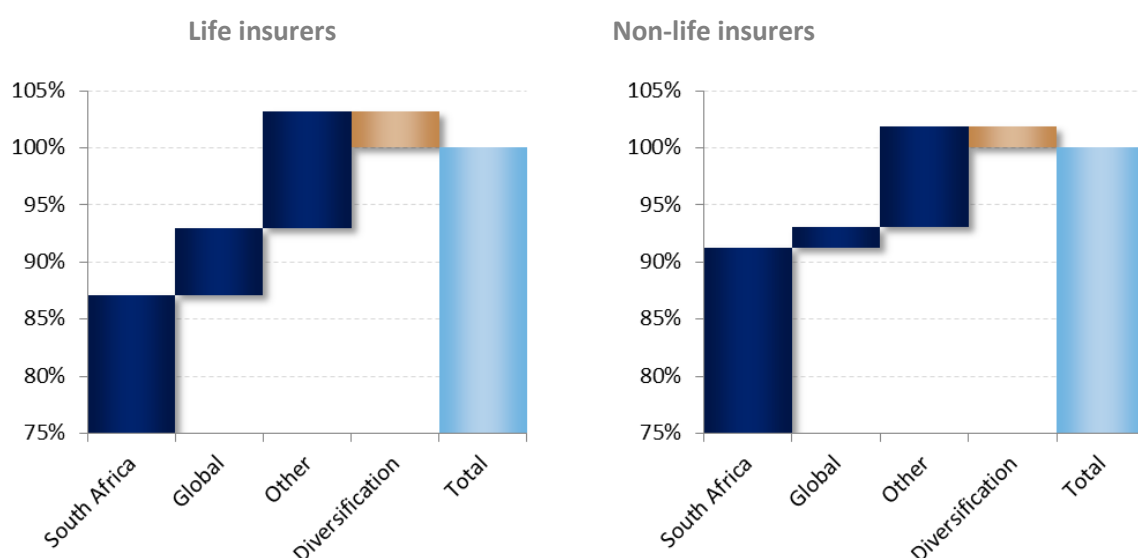


For both life insurers and non-life insurers, equity risk is the greatest component of market risk, with interest rate risk being the second greatest component. A number of insurers queried whether all assets should be stressed, or whether only assets backing the technical provisions and SCR should be stressed, with most preferring the latter. This point is currently being considered by the relevant SAM structures and will be clarified for the SA QIS 2 exercise in 2012.

- Market Risk - Equity Risk**

Figures 6.7 shows the split of equity risk capital across the various risk contributors for both life and non-life insurers.

Figure 6.7: Contribution of equity risk components to equity risk SCR (%)



It is clear that local listed equity exposure is the largest component of equity risk (87% for life insurers, 91% for non-life insurers). Life insurers also have relatively more global equity exposure than their non-life counterparts.

There were some concerns over the treatment of participations in the equity risk capital calculation. In particular, there was a view that participations should be treated the same, whether they were seen as strategic or not. There was also a concern that a 22% stress on participations was not enough, and that participations should be stressed in line with other equity holdings.

There was uncertainty as to how preference shares should be treated, and more guidance was requested on this issue. One option highlighted was to treat preference shares as a separate class of equity.

There was some concern as to whether the equity dampener would always give sensible results. A question was also raised as to whether dampeners should also be considered for other market and non-market stresses.

In the SA QIS 1 exercise, insurers were asked to provide information on the impact of changes in implied volatilities for equities and swaptions. The information was requested on the current FSB basis and was therefore not directly comparable to the SA QIS 1 basis, but gives an idea as to the possible quantum of the impact of changing volatilities. For the insurers that did provide information, the overall impact net of any offsetting actions was R5.1bn, with offsetting actions⁵ decreasing the impact to R4.7bn. This is mostly attributable to life insurers, although the non-life insurers were not immune to the stress. This indicates that volatility risk can be material for some insurers, and that this is an area where more testing should be included in SA QIS 2 to gain a better understanding of the risk, and to consider the possible treatment within the SAM regime.

- **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 6.1 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.

⁵ The offsetting actions for one outlier was removed, as they were reporting offsetting actions more than 10 times the gross impact, and this result was skewing the overall amount.

Table 6.1: Interest rate stress applied by participants by industry

	Life Insurer	Non-Life Insurer	All Insurers
Upward stress used	31	17	48
Downward stress used	7	28	35
No stress completed	2	10	12

For non-life insurers there are more insurers where a downward stress is more onerous than an upward stress. This reflects the large proportion of assets, especially equities and cash instruments, on the balance sheet of non-life insurers that are not affected by interest rate shifts.

All insurers should be affected by movements in interest rates. Even though an insurer may not hold any assets on its balance sheet that are impacted by movements in interest rates, all insurers' technical provisions will be affected by interest rate movements, as a discounted cash-flow approach is used to calculate the best-estimate liability portion of the technical provisions. This goes for both life and non-life insurers. It is thus likely that the impact of interest rate risk has been understated, although it may be that this understatement could be insignificant.

- **Market 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 under SA QIS 1.
Property Risk

- **Market Risk –** Two approaches to the treatment of spread risk were considered in the SA QIS 1 exercise. The first approach was similar to the approach followed in QIS 5 where specific stresses are applied, depending on the credit rating and duration of the assets. A second approach, also referred to as the Canadian approach, was tested where the capital requirement is calculated on a probability of default multiplied by a loss given default.
Spread Risk

There were some concerns raised over the treatment of spread risk within the standard formula under the first approach. Specifically, there were some concerns with the interaction between spread risk and counterparty default risk. A number of insurers were of the opinion that, given the illiquidity of the corporate bond market, the default approach set out in SA QIS 1 was not appropriate. A related point on the treatment of unlisted loans was raised, suggesting that these should preferably be treated under the counterparty default module of the standard formula.

Some insurers also struggled to obtain credit ratings for all of their assets, especially as international ratings were required in the SA QIS 1 exercise. A small number of insurers indicated that they had used their own approach to obtain ratings where these were not available.

There was no clear preference on whether to use national or international ratings, with approximately 40% of insurers preferring to use local ratings, 30% preferring international ratings and 30% having no preference for either a local or international rating.

Proponents of international ratings highlighted the following points:

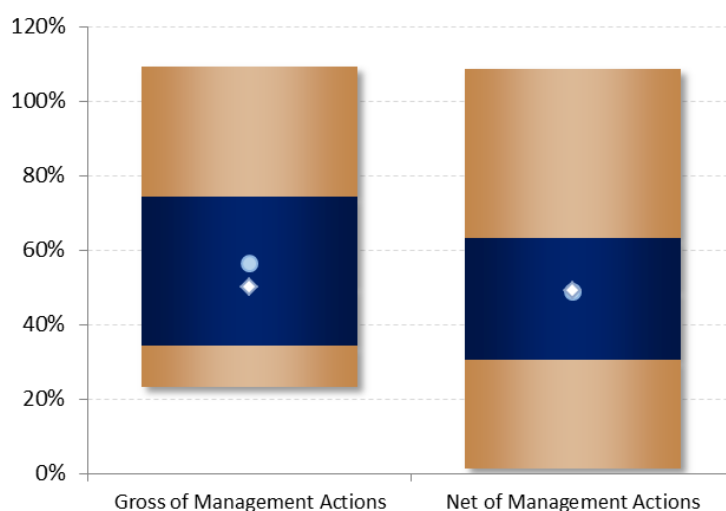
- The use of national ratings reflects ranking and does not give an indication of the probability of default.
- Using international ratings provides a better comparison between foreign and domestic exposures.
- Using international ratings would enable a consistent approach on a group level for multinational insurers.
- International ratings allow for the consistent measuring of local and international insurers.
- International ratings are a better indicator of global systemic risk.
- Where the insurer has exposure to offshore credit risk, the use of international credit ratings would be more appropriate.
- There was an opinion that international ratings were more reliable and easier to access than local ratings.

On the other hand, proponents of the use of local ratings highlighted the following points:

- International ratings are distorted by allowing for sovereign risk.
- Local ratings are readily available and more reliable because of local expertise and data.
- The use of local ratings is more relevant to local operations.
- In emerging markets the use of international ratings could compress the range of ratings, leading to compressed spreads which do not provide enough information to differentiate between relative risks and various issuers.
- Few insurers actually have international ratings.
- Using conversion tables to map local ratings to international ratings may introduce inappropriate variations.
- Local ratings will avoid inconsistencies and will ensure the consistent treatment of government debt and corporate exposures.
- Local ratings produce consistency provided that local government debt is considered risk-free.
- International ratings result in South African government debt attracting a BBB rating which is overly conservative.

Figure 6.8 shows the ratio of credit spread risk capital calculated using the Canadian approach over the credit spread risk capital calculated using the QIS 5 approach.

Figure 6.8: Spread risk capital under the Canadian approach as a percentage of spread risk capital under the EU QIS 5 approach



The graph shows that the Canadian approach generally results in lower risk capital than the QIS 5 approach. For all insurers combined, the Canadian approach produces risk capital just under half of the credit spread risk capital under the QIS 5 approach.

- Market Risk –**
Currency Risk

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

- Market Risk –**
Concentration Risk

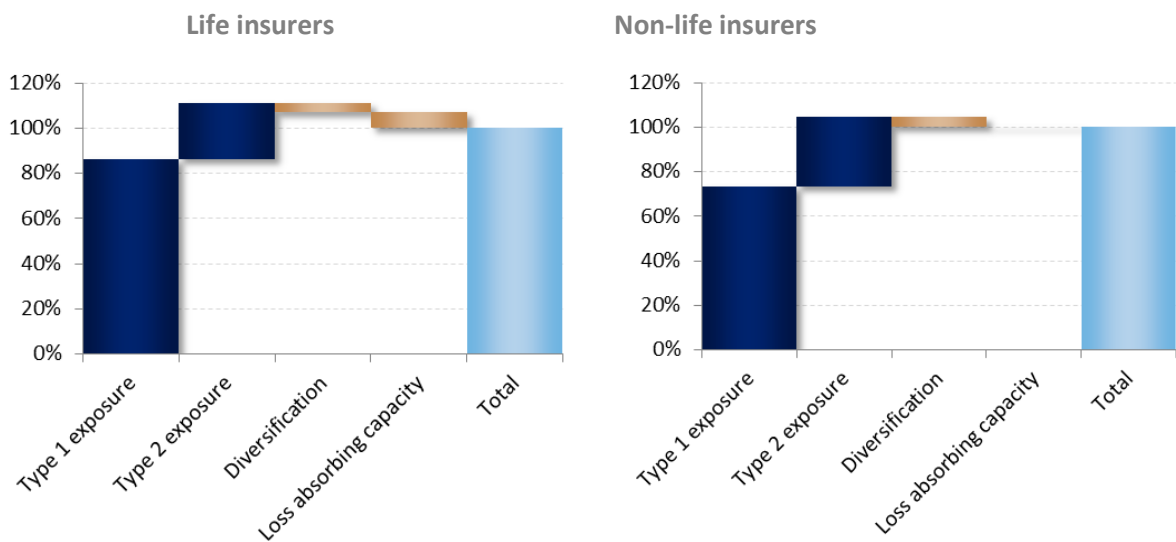
 The key concern raised in relation to the calculation of concentration risk was that the calculation methodology was too onerous given the relatively small impact of concentration risk on the overall SCR.

- Market Risk –**
Illiquidity Premium Risk

 The illiquidity premium risk is reasonably insignificant. This reflects the relatively small impact of the illiquidity premium risk as outlined in the technical provisions section. If Case 3 as set out in the SA QIS 1 technical specifications was used as the basis for the stresses, it is likely that the illiquidity premium risk would be more significant. This is because Case 3 takes more credit for the illiquidity premium to calculate lower technical provisions, and there would thus be a greater loss without the illiquidity premium.

- **Counterparty Default Risk** Figure 6.9 shows the contributions of the various risk components of counterparty default risk to overall counterparty default risk SCR.

Figure 6.9: Contribution of counterparty default risk components to counterparty default risk SCR (%)



Type 1 counterparty exposure contributes the greatest proportion of counterparty default risk for both life and non-life insurers, exceeding 80% for life insurers and exceeding 70% for non-life insurers.

The key concern raised in relation to counterparty default risk was the use of a 100% loss given default for unsecured counterparties. This was especially true for the exposure to the big South African banks. Some insurers also requested that the probability of default of the big South African banks should be revisited, as the current probabilities were considered too high. One insurer went as far as to say that there should be no counterparty default risk exposure to the big banks as the authorities would not allow any of the big banks to fail.

There was also a view expressed that there should be no exposure to counterparty default risk where the policyholders were bearing the investment risk, as any loss due to default would be passed directly to the policyholder. It should however be noted that this is directly contrary to the contents of the FSB Directive dealing with linked investment policies, which states that it is only market risk that is transferred to the policyholder, not other risks such as counterparty default risk

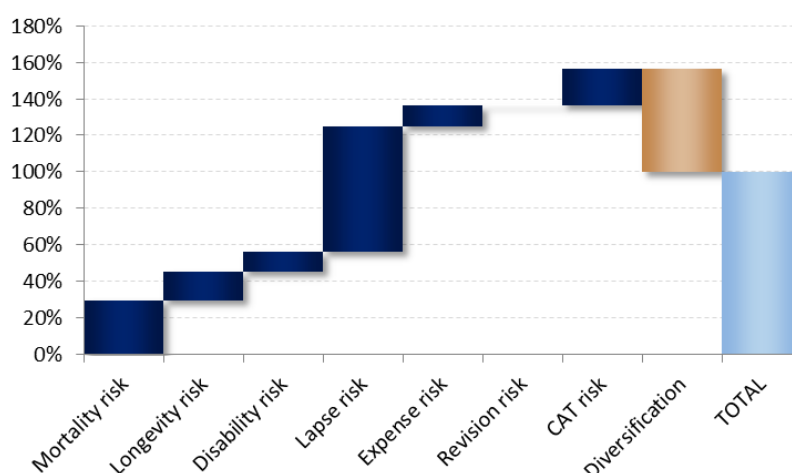
One insurer also raised a concern that there was no allowance in the formula for default risk relating to investment managers, and that this should be included in the calculation.

Some insurers were also concerned with the practicalities of the calculation, claiming that it was too onerous to calculate the exposures to all counterparties separately, and that grouping should be allowed when calculating the exposures.

■ *Life Underwriting Risk*

Figure 6.10 shows the contributions of the various risk components of life underwriting risk to overall life underwriting risk SCR.

Figure 6.10: Contribution of life underwriting risk components to life underwriting risk SCR (%)



For life insurers, the most significant life underwriting risk was lapse risk, followed by mortality risk. Although mortality risk is included in a separate module, many life insurers with exposure to health products have included it within the life underwriting module.

■ *Life Underwriting Risk – Mortality Risk*

Very few concerns were raised with the methodology proposed to calculate mortality risk capital. One insurer was concerned that applying the stress for a whole year did not take into account that premiums may be reviewable before then.

Another concern raised was that the extent of the mortality stress should be matched to the number of lives exposed, as there would be diversification effects within the block of business.

■ *Life Underwriting Risk – Longevity Risk*

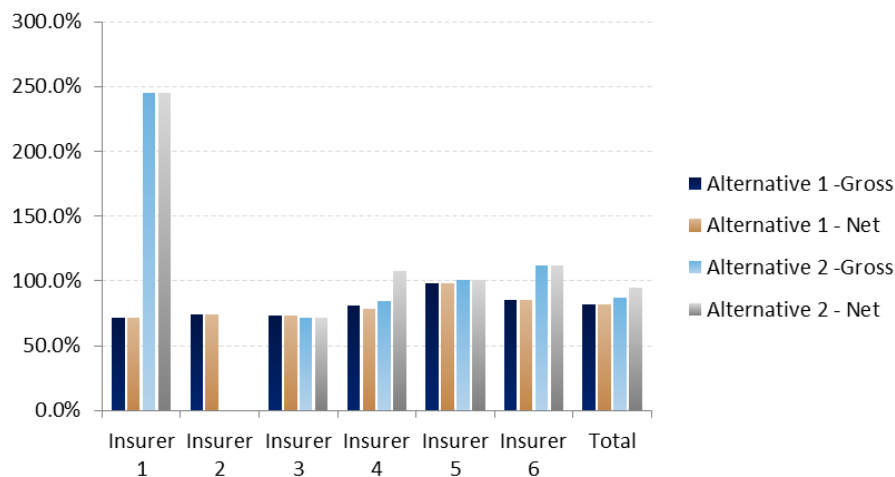
For longevity risk, life insurers were requested to test two alternative calculations for the risk capital required for longevity risk:

- The first alternative requires different shocks for ages above and below 60.

- The second alternative requires a shock to the future improvement of mortality rates.

Only five insurers were able to provide the impact of both alternatives, with one additional insurer producing results for alternative 1 only. Figure 6.11 shows the output, both gross and net of management actions, as a ratio of the underlying shock.

Figure 6.11: Longevity risk capital under alternative approaches as a percentage of longevity risk capital under stipulated approach*



*Note – Total excludes “Insurer 2”

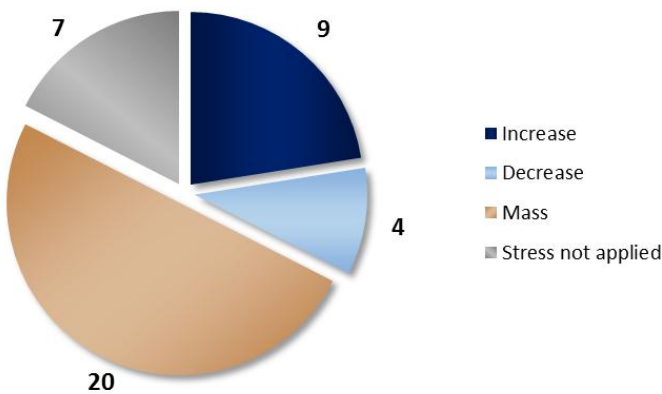
It is clear that the alternative approaches for the six insurers as a whole led to results lower than that of the stipulated approach, with alternative 1 providing lower capital requirements for longevity risk than alternative 2.

Insurers were inconsistent in determining whether business should be included in the disability module of the life underwriting risk, or in the health underwriting risk module. This is considered in more detail in the health underwriting risk section. In addition, a concern was raised that the shock in the disability module was not sufficient for hospital cash plan business.

■ Life Underwriting Risk – Lapse Risk

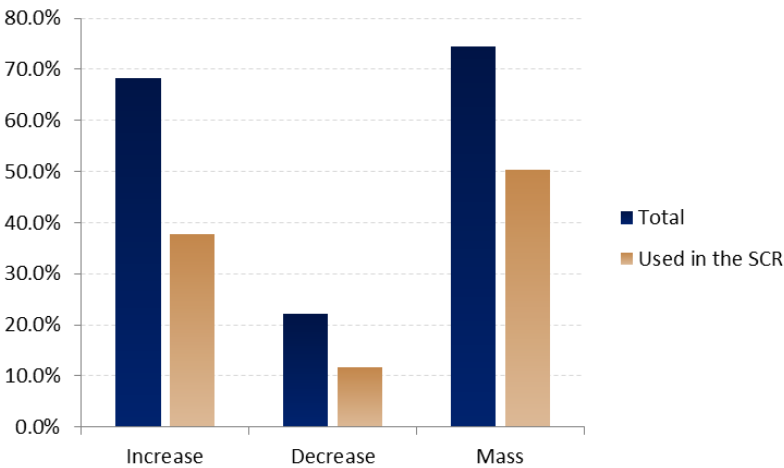
In calculating lapse stress, participants considered an increase in lapses, a decrease in lapses, and a mass lapse scenario. The most onerous of these calculations is utilised as lapse risk SCR. Figure 6.12 shows which of the lapse stress calculations were shown to be the most onerous for respondents.

Figure 6.12: Proportional split of lapse calculations found to be most onerous among participants



Although just the most onerous of calculations is used for capital purposes, it is none-the-less of interest to observe the magnitude of the calculations not counting towards capital. Figure 6.13 shows this total impact of all scenarios in contrast to the scenarios used for capital purposes.

Figure 6.13: Contribution of the various calculation types to overall life underwriting risk SCR (as a proportion of underwriting risk SCR)



Further guidance was requested on the lapse risk module, as there was some uncertainty regarding the calculation. There was also uncertainty regarding the treatment of expenses under the lapse scenario, especially the mass lapse scenario.

There was also a concern that it was too onerous to calculate the lapse exposure on a policy by policy basis, as already required in the current CAR capital calculations.

Some insurers had concerns that the structure of the lapse risk calculation was too conservative, as the combination of upwards and downwards shocks implies that policyholders will always be able to select against the insurer.

However, other insurers highlighted that both mass lapse as well as a movement up or down should be included, to ensure that all lapse risks are covered in the capital requirement.

With regard to the parameters used, there were concerns that the considerable difference in the mass lapse stress between retail business (30% mass lapse) and non-retail business (70% mass lapse) was too large and not justifiable. There was also a concern that the lapse shocks applied to life underwriting were different to the lapse shocks applied to the health underwriting module, especially for products that have both life and health benefits.

- *Life Underwriting Risk – Expense Risk*

Whereas most insurers agreed that the expense stress was sufficient to capture the risk due to inflation, there were some insurers that had concerns that the expense stress did not capture inflation risk. There were some suggestions to include inflation risk in an explicit component under the life underwriting risk, and there was also a suggestion that the risk to inflation could be included in the interest rate risk module.

It was noted that income continuation products in particular could have significant exposure to inflation risk.

There was also one concern raised regarding whether the expense stress was sufficient to capture the risk of new business volume being lower than expected, in which case per policy expenses would increase.

- *Life Underwriting Risk – Revision Risk and CAT Risk*

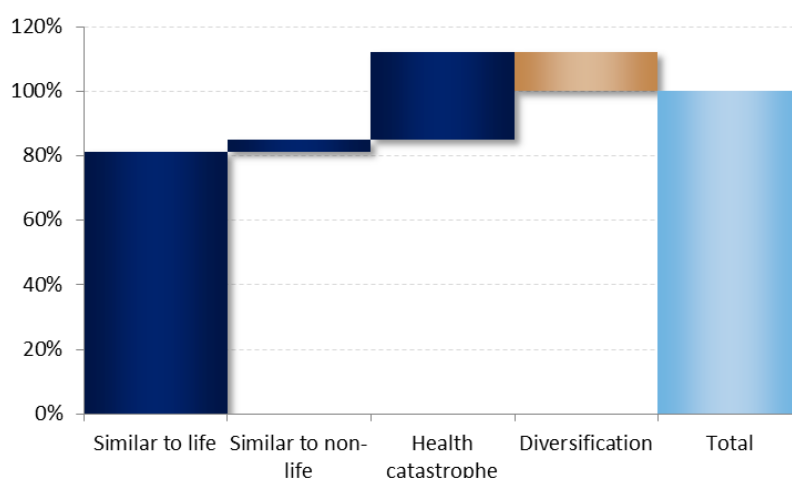
There were no insurers that reported any exposure to revision risk in the SA QIS 1 exercise.

Some concerns were raised that the parameter used to determine the life catastrophe risk capital was too high, and that it had not been properly motivated.

- *Health Underwriting Risk*

Figure 6.14 illustrates the composition of the total health underwriting risk SCR in terms of the underlying risk components. It is clear from the figure that the Similar to Life Technique (SLT) approach is the biggest contributor to overall capital requirements for this risk type.

Figure 6.14: Contribution of health underwriting risk components to health underwriting risk SCR (%)



The major concern raised in relation to the health underwriting risk module was whether the health underwriting risk should be removed and integrated into the existing life underwriting and non-life underwriting risk modules.

There were both practical and theoretical concerns for life insurers with products containing both life underwriting risk and health underwriting risk. The practical concern related to the unbundling of the contract into the various components, which would be both difficult and subjective. The theoretical concerns related to:

- Regulatory arbitrage – As the unbundling of the contract is subjective, the insurer could allocate the contract between the life and health underwriting modules in such a way so as to minimise the amount of capital required.
- Excess diversification – Due to the correlation factor of less than 100% between the life underwriting and health underwriting modules, there would be a diversification benefit assumed between factors affecting the same policy. As an example, it would not be possible to lapse the health benefit component of the policy but not the life benefit.

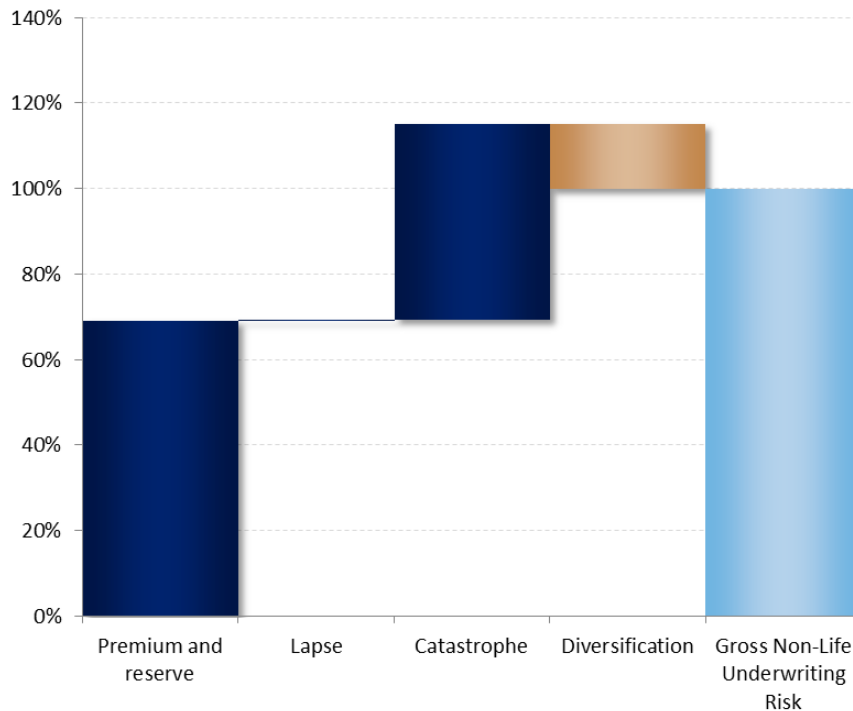
The treatment of the health underwriting risk module is currently being considered within the relevant SAM structures.

A concern was also raised that the shock in the disability module was not sufficient for hospital cash plan business.

■ *Non-life Underwriting Risk*

The vast majority of non-life underwriting risk consists of premium and reserve risk, and catastrophe risk. Each of the different risk components are considered in turn in figure 6.15.

Figure 6.15: Contribution of non-life underwriting risk components to non-life underwriting risk SCR (%)

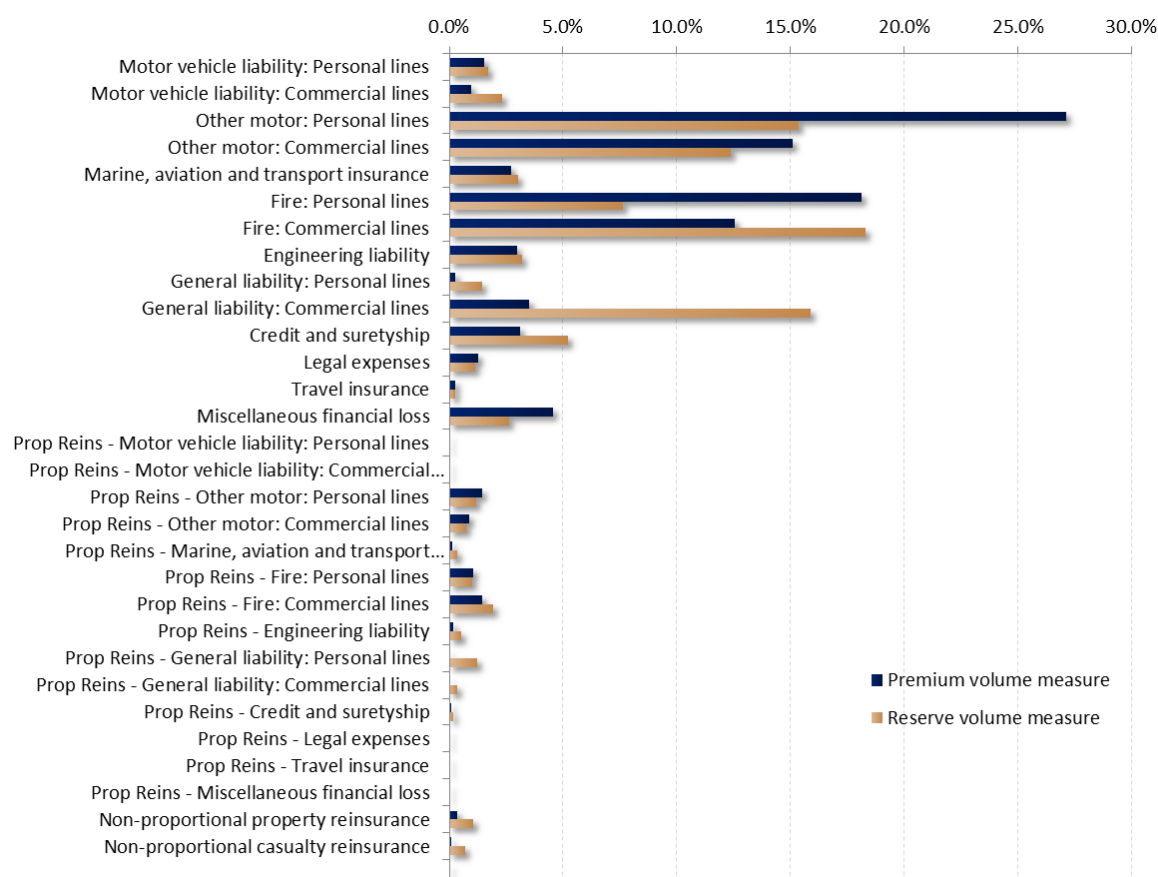


■ **Non-life Underwriting Risk – Premium and Reserving Risk**

A number of concerns were raised about the allowance for non-proportional reinsurance, as the volume measures used within this part of the calculation do not take non-proportional reinsurance or insurer specific risk mitigation strategies into account. There were also some comments raised that the volume measures do not take into account the profitability of underlying business, resulting in overly conservative capital charges. There was also a concern that the parameters used in the stress do not take into account the size of the book.

Figure 6.16 shows the split of the distribution of the volume measures across the different classes of business defined in SA QIS 1.

Figure 6.16: Volume measures across different lines of business for premium and reserving risk



It is interesting to note that, in general, the personal lines have high premium risk exposure relative to reserve exposure, whereas the commercial lines have high reserve risk exposure relative to premium risk exposure.

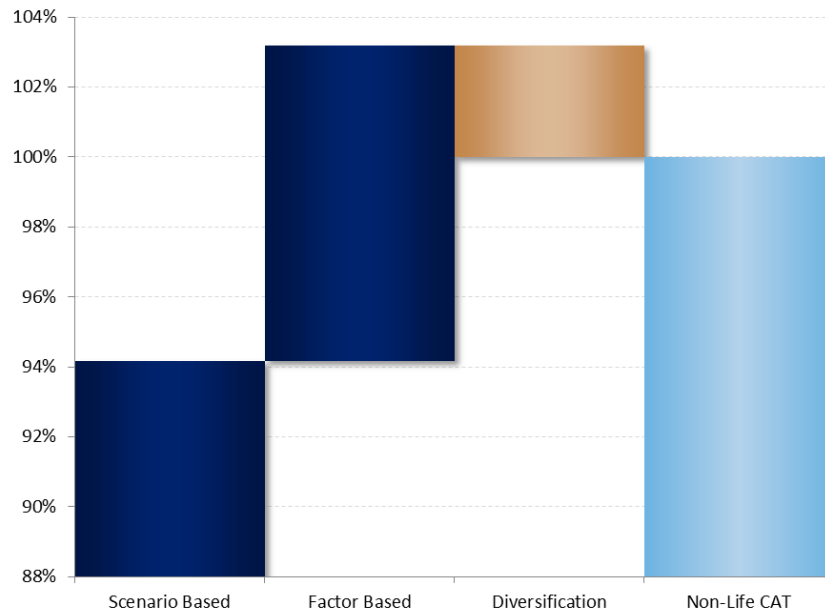
■ **Non-life Underwriting Risk – Lapse Risk**

Only four of the 55 non-life insurers that responded attempted to calculate the non-life lapse risk capital. For the insurers that did make the calculation, the lapse risk capital made up less than 5% of the non-life underwriting risk capital.

■ **Non-life Underwriting Risk – Catastrophe Risk**

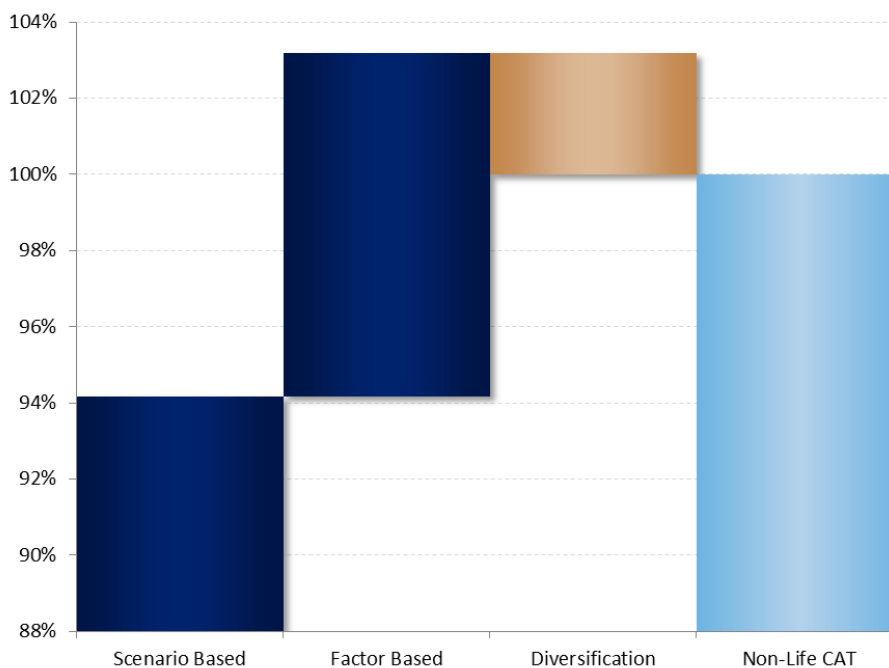
The calculation for the non-life underwriting catastrophe risk for SA QIS 1 consisted of both a scenario based and factor-based calculation, with some allowance for diversification between the two components. As can be seen in figure 6.17, the scenario-based approach makes up almost 100% of the non-life catastrophe risk capital.

Figure 6.17: Contribution of the scenario based and factor based calculations on non-life catastrophe risk capital



The scenario-based approach consists of two parts: a natural catastrophe component and a man-made catastrophe component, with some diversification benefit between the two components. Figure 6.18 illustrates the relative weighting of the two components.

Figure 6.18: Contribution of the natural and man-made scenarios to the overall scenario based approach result for non-life catastrophe risk

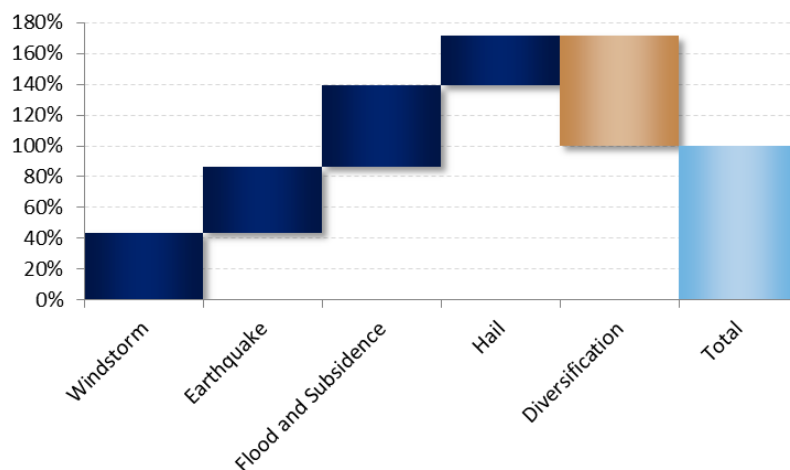


The natural catastrophe scenarios consider the following events:

- Windstorm
- Earthquake
- Flood and subsidence, and
- Hail

Figure 6.19 sets out the split of risk capital over the various natural catastrophe scenarios. The impact of diversification in this case is significant, as it is assumed in the SA QIS 1 calculation that these events are independent, and because the risk capital is split out relatively evenly over the scenarios.

Figure 6.19: Contribution of various natural catastrophe scenarios to the overall natural catastrophe scenario result for non-life catastrophe risk

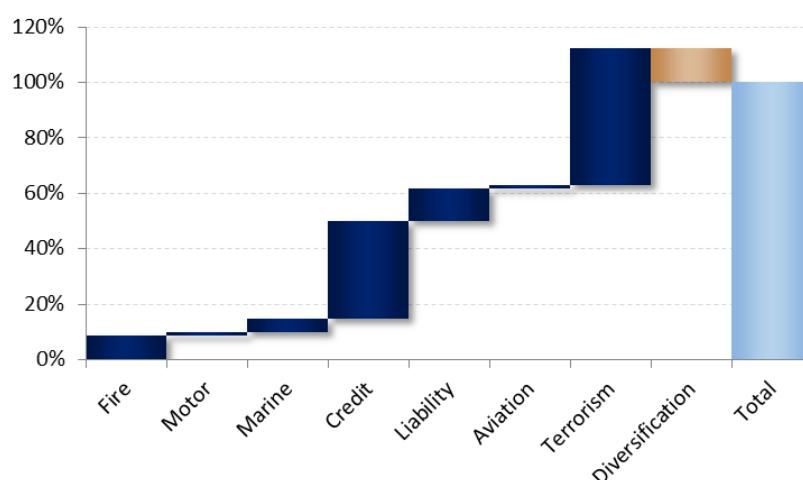


The man-made catastrophe scenarios consider the following events:

- Fire
- Motor
- Marine
- Credit
- Liability
- Aviation, and
- Terrorism

As can be seen in figure 6.20, most of the risk capital for man-made catastrophes is allocated to credit and terrorism.

Figure 6.20: Contribution of various man-made catastrophe scenarios to the overall man-made catastrophe scenario result for non-life catastrophe risk

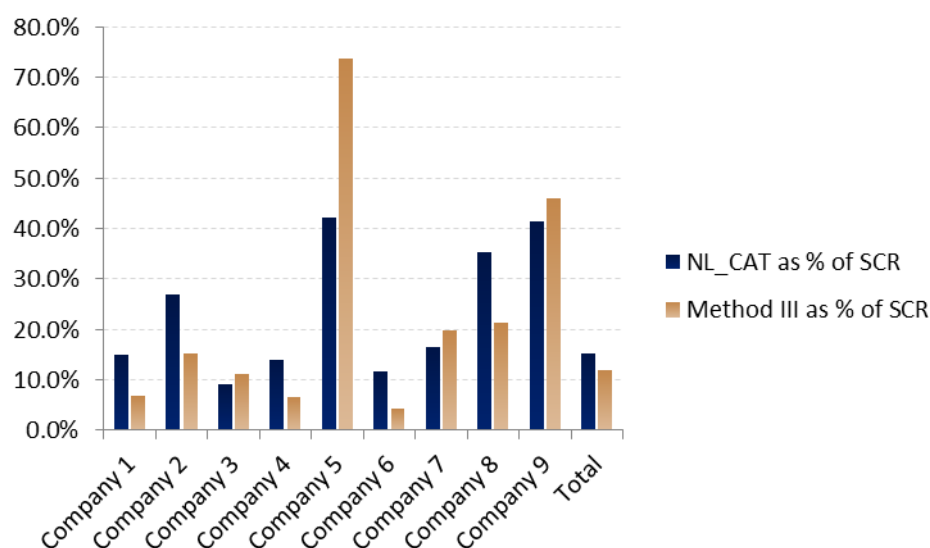


There was a general concern that the calibration of the catastrophe risk in the SA QIS 1 exercise was too high, with some insurers indicating that their undertaking-specific parameters and internal models were calculating lower risk capital. Specific areas that were highlighted included the credit catastrophe scenario and the flood scenario. There was also a concern that the structure of the calculation meant that there was an assumption in the calculation of the SCR that a 1 in 200 year event would happen more than once.

The SAM structure is currently undertaking a calibration exercise in order to produce a new calibration for non-life catastrophe risk for the SA QIS 2 exercise. However, in order to derive a calibration appropriate to the South African market, industry participants will need to provide the SAM task group with appropriate data.

In addition to the default catastrophe calculation, additional information was requested on the Maximum Event Retention (MER) approach as used by the Australian regulator, which was listed as Method III in the technical specification. Nine non-life insurers have provided results of the Method III calculation, as set out in figure 6.21 below.

Figure 6.21: Contribution of various man-made catastrophe scenarios to the overall man-made catastrophe scenario result for non-life catastrophe risk



The graph indicates mixed results, with five of the insurers showing higher risk capital under the SA QIS 1 approach, and four insurers showing higher risk capital under the Australian approach.

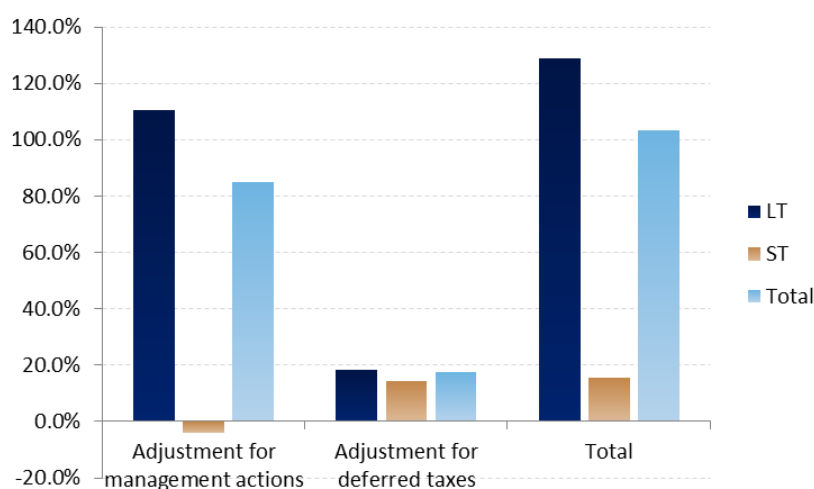
- *Loss-absorbing capacity of technical provisions*

The adjustment for loss-absorbing capacity of technical provisions refers to the case where the technical provisions are able to absorb losses once various stresses have been applied. There are two components to this loss absorption capacity:

 - Loss absorption due to management actions taken under the stressed conditions.
 - Loss absorption due to the impact on deferred taxes.

Figure 6.22 shows the contribution of these two elements to the overall loss-absorbing capacity of technical provisions.

Figure 6.22: Split of adjustment for loss-absorbing capacity of technical provisions as a percentage of SCR



- Loss-absorbing capacity of technical provisions – Management Actions**

For life insurers, the bulk of the adjustment is due to the management actions taken under stressed conditions. This is primarily due to the management actions taken in respect of with-profit policies under various market stresses. Figures 6.23 and 6.24 below show the impact of management action on the various components of the BSCR, as well as on the components of the market risk module.

Figure 6.23: Impact of management action on the various components of the BSCR (R'm)

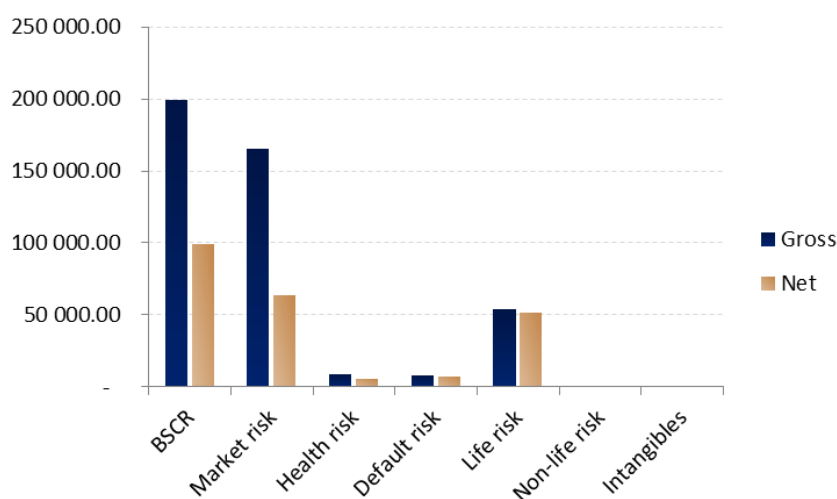
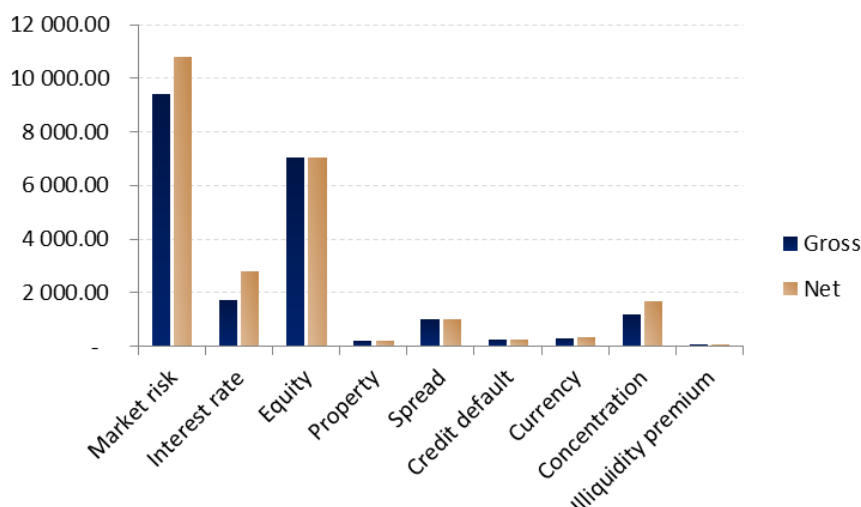


Figure 6.24: Impact of management action on the various components of the market risk SCR (R'm)



The types of management actions typically taken by life insurers with respect to with-profit policies include:

- Changing the assets used to back the with-profit policies.
- Removing discretionary bonuses for with-profit policy benefits.
- Decreasing the bonus smoothing reserve.

It is also worth pointing out that insurance management actions will vary widely between insurers and policies, depending on:

- Expectations created among policyholders in terms of management actions that may be taken.
- Principles and practices of financial management set out by the insurer.
- Management actions allowed by the policy's terms and conditions.
- Product literature communicated to the policyholder.
- Prior practice of management actions taken.
- Objectives and risk appetite of the insurer.

In order to understand the management actions taken, appropriate disclosure will be very important. This is an area that will need further development within the SAM regime.

There were some concerns around the practicalities of calculating the impact of shocks without taking any management actions, as often the management actions are an integral part of the cash flow models used by the life insurers. There was also a concern regarding the extent to which management actions could be taken, and whether results between insurers would be comparable.

In order to ensure that the loss absorption is not double-counted between different stresses, SA QIS 1 set out a single equivalent scenario. This calculation applies the loss-absorbing mechanism only once in a single scenario where all risk factors are represented, as opposed to applying the mechanism individually

to each separate shock for each risk factor. However, no insurers attempted the single equivalent scenario.

- **Loss-absorbing capacity of technical provisions – Deferred taxes** As previously set out in the section dealing with liabilities other than technical provisions, the approach taken for the calculation of deferred tax liabilities varied widely between insurers. This was specifically the case for life insurers where the release of margins in the calculation of the best-estimate liability resulted in a considerable decrease in statutory liabilities and an increase in deferred taxes, depending on which tax basis is to be used in the SAM regime.

This divergence in treatment was further exacerbated when considering the impact of the loss absorption capacity of these deferred tax liabilities under various stressed conditions. Specifically, the extent to which the loss absorption of deferred taxes was taken into account varied. Some insurers also ignored the impact of the loss absorption.

There was a request that more guidance be given on how to apply this adjustment.

- **Simplifications** A number of insurers made use of the simplifications available under the calculation of the SCR standard formula.

Table 6.2: Number of insurers using simplifications

	Life insurers	Non-life insurers	Total
Credit Spread	7	1	8
Mortality	2	0	2
Longevity	0	0	0
Disability-Morbidity	3	0	3
Life expense	3	1	4
Life lapse	4	0	4
Health	2	1	3
Counter-party default	14	18	32

Most notable was the use of the simplification to calculate the capital requirement for the counterparty default risk module, with a number of life insurers also using the simplification under the credit spread risk module. It was interesting to note that, apart from the counterparty default module, very few non-life insurers made use of the simplifications available under the standard formula.

Most insurers believed that the simplifications available were either fair or good, with the life insurers having a slightly more positive view of the simplifications than the non-life insurers.

Table 6.3: Participants' assessment of the appropriateness of simplifications provided

	Life insurers	Non-life insurers	Total
Poor	5	6	11
Fair	9	22	31
Good	16	16	32
Excellent	1	0	1

The key concern raised with the existing simplifications was over the simplification for the counterparty default module. In particular, respondents mentioned that the grouping of reinsurers by credit rating would make the simplification easier, or to have a simpler way of calculating the exposure to reinsurers. There were also concerns relating to the parameters used in the simplification, especially for the exposure to the big South African banks.

For some of the life underwriting simplifications there was also a concern over being able to adequately ascertain the run-off pattern for lines of business, and whether these were appropriate proxies for the actual risk exposure. There was also a request for further guidance on the use of the group lapse simplification.

A comment was also made that it would be helpful to have further guidance on when it would be appropriate to use simplifications.

In addition insurers also raised further suggestions of areas where simplifications could be used.

Many insurers expressed concerns with applying a look-through approach to determine exposure to market risks for collective investment schemes or funds invested by a third party. A suggestion was made to determine the exposure based on the mandate of the collective investment scheme or third party. There were also requests to have a simplification for the concentration risk sub-module, possibly by ignoring small exposures or aggregating some of the exposures. There was also a concern raised over the treatment of securitizations and credit-linked notes.

There was a suggestion to incorporate the SLT-Health module into the SCR-Life module, as well as a request to have a simplified disability shock where there was an instantaneous increase over all years.

Under the non-life underwriting risk module, there was a request for a simplified method to calculate the reinsurance recoverable under catastrophe scenarios.

There was also a request to have separate simplifications for reinsurers as compared to insurers, although no specific simplifications were suggested.

■ *Undertaking-specific parameters*

There were five insurers that calculated undertaking-specific parameters for premium and reserving risk within the non-life underwriting risk module of the standard formula. In general, for premium risk, the undertaking-specific parameters were lower than the corresponding parameters of the standard formula, whereas the undertaking-specific parameters for reserving risk tended to be higher than the corresponding parameters in the standard formula. A combination of all three methods as set out in the SA QIS 1 technical specification was used in calculating the undertaking-specific parameters.

No undertaking-specific parameters were calculated for either the health or life underwriting risk modules.

Insurers highlighted that there may be issues in obtaining the data required to calculate the undertaking-specific parameters. The following issues were highlighted:

- The relevant data may be held by third parties, such as brokers and underwriting managers.
- Historical data may not be available in the segmentation required.
- Historical data may not be reliable.

Apart from the undertaking-specific parameters allowed in QIS 5, there were also suggestions to allow the calculation of undertaking-specific parameters for the following parts of the standard formula:

- Natural catastrophe parameters could be replaced by results from proprietary catastrophe models.
- Life SCR parameters e.g. mass lapse, mortality, expenses, etc.
- Probability of default and recovery rates under counterparty default.
- The shocks applied to lapse assumptions.

■ *Participations*

In total 172 participations were disclosed by insurers. Table 6.4 shows the number and value of participations by type of participation.

Table 6.4: Number and value of participations reported, split by type of participation

Types of participations	Number of participations	Value of participations (Rm)
Financial and credit institutions subject to CRD - equity	6	24 215
Financial and credit institutions (others) - equity	17	3 316
Financial and credit institutions (others) - subordinated liabilities and preference shares	1	92
(Re)insurers - strategic Global equity	4	26
(Re)insurers - strategic SA equity	30	19 874
(Re)insurers - strategic Other equity	20	16 791
Related undertakings where the investment is of a strategic nature other than those above	75	4 003
Other related undertakings not included above - SA Equity (SCR 5.31)	16	1 402
Other related undertakings not included above - Other Equity (SCR 5.31)	3	1
Total	172	69 719

Table 6.4 illustrates how significant the treatment of participations is to the South African insurance industry.

The treatment of financial and credit institutions tested under SA QIS 1 requires insurers to exclude the value of the financial and credit institutions from the Eligible Own Funds available to meet the SCR. As illustrated in the table, there is a total of R27.6bn of participations in financial and credit institutions which has been deducted from the Eligible Own Funds.

Some of the insurers have suggested that the treatment of participations in financial and credit institutions should be allowed in the Own Funds, with a capital charge added to the equity sub-module of the standard formula.

There have also been concerns that the 22% charge applied for strategic participations understates the risk associated with these participations. It has been suggested that the charge should be increased to take into account the same stress levels as other equities.

Insurers highlighted various reasons for classifying investments as strategic. These included:

- Percentage of ownership and control over participation.
- The extent of time over which the insurer intends to hold the participation.
- Whether the insurer could demonstrate that there were benefits in addition to the investment benefits.
- Synergies with other activities undertaken by the group.
- Including the participations as part of the consolidated group reporting.

Cell captives which had been set up for specific reasons were also regarded as strategic participations.

It is clear that further guidance will be required on whether participations are strategic or not so as to ensure consistent treatment of participations.

- *Ringfenced funds*

Some insurers have indicated that they have legally ringfenced funds where there is a court order in place as part of a transfer of business from one long-term insurer to another. An insurer has also highlighted that cell captives are contractually ringfenced, although not legally.

The point has been made that with-profit business in South Africa does not lead to a ringfenced fund from a legal point of view. However, in practice the fungibility between assets backing with-profit business and the assets backing non-profit business may be limited, due to policyholders' reasonable expectations and the limits placed on insurers due to their Principles and Practices of Financial Management. This is an area that will need further discussion and deliberation in the SAM project, as well as possible consideration under future quantitative impact studies.

7. Minimum Capital Requirement (MCR)

The MCR is the amount of capital at which point the regulator would be expected to take immediate action to ensure that policyholders would be protected. The calculation has been set up in such a way that it is easy to calculate, so that an insurer and the regulator will be able to form a view very quickly as to whether the MCR is being met.

There are only two life insurers and two non-life insurers that are not meeting their MCR under SA QIS 1.

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. 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	10	10	20
MCR is 25% of SCR	20	14	34
MCR between 25% and 45% of SCR	2	23	25
MCR is 45% of SCR	8	8	16

There were some concerns that the choice of parameters used in the calculation seemed arbitrary. A parameter that has been specifically highlighted is the 0.5% of reserves for unit-linked funds.

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

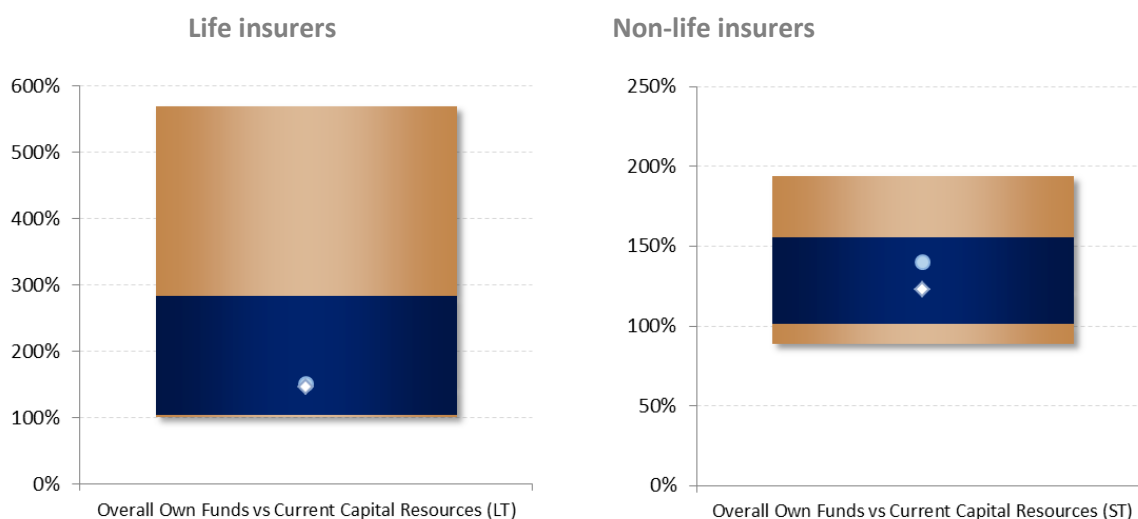


Figure 8.1 above shows the significantly greater spread in the ratio of Overall Own Funds to Current Capital Resources for life insurers as compared to non-life insurers. The median ratio for life insurers was 146% (average=269%), while that of non-life insurers was 123% (average=136%). 90% of life insurers had ratios at least as great as 101%, while 90% of non-life insurers had ratios exceeding 89%. 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.

■ 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 so 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 eight non-life insurers reported holding any Tier 2 capital. A further four life insurers reported holding Tier 3 capital, while one of the eight non-life insurers holding Tier 2 capital also holds Tier 3 capital. The largest proportion of own funds not in Tier 1 reported by a life insurer was 13,8%, while that for a non-life insurer was 24%. It should be noted however that a few insurers indicated pursuing instruments which would qualify as Ancillary Own Funds in future.

In analysing the results however, it should be noted that it appears that a number of respondents did not undertake to tier their own funds, and as a result the true exposure to Tiers 2 and 3 may be higher than that indicated in the SA QIS 1 results.

- *Overall 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. Overall Own Funds will therefore exceed Eligible Own Funds if the tiering of assets results in assets in Tier 2 or Tier 3 being excluded.

Results show very close alignment between Overall Own Funds and Eligible Own Funds for all insurers. Looking at Overall as a percentage of Eligible funds, this percentage ranges from 98% to 104% for life insurers and from 90% to 106% for non-life insurers, with by far the majority of respondents indicating a ratio of 100%.
- *Comments from participants*

EPIFP - The calculation of EPIFP was not reported to be an undue burden by those of the insurers who completed the calculations, although many insurers omitted it. Many of the insurers did not see the purpose of calculating the EPIFP, and so were unable to comment on the appropriateness of the methodology. There was a concern raised by one participant that smaller insurers may use this method to raise capital. Concerns over conflict with profit recognition in terms of IFRS and potential tax implications were also raised.

9. Internal Models

It was not the specific intention of the SA QIS 1 exercise to perform a detailed review of internal model details. As such, no change was made to the internal model quantitative and qualitative request made by EIOPA for the QIS 5 exercise.

However there were a number of insurers that did provide both quantitative and qualitative information on their internal models. In total, 12 insurers completed the internal model questionnaire, and 12 insurers provided results of their internal model within their SA QIS 1 submission. Note that the 12 insurers completing the questionnaire were not the same insurers providing the SA QIS 1 submission – there were three insurers that completed the questionnaire and did not provide results, and three insurers that provided internal model results without completing the questionnaire.

There were two life insurers that provided internal model results.

One of these was a linked insurer, where the key exposure was operational risk. The internal model calculated an SCR for operational risk that was 30% lower than the corresponding number calculated by the standard formula.

The other insurer was a niche insurer selling credit life policies. The key risk for this insurer was the risk associated with the retrenchment benefit. For this insurer, the internal model calculated risk capital for the retrenchment benefit that was 10% higher than the corresponding number from the standard formula.

Ten non-life insurers provided full or partial results for the SCR calculation. Nine insurers provided results of the non-life underwriting risk, although only seven split the results into the premium and reserve risk and catastrophe risk as per the standard formula structure. Some of the insurers also provided results for market, counterparty default and operational risk.

Table 9.1 below sets out the insurers' increase or decrease for the various risk components as a result of using internal models as opposed to the standard formula. Comparisons at the overall level were only possible for the four insurers that calculated the overall SCR using an internal model. The table also compares the internal model risk capital to the standard formula risk capital across all insurers.

Table 9.1: Impact of the use of internal models on capital requirements

	Overall SCR	Non-life under-writing risk	Premium and Reserve risk	Catastrophe risk	Market risk	Counter-party default risk	Operational risk
Internal Model capital less than Standard Formula capital	3	8	6	5	2	3	2
Internal Model capital greater than Standard Formula capital	1	1	1	2	1	2	2
Total Internal Model capital as a % of Standard Formula capital	92%	58%	53%	70%	107%	71%	142%

It is interesting to note that most of the insurers show a decrease in the amount of capital held for non-life underwriting risk. In some cases, insurers have even reported a negative amount for some components of premium and reserve risk. This anomalous result reinforces the need for a robust internal model approval process to ensure that the SCRs calculated by insurers give an appropriate result.

10. Conclusion

■ *Looking ahead to QIS 2*

Whereas SA QIS 1 has provided some good insight into what the impact of the SAM regime may be on the South African insurance industry, there is still a long way to go. A second quantitative impact study is planned for 2012 to further gauge what the impact of the SAM regime may be. The impact study is currently planned to take place in 2012, with a similar time schedule to that followed in 2011 for SA QIS 1:

- Technical specification of SA QIS 2 released in May 2012.
- Submissions from insurers completed by September 2012.
- Report on SA QIS 2 released before the end of 2012.

Through the results of the SA QIS 1 study, as well as the work currently being performed by the various task groups and working groups within the SAM structure, there is already an early indication of some of the key areas that SA QIS 2 will focus on. These include:

Ring Fenced Funds

SA QIS 2 will explore how the solvency position of ring fenced funds could be treated. The intention is not only to consider the treatment of legally ring fenced funds, but also operationally ring fenced funds, where it is not possible to meet losses in one fund from the assets available in a different fund.

Contract Boundaries

As outlined earlier, the choice of contract boundary has a significant impact on the solvency position of an insurer. SA QIS 2 will aim to gather further information on the choice of contract boundary on the solvency position of insurers.

Treatment of tax

As indicated earlier, the treatment of tax under the SAM regime is still unclear. SA QIS 2 will aim to give more detailed guidance on how to allow for tax within SAM, in order to get consistent information across the industry.

Groups

SA QIS 2 will also include a request to calculate the solvency position of insurance groups.

Annexure 1: Abbreviations

Acronyms

BF	Bornheutter Ferguson (non-life insurers)
BSCR	Basic Solvency Capital Requirement
CAR	Capital Adequacy Requirement (life insurers)
EIOPA	European Insurance and Occupational Pensions Authority
EPIFP	Expected Profits Included in Future Premiums
IBNR	Incurred But Not Reported (non-life insurers)
MCR	Minimum Capital Requirement
MER	Maximum Event Retention
OCR	Outstanding Claims Reserve (non-life insurers)
RFF	Ringfenced Funds
SCR	Solvency Capital Requirement
SLT	Similar to Life Technique