

RESULTS FROM QUANTITATIVE IMPACT STUDY 4

Between April and July 2008, CEIOPS conducted Quantitative Impact Study 4 (“QIS4”) to understand the potential impact of the latest Solvency II proposals on the balance sheets of companies. The results of QIS4 will now feed into the political discussion currently taking place and will form a basis for the work in 2009 on the more detailed implementing measures. In this Update, we discuss the major findings of QIS4 and look at the work undertaken by Towers Perrin with the CRO Forum, comparing the results of their internal models with the QIS4 standard formula.

SUMMARY OF MAIN FINDINGS

■ QIS4 participation was up approximately 40% over QIS3 with 1412 companies completing the solo submission and 111 groups completing the group calculations. QIS4 also included 99 captive companies.

■ Solvency II will impact both the available and required capital, but for companies overall, the average SCR coverage ratio across all firms was approximately 250% (with a median result of approximately 200%). However, there was significant variation within countries, by region and by type of business (life companies on average appearing healthier than the non-life companies).

■ About 1% (17) of the participants were unable to meet the Minimum Capital Requirement (“MCR”) and approximately 11% (154) of the firms were unable to meet the Solvency Capital Requirement (“SCR”).

■ Compared to Solvency I, the QIS4 solo results indicated that:

■ For life companies, the median coverage ratio improved from 200% to 230% under QIS4. For non-life companies, the median ratio worsened from 277% under Solvency I to 193% under QIS4.

■ Available capital increases by approximately 27% as a result of the removal of prudence margins in the current asset and liability valuations, in addition to greater recognition of innovative forms of capital such as hybrid debt.

■ On average, the technical provisions under QIS4 were lower for both life and non-life business, even though QIS4 includes a cost of capital risk margin which added approximately 5% to the insurance best estimate liabilities.

■ The SCR capital requirement increases compared to the equivalent Solvency I requirement, with a significant part of this increase relating to the non-life business. Diversification reduces gross capital requirements by typically 10% to 30% for life and 15% to 35% for non-life companies.

■ CEIOPS’ new linear approach for the MCR did not give results that were stable in relation to the SCR. This was a particular problem for life companies, where the MCR was greater than the SCR for 12% of the participants.

■ CEIOPS internal model results indicate that there may be incentive for some companies to use internal models, but not for others. Compared to the standard formula, half of the internal model respondents indicated that an internal model could potentially reduce their capital requirements by 20%.

However, for some risk modules such as equity, property and mortality, the internal models gave a higher capital charge than the standard formula. Even in cases where the internal models gave rise to a lower capital requirement, it was not clear that the incentive was uniform across the different risk classes.

■ CEIOPS indicates that group diversification effects can be substantial (26% in QIS4), but expresses concerns relating to the transferability of capital within the group, particularly in relation to the non-EEA businesses.

UPDATE

From the point of view of CEIOPS and the European Commission, QIS4 was a major success. It has provided useful data to analyse many of the outstanding technical issues and exceeded the targets set for participation.

The high level of participation indicates that momentum is building in the Solvency II project. The overall QIS4 coverage ratio of 250% provides high-level comfort that the industry is reasonably well capitalised. Companies unable to meet their SCR may need to review the risks which they are running, potentially reallocate capital within the organisation or even raise capital. However, this could also indicate that further work is needed on the Solvency II calibration.

It is important to note that the QIS4 calculations were performed using data as at December 2007 and do not reflect the volatile economic conditions experienced in the past 12 months. For many companies, the market conditions have made management focus on the economic capital required to run the business. Not all companies have in place the tools and/or methodology for an economic capital assessment. For such companies, QIS4 (perhaps adjusted) may serve as a practical basis to highlight the most significant risks within the organisation and the potential impact of management actions to reduce these risks.

Appropriate incentives should be built into the new framework to encourage companies to develop internal models. CEIOPS indicates that such incentives may exist, but the work of the CRO Forum (see below) indicates that although there may be some incentive for non-life companies, there is little or no incentive for life companies. As a result, further work on the standard formula calibration will be required to ensure consistent incentives for internal models across companies and risks, and hence avoid the possibility of cherry picking.

Looking forward, the timing of QIS5 is still to be determined. In many ways, 2009 will be a disjointed year with the focus on consultation on the Level 2 implementing measures and the elections in the European Parliament. As such, it may be reasonable to expect QIS5 to be held in 2010 (or late 2009) in order to allow the stakeholders to further develop the details of the new framework before another comprehensive test.

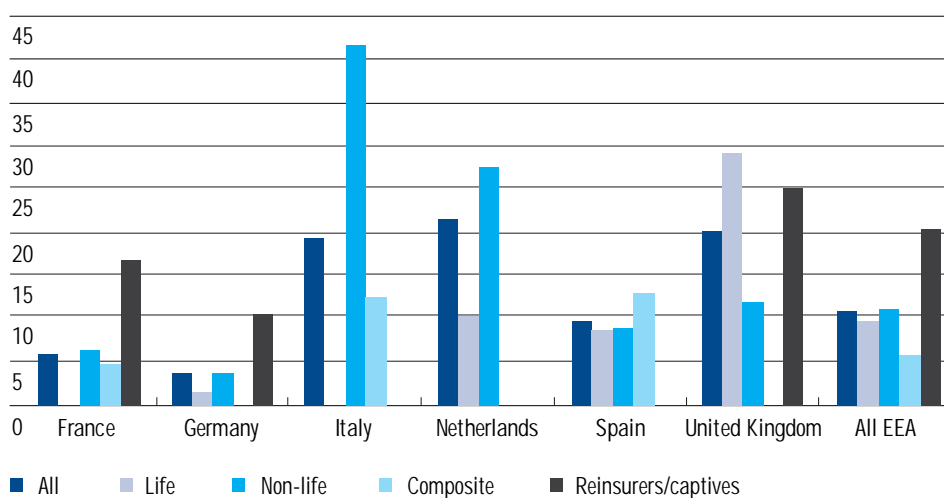
RESULTS FOR SELECTED MARKETS

Figure 1 provides data on the proportion of companies that fail to meet the SCR for selected countries.

For the MCR, the weighted average coverage ratio was approximately 10 times (median approximately 6.5 times) across Europe. There were 17 companies across Europe that would be unable to meet the MCR. Five of these were in the UK and one in Italy. France, Germany, Netherlands and Spain did not indicate any companies failing to meet the MCR requirement.

QIS4 also provides information on the overall balance sheets for various countries. These have been normalised so that assets and liabilities total to 100 and the results for selected countries are shown in Table 1.

FIGURE 1: Percentage of companies that would not meet the SCR



Source: CEIOPS QIS4 report

Under QIS4, reinsurance is shown as an asset on the balance sheet as opposed to a reduction in the liabilities. In addition, the cost of capital risk margin appears to be between 1% and 3% of the balance sheet, although this would correspond to a higher percentage of the best estimate liabilities. The available capital (or own funds) under QIS4 increases compared to Solvency I.

The variation in balance sheet by country may reflect a number of factors, including different product structures, risk profiles, types of companies within the market and differences in approach to QIS4. It remains to be seen in the longer term whether the overall structure of the balance sheet across countries will converge as a result of the explicit Solvency II objective for deeper market integration within the European Union.

Figure 2 shows the SCR coverage ratios for selected countries. It includes the weighted average results for each country (life and non-life shown separately), as well as the distribution of the country results between the 25th and 75th percentiles. The results indicate a wide variation of coverage ratios in the individual markets.

The coverage ratio is influenced by changes in available and required capital. There are also differences by company type, with life companies having on average higher coverage ratios than non-life companies. For non-life companies, the QIS4 capital requirements (equal to an average of 195% of Solvency I¹) increase more than for life companies (equal to an average of 100% of Solvency I).

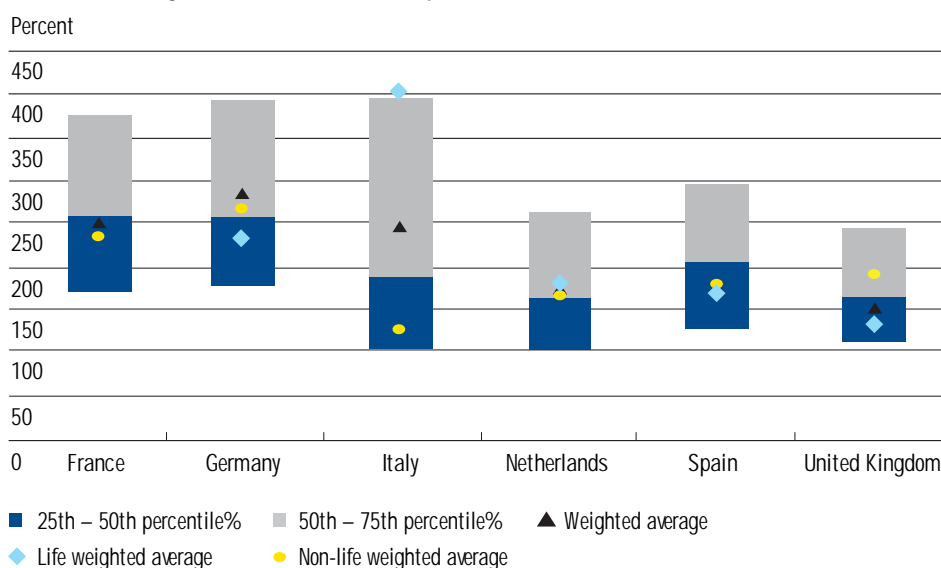
¹ Defined as the Solvency I explicit margin plus margins held in the valuation of Solvency I assets and liabilities

TABLE 1: QIS4 normalised balance sheets (based on the country level averages)

	France	Germany	Italy	Netherlands	Spain	United Kingdom
Assets:						
■ Investments	77.0	65.6	64.8	48.4	83.9	46.3
■ Unit linked investments	14.4	3.2	23.5	25.1	2.8	28.0
■ Reinsurance	3.3	3.0	3.3	8.4	2.4	15.6
■ Other assets	5.3	28.2	8.4	18.1	10.9	10.1
Total	100.0	100.0	100.0	100.00	100.0	100.0
Liabilities:						
■ Best estimate insurance	65.9	71.5	51.2	48.4	67.8	44.9
■ Risk margin (Cost of capital approach)	1.1	1.6	1.0	2.9	2.2	1.7
■ Unit linked liabilities	13.6	3.1	22.9	23.9	2.6	39.0
■ Other Liabilities	8.2	9.9	10.9	12.8	10.1	5.4
■ Equity	11.2	14.0	14.0	12.0	17.2	8.9
Total	100.0	100.0	100.0	100.00	100.0	100.0

Source: CEIOPS QIS4 report

FIGURE 2: Coverage ratios – available QIS4 capital to SCR



Source: CEIOPS QIS4 report. Note that results were not available for the weighted average position for life companies in France

PARTICIPATION AND RESOURCE REQUIREMENTS

Table 2 shows the participation by country and company type.

The QIS4 results represent an increase in participation of approximately 40% over QIS3 with France, Luxembourg, United Kingdom, Netherlands and Germany showing the largest increase in the number of participants.

Overall, the participation equals approximately 33% of companies across Europe, but represents over 60% by market share (defined by gross provisions for life and health and gross premiums for non-life).

On average, QIS4 took most companies between three and four months to complete.

TABLE 2: Participation by country

Country	Life	Non-Life	Composite	Reinsurance	Captives	Total	Mutuals thereof	Total QIS3
Austria	4	7	15	0	0	26	4	27
Belgium	5	9	13	0	0	27	0	15
Bulgaria	2	3	0	0	0	5	0	6
Cyprus	4	3	0	0	0	7	0	5
Czech Republic	2	4	8	0	0	14	0	12
Denmark	19	40	0	1	0	60	16	69
Estonia	2	5	0	0	0	7	0	7
Finland	0	10	9	0	1	20	8	19
France	0	125	103	6	0	234	128	154
Germany	60	135	0	12	7	214	43	179
Greece	3	3	1	0	0	7	0	1
Hungary	4	3	8	0	0	15	1	13
Iceland	3	3	0	0	0	6	0	7
Ireland	23	19	0	13	10	65	0	39
Italy	36	36	16	0	0	88	3	73
Latvia	2	5	0	0	0	7	0	2
Liechtenstein	1	0	0	0	0	1	0	0
Lithuania	5	6	0	0	0	11	0	11
Luxembourg	10	15	0	3	65	93	2	16
Malta	2	8	1	2	3	16	0	5
Netherlands	29	69	0	4	0	102	19	58
Norway	4	9	0	0	7	20	6	19
Poland	11	14	0	0	0	25	2	24
Portugal	14	18	5	0	0	37	1	33
Romania	2	3	2	0	0	7	0	0
Slovakia	1	0	6	0	0	7	0	5
Slovenia	2	2	4	2	0	10	1	11
Spain	23	56	31	2	0	112	34	108
Sweden	16	17	1	0	6	40	14	27
United Kingdom	62	59	4	4	0	129	22	82
Total	351	686	227	49	99	1,412	304	1,027

Source: CEIOPS QIS4 report

FEEDBACK ON QIS4

The QIS4 specification covered the areas of the balance sheet shown opposite.

We discuss the major findings for each of these components below.

Assets and liabilities

Assets were generally taken at market value. However, the views on how to treat intangibles were mixed, with many companies indicating zero value whilst others indicated that intangibles should be valued at their economic value.

QIS4 participants indicated general support for the new proposed design of the technical provisions, which consists of a best estimate liability and a risk margin calculated using the cost of capital approach for non-hedgeable risks.

CEIOPS reported an improvement in consistency of approach across countries for life companies compared to QIS3. For non-life, however, it was difficult to form a view on consistency due to the multitude of methods used.

In general, the technical provisions were lower than for Solvency I and, in some cases, there could be negative best estimate reserves where the future premium income exceeds policy outgo. The move from prudent to best estimate assumptions, the absence of a surrender value floor, the inclusion of future premiums for certain life products and the discounting of both life and non-life claims using the swap rate were all cited as reasons why the QIS4 technical provisions were lower than Solvency I. This was, however, offset to some extent by an explicit allowance for future bonuses on life with-profit policies.

Technical specifications				
Assets and liabilities	Own funds	Solvency Capital Requirement	Minimum Capital Requirement	Groups

Several companies indicated issues relating to data and, in certain cases, the segmentation of policy contracts in QIS4 was difficult, unclear and inconsistent with current reporting standards – in particular for certain types of non-life business.

There was general support from participants for the cost of capital risk margin, although in most cases simplifications were used to calculate it. There was some criticism of the large size of the risk margin generated by certain products. In addition, undertakings felt that all forms of diversification should be taken into account when calculating the risk margin and a number of questions were raised about the appropriateness of the cost of capital rate of 6%.

For **non-life companies**, there were difficulties where there were no cash flow patterns, such as very large one-off claims. As a result, some companies split their analysis into small and large claims and used a case-by-case approach for the large claims. CEIOPS indicated in the QIS4 specifications that a number of simplifications and proxies could be applied if certain thresholds were met. However, it was felt by the industry that many of these methods were actually traditional reserving methods, and as such should not be regarded as proxies or simplifications requiring threshold criteria.

Some **life companies** indicated difficulties in applying market-consistent techniques in areas such as the valuation of options and guarantees, particularly for smaller firms. The treatment of discretionary future bonuses also varied amongst countries, as did the assumptions regarding future management actions, such as changes in future asset allocation, dividend schedules, hedging and changes in the level of premiums.

It is encouraging to see the general support from the industry for the market-consistent principles. However, it is clear that Solvency II and the market-consistent approach will make certain products appear more or less attractive. This greater understanding of the business impact of Solvency II is one of the key advantages for companies participating in QIS4.

Solvency II may also result in changes in actuarial systems needed to calculate the technical provisions. QIS4 provides an early insight into the potential system requirements and allows companies to understand and plan for their potential gaps in the move to the new regime.

Setting best estimate assumptions will also be a challenge for companies which are not currently doing so. Over time, common standards will develop on setting such assumptions, but it is also likely that the supporting evidence demanded by supervisors will be much greater than it is today. This highlights the need for companies to be collecting and analysing their data now in order to be able to set credible assumptions in the future.

Supervisors currently view the allowance for management actions as highly subjective and, in order to avoid this, companies will need to work to explain their profit sharing systems and degree of management actions relative to current practice. This should be a priority for companies if they have not already done so.

We would expect further guidance on these issues during 2009 as part of the consultation on Level 2 implementing measures.

Own funds (or available capital)

The available capital increases by 27% from Solvency I mainly due to the removal of prudence in the current asset and liability valuations, which in turn is a result of the market-consistent valuation, the reclassification of equalisation provisions and inclusion in full of hybrid capital instruments, subordinated liabilities, and ancillary own funds.

On average, companies classified most of their own funds as Tier 1 (95%) with the remaining as Tier 2 (4%) and Tier 3 (1%). Tier 1 consists mainly of common equity, retained earnings and recognition of current prudence while Tier 2 and Tier 3 consist mainly of subordinated debt and supplementary member calls.

Overall, the approach to classifying own funds is deemed suitable and practicable by both supervisors and undertakings, although greater clarity would be welcomed on some aspects.

One issue that was highlighted by at least seven countries was the treatment of **ring-fenced funds**. It was generally agreed that it was not appropriate to allow own funds within ring-fenced funds to meet the SCR for the whole undertaking and there was support for the principle of only using the own funds within ring-fenced structures to meet the capital requirements of the ring-fenced structure.

The total volume of hybrid capital instruments and subordinated liabilities in issue by companies completing QIS4 was approximately €42.6 billion, with issuance concentrated in Germany, France, Italy and the United Kingdom.

The majority of hybrid capital instruments and subordinated debt were reported in Tier 2 because they did not satisfy the loss absorbency requirements or criteria relating to permanence and absence from requirements/incentives to redeem.

The issues around ring fenced structures will be fundamental to companies that have such structures and this clearly requires further work to ensure that Solvency II provides a realistic view of the ability of the ring-fenced structure to support other parts of the business.

CEIOPS work on subordinated liabilities and the development of the six criteria² is certainly an improvement in the guidance on the classification of own funds. However, further work is required as to the practical interpretation of the guidance and some supervisors have already questioned the classification of certain instruments by companies in QIS4 and whether these instruments should be reclassified in lower tiers. There is also the possibility that additional limits may be placed on the tiers, for example limiting the amount of Tier 2 capital that can be counted based on the amount of available Tier 1 capital.

Whatever the final outcome, it is important that there are “grandfathering” procedures to ensure a smooth transition to Solvency II for the capital instruments currently in issue.

² See our QIS4 update from February 2008 “Solvency II: QIS4 Draft Specification” available on www.towersperrin.com/solvencyII

Solvency Capital Requirement (Standard Formula)

Under the modular approach of QIS4, the SCR has 3 components:

- Basic Solvency Capital Requirement (“BSCR”);
- Capital charge for operational risk; and
- Adjustment for the risk absorption properties of deferred taxes and future profit sharing.

This is shown in Figure 3.

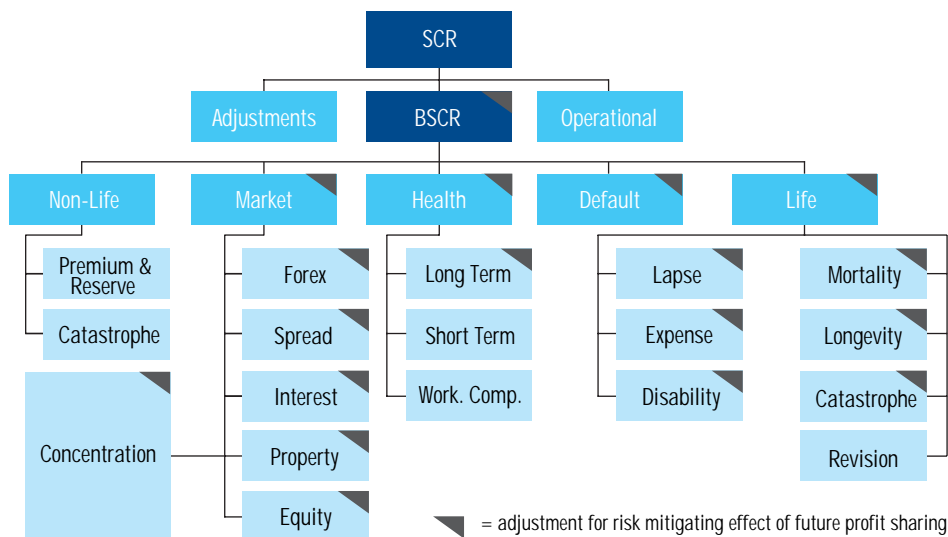
Across the different countries, the main component of the BSCR is market risk for life companies and underwriting risk for non-life companies. The effect of diversification across the risk modules was between 10-30% for life companies and 15-35% for non-life companies.

For **market risk**, the major issue related to equity risk. Feedback from companies and some supervisors indicated that the 32% stress for global equities (those listed in EEA and OECD countries) was too low.

There was mixed support for the equity dampener approach, although this decreased the equity risk capital (greater impact for the longer duration life business than non-life business). The opponents of the dampener approach cited reasons such as the lack of empirical data, inconsistency with the one-year VaR methodology and inappropriate incentives for risk management

Additional comments on the treatment of equities indicated concerns that the sub-module did not adequately reflect some highly diversified, low risk investment funds which were classed as “Equity, other” and hence subject to a 45% equity stress.

FIGURE 3: SCR structure



Source: CEIOPS QIS4 report

The treatment of participations remains an area for further work with many supervisors undecided on the most suitable option. QIS4 tested various options, including applying the equity stress test to the participations, a differentiated stress test equal to 50% of the normal equity stress test and a look through approach. Participations were also relevant to the concentration risk module where feedback indicated that care was needed to avoid double counting the participation as a concentration risk.

On interest rate risk, there was mixed feedback, with some stakeholders indicating that the calibration was too high and others indicating that it was too low. There were also suggestions that the current correlation of 0% between equity risk and interest rate risk needs to be increased.

Some participants also indicated that certain risks such as interest rate and equity implied volatility risk are not captured in the standard formula.

The *counterparty default risk* module, on average, accounts for 3% of the BSCR for life and 5% for non-life. The loss given default approach and subsequent aggregation were heavily criticised by many participants as overly complex relative to the size of exposure and simplification was requested.

There were also questions raised over the treatment of unrated counterparties where participants indicated the probability of default used in QIS4 was too severe, leading to high capital charges.

For *life underwriting risk*, a number of comments were raised relating to the lack of transparency in the derivation of QIS4 calibration parameters. There were differing views, but some participants indicated that the longevity and disability calibration was too strong and that gradual changes to inception rates and trends may be more appropriate than one-off shocks.

For lapse risk, participant feedback was that the policy-by-policy calculation was too burdensome for lapse and lapse catastrophe risk. It was suggested that homogeneous risk groups be used instead.

The adjustment for *loss absorbing through profit sharing* is a key element in the SCR calculation for life and health insurers. Many companies commented on the complexity of the calculation and, in particular, the burdensome and unnecessary obligation to provide a gross SCR (SCR before the application of risk mitigation effects of future profit sharing). However, supervisors were more open to the use of gross and net of profit sharing results.

Certain companies indicated preference for an “equivalent scenario” method over the gross/net stress approach, as this helped address the issue of non-linearity. However, the approach was not widely tested because of limited time. It was, nonetheless, recognised that further and more detailed guidance is required on the approach to determine the effect of reductions in future profit sharing and the assumptions on future management actions that impact the calculations.

For *non-life insurance risk*, there is no allowance for expected profits and losses in the calculation of the SCR and the MCR for business anticipated to be written over the next year. To overcome this situation, it would be necessary to include a prospective assessment of expected profitability in the standard formula.

There were still some concerns that the calibration of the non-life capital charge factors is overly prudent. The criticism was, however, mitigated to some extent as companies had the option to use company specific data, both for premium risk and reserve risk (previously companies were only allowed to use company specific data for premium risk). Despite being carried out by a minority of the companies, this option was well received. The method prescribed by CEIOPS is mechanical in nature and some companies would have preferred a more flexible approach, where changes over time (eg, changes in mix of business or reinsurance coverage) could be better captured.

In QIS4, credits were given for geographically spread non-life portfolios. This was generally well received and has led to a reduction of capital charges for premium and reserve risk of around 10% to 15% for those companies with international business.

For non-life catastrophe risk, three methods were provided: a simple standard factor approach, a prescribed scenario approach and an own scenario approach. Limited feedback was provided by the industry, but it was generally appreciated that the own scenario approach could be used. Some supervisors, however, expressed a concern of cherry picking where insurers could select the method providing the lowest answer.

The contribution of the **operational risk** charge to the total SCR typically ranged between 5% and 10%. The general comment on the operational risk formula was that the factors related to premium and reserves were too simplistic and not risk sensitive. In addition, participants noted that the 100% correlation with other risks was not appropriate and the factors did not reflect the wide spectrum of operational risks that can materialise within a company, the quality of operational risk management processes or provide an incentive to develop good practices.

The definition and treatment of **deferred taxes** was unclear in the QIS4 specification and, as a result, this led to inconsistent treatment by companies in both the base balance sheet and determination of the risk absorbing effect included in the SCR. Some companies valued deferred taxation on both the asset and liability side, others only on the asset side and some companies indicated they were not able to value the deferred taxes, although it was likely to be material.

Overall, the standard formula will have to maintain a balance between practicality and risk sensitivity. Further work is required in areas such as operational risk to improve the risk sensitivity, while work is also required in areas such as the treatment of future profit sharing to improve the practicality.

In terms of the calibration, the recent market turmoil may need to be taken into account. However, the recent market turmoil has also highlighted the need to provide some mechanism to mitigate against potential pro-cyclical effects and it remains to be seen whether this is best served as part of Pillar 1 or Pillar 2.

The use of entity-specific parameters would allow companies to tailor the standard approach to their risk profile, although this may blur the distinction with partial models. Currently, entity specific parameters are allowed for non-life underwriting risk, but this should be extended to life underwriting which might help address some of the concerns on the calibration of life underwriting risks.

On non-life, the lack of allowance for expected profits is disappointing, as this will make the SCR and MCR unresponsive to the underwriting cycle. There will also be, as under Solvency I, a counter-intuitive situation where increasing premium rates will lead to higher capital charges.

Solvency II is not intended to impact the taxation basis for companies. As a result, there can be deferred tax liabilities to the extent that the market-consistent valuations are different from the current tax valuations. Although companies may expect to pay this tax liability in normal circumstances, the liability may not exist in stressed circumstances. This is the underlying principle that should be taken into account in the SCR calculation.

Other issues such as the allowance for non-linearity and the implied volatility risks may need to be considered in the context of the limitations of the standard formula and the additional requirements to review all material risks in the Own Risk and Solvency Assessment (“ORSA”). In light of this, there may be a case for a more simplistic conservative standard formula which encourages the use of partial and full internal models.

Minimum Capital Requirement

Under QIS4, the MCR is calculated using the ‘linear approach’ by applying fixed factors to basic volume and risk measures. The calculation caused little or no practical difficulty for most participants. The method was better received by companies than the QIS3 modular design method.

The QIS4 results indicate that the linear approach works better for non-life business, but more work is required for life business where the linear MCR exceeds the SCR for 12% of the companies.

CEIOPS also tested a *combined approach* which applies a cap to the linear approach MCR equal to 50% of the SCR and a floor equal to 20% of the SCR. The MCR (shown in Figures 4 and 5) indicates that the cap and floors applied to approximately one-third of non-life companies and over half of life companies.

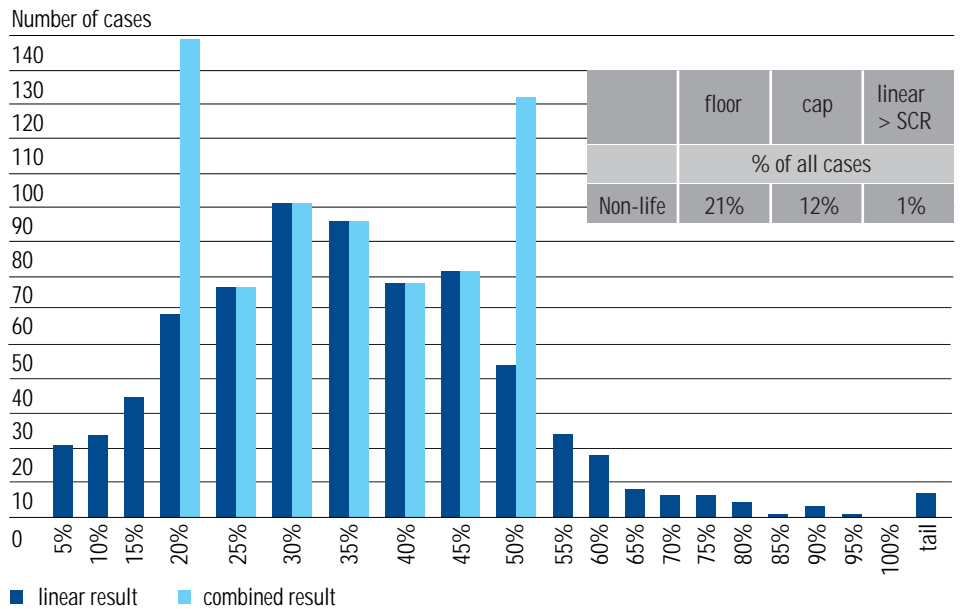
A large number of participants indicated that they favoured the compact approach originally proposed by the CEA, where the MCR is expressed as a fixed percentage of the SCR.

The majority of supervisors supported the QIS4 combined approach, or thought it was an acceptable compromise. However, some supervisors expressed concerns about the dependence of the MCR on a prior calculation of the SCR which raises questions about simplicity and auditability.

The frequency in application of the caps and floors in the calculation of the MCR suggests that the formula used for the MCR does not provide an appropriate or robust economic assessment. It is also not clear how the proposed ladder of intervention will function if for some companies the MCR is 20% of the SCR and for others it is 50% of the SCR.

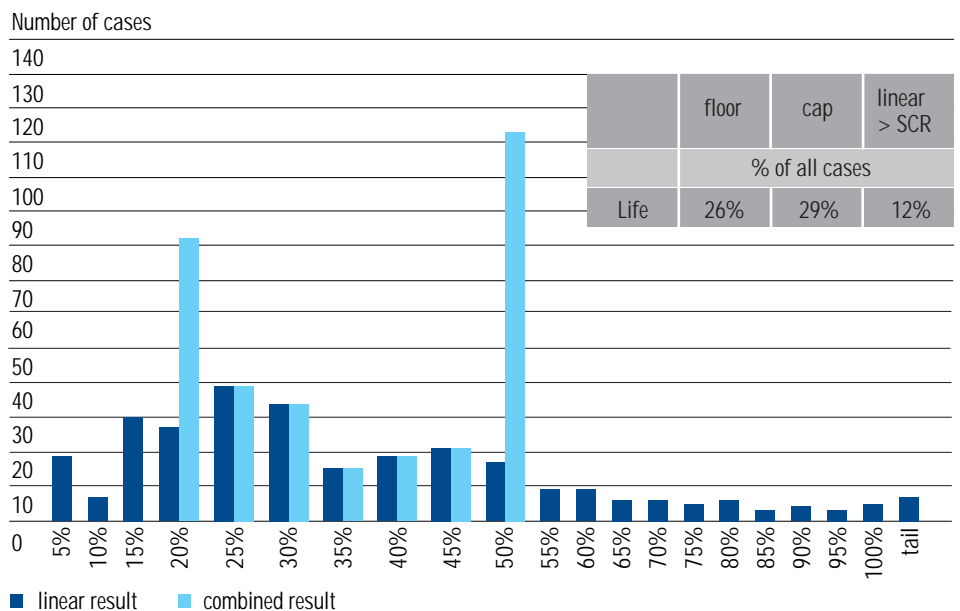
The combined approach is a compromise, but it is not clear why it is superior to the much simpler and more risk-sensitive compact method proposed by the CEA.

FIGURE 4: Combined MCR to standard SCR (property & casualty undertakings)



Source: CEIOPS QIS4 report

FIGURE 5: Combined MCR to standard SCR (life undertakings)



Source: CEIOPS QIS4 report

Groups

In total 111 groups participated, but CEIOPS indicated that the results should be considered as a guideline given that many companies applied simplifications and adjustments due to the short timeframe available to do the multiple group calculations.

Overall, the group solvency position improves with the ratio of weighted average QIS4 surplus to Solvency I surplus equal to 109%. The level of group diversification was 26% on average, where diversification is based on the ratio between the group SCR, and the sum of the solo SCRs.

Diversification is highest for the largest groups and arose mainly due to the elimination of capital charges relating to intra-group transactions, offsetting of risks across the group and a more diversified risk profile at the group compared to the solo level.

QIS4 tested a number of options for calculating the group SCR, including separately identifying the impacts of non-EEA business and with-profit funds. However, participants indicated a clear preference for the default worldwide consolidation method that treats a group as if it were a single economic entity, recognising diversification effects from third-country entities and across with-profit businesses. Under QIS4, the worldwide consolidation method is calculated by applying the solo standard formula to the consolidated accounts with some adjustments.

The QIS4 results indicate that group own funds increase by 39% compared to the current Solvency I position. The proportion of hybrid capital instruments and subordinated liabilities is higher (13%) compared to the solo level (2%). Groups classified most hybrid capital as Tier 1, but CEIOPS indicated some reservations on this classification as they were unsure whether the instruments had the required loss absorbency features.

CEIOPS also recognised that within a group, not all funds are fully available to cover losses in other parts of the group. They indicated that due to insufficient data, it was not possible to draw from the QIS4 results any general conclusions on the amount of non-transferable elements and the potential impact on group own funds. Nonetheless, groups that responded to the QIS4 questionnaire were strongly in favour of the group support regime.

Advances in group supervision are one of the most innovative proposals for the new Solvency II regime. QIS4 tested a number of options and represents a substantial improvement over QIS3 where the group position was tested for the first time.

It is clear that a number of technical issues will need to be addressed, including proper recognition of group diversification effects and any limits on transferability of capital. These technical issues should not, however, distract from the underlying principle of a risk-based economic approach for Solvency II, regardless of legal form.

INTERNAL MODELS – CRO FORUM BENCHMARKING STUDY³

Background

The CRO Forum companies have developed internal capital models, which they expect to be approved by the regulators as a basis for setting the SCR under Solvency II. The CRO Forum companies have also participated in QIS4 and asked Towers Perrin to support a benchmarking study, comparing the results of internal models and the QIS4 submissions, both for solo entities and for groups.

CRO Forum members recalibrated their internal model results to a one-year Value-at-Risk based on a 99.5% confidence interval, in order to have a consistent basis for comparison with QIS4. The QIS4 results and internal model results were submitted to the Austrian Financial Market Authority (FMA) on behalf of CEIOPS for aggregation and analysis before being transmitted to Towers Perrin for analysis. This process was to ensure the confidentiality of the data.

A total of 135 solo entities were included in the study across 16 EU countries. These submissions are effectively a subset of the main QIS4 exercise and cover approximately one-fifth of the European insurance premiums, with substantial life and non-life coverage in the various markets. Group submissions were received from 15 groups, of which nine submitted internal model results.

Results

The benchmarking study highlights differences between QIS4 and internal models in the measurement of available and required capital.

In both cases, the available capital is based on the market-consistent value of assets less liabilities. However, the risk margin used in calculating the liabilities is significantly lower in the internal models than in QIS4. This may be due to the lower cost of capital rate used in internal models and differences between QIS4 and internal models in the calibration and diversification effects for the non-hedgeable risks underlying the risk margin. The net result is that the available capital in QIS4 may be up to 10% lower than the comparable amount for an internal model due to the risk margin methodology.

Figure 6 shows the comparison between the QIS4 and internal model required capital results. On average, across all company types, the ratio of internal model capital to the QIS4 SCR was 99% - indicating that there is little incentive for companies to use an internal model. However, this masks considerable variation by company type, with the average ratio for life insurers being 109%, while the ratio for non-life insurers was 90%.

For life companies, there was also significant variation across countries. However, the ratio of internal model to QIS4 required capital was greater than 100% in all countries, except the Netherlands (92%) and France (99%). Internal model requirements were significantly greater than QIS4 in Belgium (128%), Italy (126%) and the UK (115%). The key driver for these results was the calibration of market risk, where internal model capital was on average 111% of QIS4. In contrast, the ratio of internal model life underwriting risk to QIS4 was 80%, while the level of diversification achieved in each calculation was similar.

³ The complete CRO Forum benchmarking study can be found at www.croforum.org

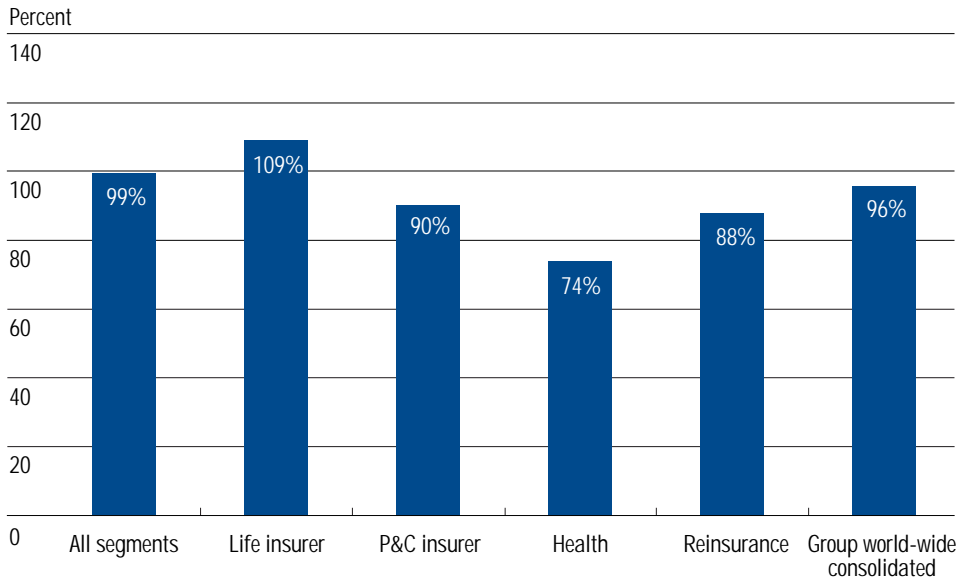
The results for non-life insurers indicate conservatism in the QIS4 calibration relative to internal models. The ratio of internal model to QIS4 required capital was less than 100% in all countries except Italy, with significantly lower internal model requirements in the Netherlands (74%) and Germany (76%). Looking at results by risk type, the ratio for market risk was the same as for life insurers (111%), while the ratio of internal capital to QIS4 capital for non-life underwriting risk was 85%. The main reason for the favourable results for non-life companies using internal models is the greater skew to underwriting risk (with less emphasis on market risk) than is the case for life companies.

The QIS4 requirement for stand alone operational risk is significantly lower than in internal models. In contrast to many internal models, however, QIS4 does not allow for diversification between operational and other risks.

QIS4 tested a number of options for producing group results. The study indicated the results using the worldwide consolidated option were similar for the internal models and QIS4, although there can be bigger variations for some of the other group formulations tested in QIS4.

Finally, it is worth noting that the capital charge on other financial sector entities is much higher in internal models than in QIS4, as these sectors are based on their current regulatory basis, which is not necessarily risk-based.

FIGURE 6: Solo and group internal model required capital to QIS4 required capital



Source: CRO Forum benchmarking study

CRO Forum Recommendations

Based on the benchmarking against internal models, the CRO Forum expressed concerns about the inconsistencies between the QIS4 and internal model calibration, such that there is variation in the level of conservatism across risk types. This may have some unintended consequences: in certain cases (for example market risks), there appears no clear incentive, on average, for companies to use an internal model. The inconsistent calibration could lead to cherry picking between (partial) internal models and the standard formula.

In addition, the CRO Forum indicates:

- Risk margins for non-hedgeable risks should reflect diversification benefits across non-hedgeable risks up to the group level and the associated cost of capital rate should be revised (refer to the principles outlined in the CRO Forum paper on the Market Value of Liabilities for Insurance Firms, dated 28 July 2008).

- The MCR should be calculated via the compact approach (a level percentage of the SCR).
- The default worldwide consolidated basis is the most meaningful to calculate the group capital requirements. Other methods tested in QIS4 do not allow for the proper economic treatment of group diversification effects.
- There should be an economic evaluation and allowance for diversification between the insurance sector and other financial sector entities, as well as non-controlled participations.
- CEIOPS should provide more guidance regarding the treatment of taxes, the reflection of constraints to fungibility of capital and future renewal premiums in the standard formula.

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