

MANAGING EXTREMES

Willis Re

BEWARE THE DOG THAT DIDN'T BARK – IS THE EUROPEAN INSURANCE INDUSTRY REALLY READY FOR SOLVENCY II?

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Beware the dog that didn't bark – Is the European insurance industry really ready for Solvency II?

QIS5: As many questions as answers?

On Monday, March 14, 2011 the European Insurance and Occupational Pensions Authority (EIOPA) released its report on the fifth Quantitative Impact Study (QIS5) for Solvency II – with a mixture of relief and satisfaction, we surmise, because, contrary to what many expected, the results do not show any major capital deficit either at individual level or for the sector as a whole.

At the aggregate level, eligible own funds to cover the Solvency Capital Requirement (SCR), calculated according to the QIS5 specifications, exceeded regulatory requirements by €355 billion, with a solvency ratio of 165%. The figures suggest that the European insurance industry has absorbed the impact of the financial crisis and remains comfortably well-capitalized under the new solvency requirements.

At the individual level, about 15% of insurers¹ who took part in the study proved unable to cover their SCR. Forty per cent of these, however, missed the target by less than 25% – a gap small enough to be explained by measurement error or ‘the inherent short-term volatility of financial markets’, according to EIOPA. In addition, about a quarter of the remaining under-capitalized insurers belong to groups which could easily address the problem by reallocating either capital or risk among their subsidiaries.

Distribution of SCR coverage

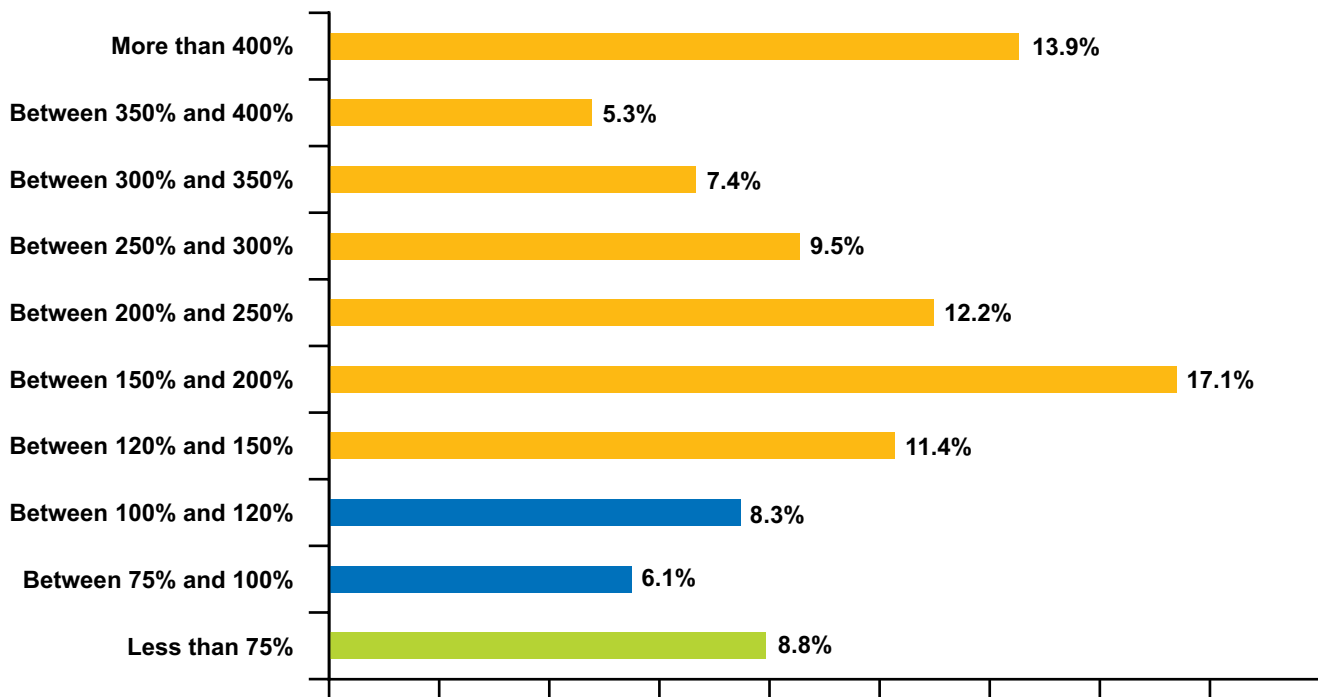


Figure 1: Distribution of SCR coverage – Source: EIOPA.

So is the European insurance industry really ready for Solvency II? The answer depends on how credible you think the QIS5 results are. Concerns voiced by leading insurance figures and trade groups during the last months suggest that insurers found it very difficult to apply QIS5 technical specifications. It is only natural to wonder whether this had a material impact on the study results. The EIOPA report does not provide a clear-cut answer, but the summary of comments received from insurers and supervisors hints at potentially significant errors and misstatements in several areas.

We therefore believe that a dose of healthy scepticism is in order when looking at the QIS5 results. Our opinion is reinforced by the answers to the qualitative questionnaire included in QIS5, the frequent use of simplifications by respondents and the limited number of insurers who used internal capital models. In what follows, we review the main results of QIS5 through a series of questions and answers based on the contents of the EIOPA report.

¹ In what follows, we use ‘insurers’ to denote both primary insurers and reinsurers.

1. How many insurers took part in QIS5?

In total, 2,520 insurers as well as 167 groups participated in QIS5, accounting for more than 95% of technical provisions and 85% of premiums of insurers subject to Solvency II. The participation rate for individual insurers was 68%, higher than the target set out by the European Commission (60%). The EIOPA report does not provide the participation rate for groups, so we presume that the 75% target set out by the Commission was missed.

	Total number	Number SII affected	QIS5 participants	Of which		
				Small	Medium	Large
Life	888	799	610	291	236	82
Non-Life	2,681	1,879	1,284	834	378	72
Reinsurers	203	182	111	72	26	13
Captive	393	353	175	171	4	0
Composite	588	467	336	142	146	48
All	4,753	3,680	2,520	1,511	791	217
Of which health	1,288	749	382	270	94	18
Of which mutuals	1,509	800	454	337	96	21

Figure 2: Participation in QIS5² – Source: EIOPA.

Participation was much higher than in QIS4, to which 1,412 insurers and 106 groups responded. Most of the increase was due to smaller insurers, whose number doubled compared to QIS4.

	QIS5/QIS4			
		Small	Medium	Large
Life	174%	229%	170%	98%
Non-Life	187%	253%	139%	87%
Reinsurers	227%	300%	173%	130%
Captive	177%	174%	400%	
Composite	149%	161%	154%	112%
All	178%	227%	152%	99%
Of which mutuals	149%	190%	93%	88%

Figure 3: Participation in QIS5 compared to QIS4 – Source: EIOPA.

²As in QIS4, classification of solo undertakings by size was done according to the following table:

Size	Non-life insurers	Life insurers
Large	> €1 billion gross written premiums	> €10 billion gross technical provisions
Medium	€0.1 billion – €1 billion gross written premiums	€1 billion – €10 billion gross technical provisions
Small	< €0.1 billion gross written premiums	< €1 billion gross technical provisions

Additional criteria were applied to reinsurers, composite direct insurers and health insurers. Lastly, large groups were defined as groups with total assets greater than €90 billion, small groups as those with total assets less than €30 billion. For the full set of criteria, see the EIOPA Report at https://eiopa.europa.eu/fileadmin/tx_dam/files/publications/reports/QIS5_report_final.pdf - p. 22, esp. footnote 1.).

2. What were the main results?

The European insurance sector as a whole has sufficient capital to cover Solvency II capital requirements. The sector's total eligible own funds amounted to 165% of its aggregate SCR and 466% of the aggregate Minimum Capital Requirement (MCR), both calculated on a 'solo' (as opposed to 'group') basis.

15% of participants do not have enough capital to cover their SCR, up from 11% in QIS4. Fewer than 5% do not cover their MCR, roughly one in 22, approximately four times the number for QIS4. At the other end of the scale, over 25% of respondents have over four times the bare minimum regulatory capital required to operate.

Distribution of SCR coverage

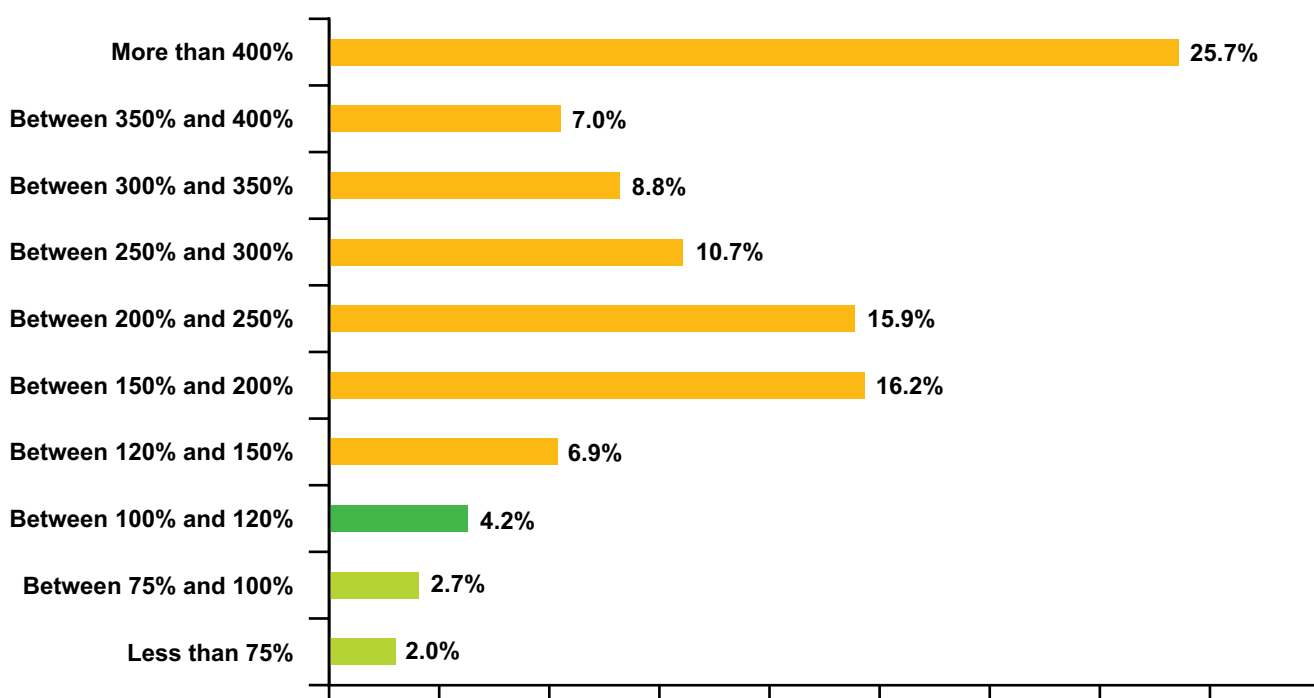


Figure 4: Distribution of MCR coverage – Source: EIOPA.

The adequacy of SCR coverage differed markedly across Europe: weaker in Greece, Poland, Ireland, Sweden and the U.K., relatively strong in France and Germany.

Distribution of SCR coverage by country

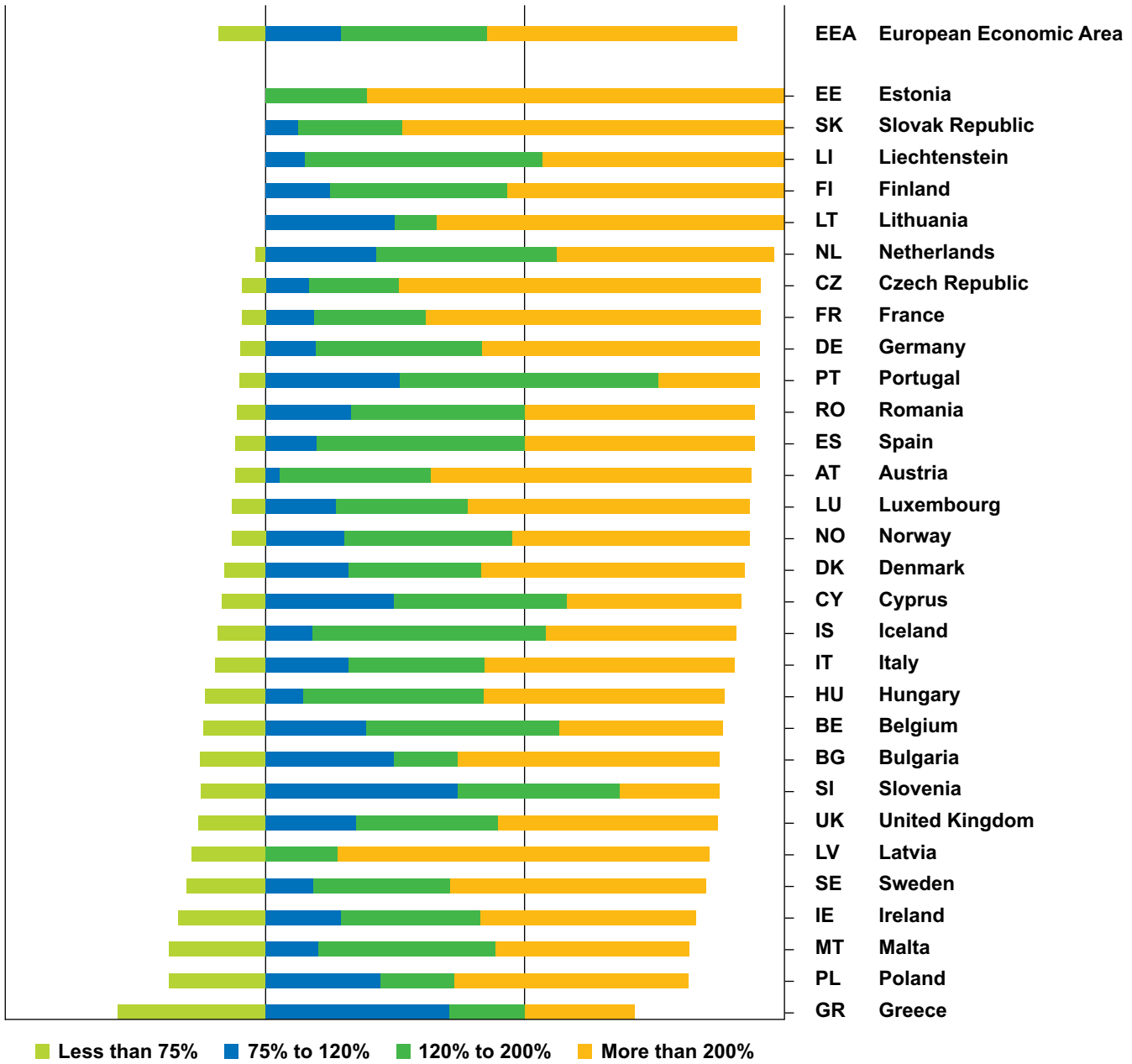


Figure 5: Distribution of SCR by Country – Source: EIOPA.

For groups, aggregate surplus over SCR calculated according to the standard formula dropped by €86 billion compared with Solvency I. If group internal models and third-country equivalence were used, however, aggregate group surplus would decrease only slightly, from €200 billion to €197 billion. About 8% of groups' own funds cannot be considered 'fungible', that is easily and quickly transferable between subsidiaries.

As expected, the main drivers of capital requirements were market risks (esp. equity, spread and interest rate risks) and non-life underwriting risks (esp. premium, reserve and CAT risks). The former accounted for 67% of aggregate life insurers' Basic SCR (i.e. SCR before the capital requirement for operational risk and the adjustment for the loss-absorbing effect of technical provisions and deferred taxes), the latter for slightly more than 50% of non-life insurers' Basic SCR.

The figures below show the make-up of the Basic SCR for solo life and non-life undertakings.

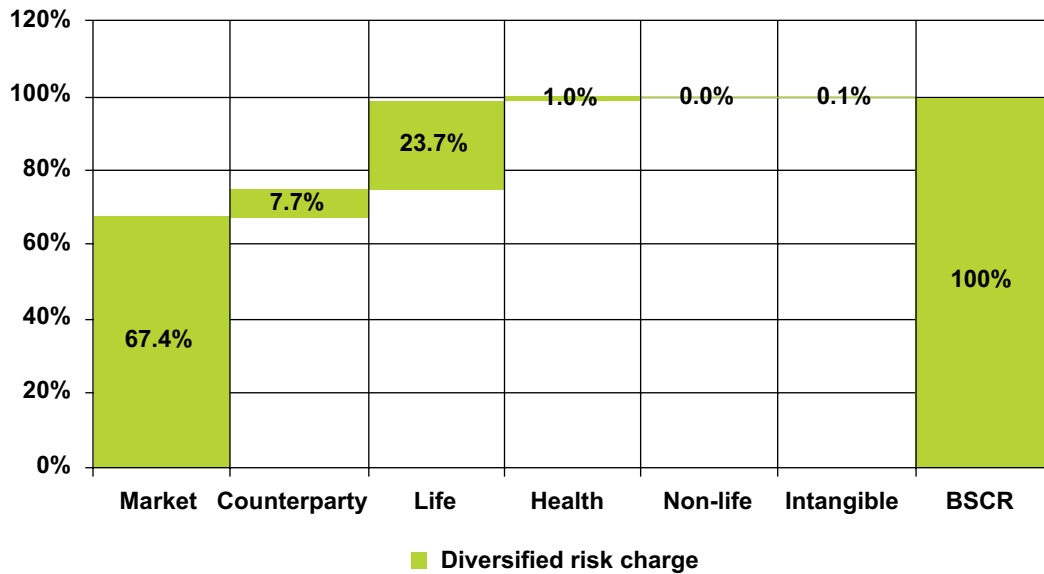


Figure 6: Diversified BSCR – Solo life undertakings – Source: EIOPA.

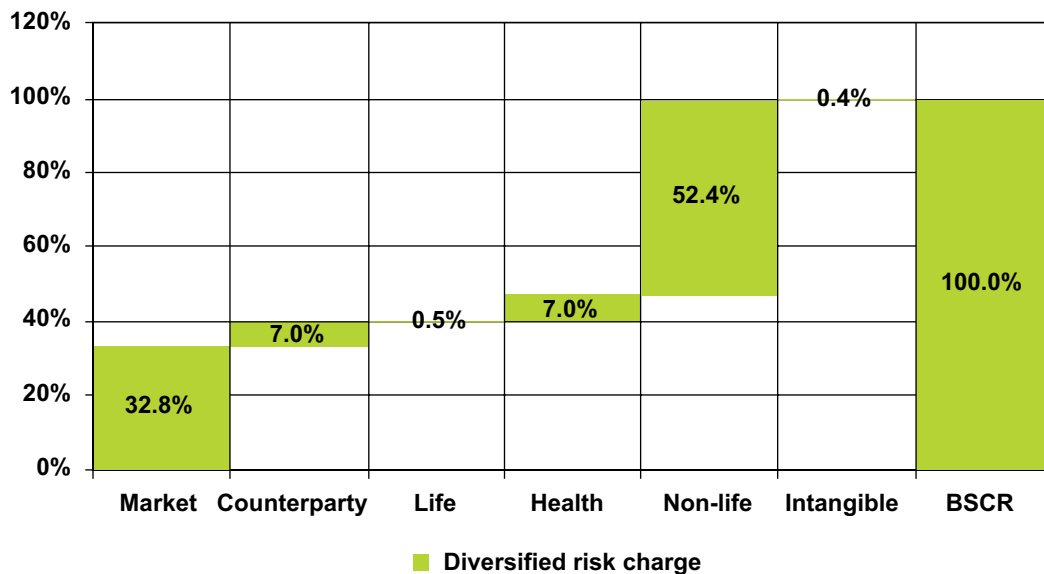


Figure 7: Diversified BSCR – Solo non-life undertakings – Source: EIOPA.

Concerns about the impact of Solvency II on life insurers' business mix were strengthened. In QIS5 net provisions for with-profits products, for example, increased by 8%, 50 – 60% more than what most analysts expected. Together with higher capital requirements for market risks, this will materially increase total resource requirements for with-profits products. On the other hand, net provisions for linked policies apparently dropped much more than expected by many.

Some (partial or full) internal capital model was used by 9% of individual respondents and 17% of groups and, on average, did not produce materially different capital requirements from the standard formula at individual level. For groups, however, the SCR calculated according to internal models was, on average, 20% lower.

3. Where did respondents encounter problems?

The EIOPA report summarizes a large number of observations made by QIS5 respondents and supervisors. They can be grouped in three broad categories:

- Disagreements with the standard formula calibration, judged too severe in at least some respects by many participants. Calibrations used for CAT risk were probably the most controversial;
- Complaints about the complexity of many specifications, often judged disproportionate to the actual relevance of the risks being measured. Counterparty default risk is a case in point;
- Concerns about the practicability of specifications due, in particular, to limitations of available company and market data. CAT risk is, again, the most notable example.

While often sensible, QIS5 participants' comments sometimes reveal worrying weaknesses in risk measurement approach and capabilities. It is difficult to quantify the margin of error they have introduced in QIS5 results, but it is fair to assume that it may be material in some cases.

A non-exhaustive list of the QIS5 requirements which respondents and their supervisors found particularly difficult includes the following:

- Market-consistent valuation of assets and liabilities. This is a crucial, fundamental requirement of Solvency II. For assets, difficulties were probably not limited to smaller insurers currently not reporting under IFRS: for example, a significant number of participations were valued by mark-to-model rather than at market value or by the adjusted-equity method as would be natural. For liabilities, valuation of life technical provisions proved challenging and the margin of error in the valuation of embedded options, guarantees, future discretionary benefits and management actions may well be material. Some supervisors also questioned the reliability of non-life technical provisions;

- Calculation of the risk margin for technical provisions. Many insurers, including some large ones, were unable to carry out the full calculation and adopted some simplifications, for the projection of the future SCR in particular;
- Estimation of counterparty default risk parameters (e.g., expected default probability, loss given default). This is also required for the valuation of reinsurance recoverables;
- Calculation of the loss absorbing capacity of technical provisions and deferred taxes. Most respondents found the QIS5 specifications quite difficult to apply and only 60% of respondents actually calculated a loss absorbency adjustment. This means that 40% of participants may have *overstated* their SCR. Note that at sector level the loss absorbency adjustment reduced capital requirements by 24%, equivalent to €314 billion;
- Segmentation and granularity of data. QIS5 lines of business were often different from those actually in use in many countries. Examples include motor insurance and health insurance. Some respondents had to make *ad hoc* adjustments to fit their figures to the QIS5 classification as the required data was not available. Granularity was often a problem for life insurers who had to make extensive use of simplifications and the model-point approach;
- Assessment of non-life CAT risk exposure. Insurers and supervisors alike from most countries indicated that the CAT sub-module is too complex, burdensome, and requires data which is not always easily obtainable;
- In most cases, respondents were allowed to use simplifications, and did so quite frequently. Simplifications were adopted by more than 200 participants for spread risk, for example, and almost 600 for default risk. The proportion of BSCR covered by simplifications was particularly high for mortality and longevity risks (~40%), health, life lapse and life expense risks (~30%), default risk (~20%). It is also worth noting that some supervisors believe the number of respondents using simplifications

may actually be higher than reported.

4. How did internal capital models perform in QIS5?

Only 262 insurers from 19 countries – about 10% of total respondents – used an internal model to calculate their SCR. Perhaps surprisingly, their solvency ratios were on average only marginally different from the standard formula; however, variation was significant at individual level.

	10th	25th	50th	75th	90th	Weighted	Standard	Sample
	percentile					average	deviation	size
SCR Internal model to SCR standard formula	66%	83%	91%	107%	121%	99%	0.38	236

Figure 8: Ratio internal model to standard formula SCR – Source: EIOPA.

There was also some variation across size groups: the median ratio of the SCR based on the internal model to that according to the standard formula was 93% for large and medium sized insurers and 101% for smaller ones.

Differences between internal models and the standard formula were more significant for groups and for individual insurers who used a partial internal model. For groups (29 out of 167 participants), both the median and the mean ratio of the two SCRs was 80%. Excluding 6 groups which may be considered outliers due to their risk profiles, the ratio for the rest of the sample ranged from 46% to 90%.

A partial internal model was used by 99 individual participants (about 42% of all the respondents who provided internal model results). Their SCRs were, on average, 82% of those calculated according to the standard formula.

	10th	25th	50th	75th	90th	Weighted	Standard	Sample
	percentile					average	deviation	size
SCR partial model to SCR standard formula	51%	80%	86%	99%	110%	82%	0.37	100

Figure 9: Ratio partial internal model to standard formula SCR – Source: EIOPA.

It is difficult to draw any meaningful conclusions on the relative merits of internal models and the standard formula from these results. We remark that:

- The sample is too small to provide any useful evidence. Note also that insurers from eleven countries out of thirty did not use any internal models in QIS5. In France, only 12 insurers from three groups submitted results from their internal models (see <http://www.banque-france.fr/acp/solvabilite-2/Analyses-Syntheses1.pdf>, p. 17);
- Most if not all participants have not yet finalized their internal models. In addition, model validation seems to be lagging behind construction. Therefore, material revisions and corrections to the models as they stand now cannot be excluded;
- Some assumptions and approaches used by respondents are unlikely to be approved by supervisors. For example, many respondents combined a partial internal model with a correlation matrix which differs from the one in the standard formula. In EIOPA's view, this is not going to be allowed under the new regime;
- A number of insurers have not used an internal model for QIS5, but may intend to develop one or may already be doing so. Even in the U.K., the number of respondents who submitted the results of their internal models was substantially lower than that of insurers who have already entered the approval process (see http://www.fsa.gov.uk/pubs/international/qis5_mar11.pdf, p. 32).

It is interesting to note that most participants who used a (partial) internal model for CAT risk had a lower capital requirement for that risk than under the standard formula.

5. What do QIS5 results mean for reinsurers and their clients?

According to pre-QIS5 consensus, Solvency II would, on balance, benefit reinsurers as the negative impact on their solvency ratios is expected to be more than offset in the long run by an increase in demand coming from two sources:

- Mutuals and undiversified direct insurers unable to raise additional capital, aiming at lowering their SCR through proportional and non-proportional reinsurance;
- Primary carriers increasing their use of reinsurance as a risk mitigation tool, especially for CAT risk.

Recognition of non-proportional reinsurance protection in solvency ratios was expected to provide an additional boost to demand for reinsurers.

Non-proportional reinsurance has been explicitly recognized for the first time in QIS5 technical specifications, which also include a thorough treatment of CAT risk, especially for non-life insurance. The study results, however, provide only partial support to the pre-QIS5 consensus expectations regarding demand for reinsurance:

- On the whole, the European insurance industry does not appear to need significant amounts of capital to comply with Solvency II rules. The number of insurers who proved unable to cover their SCR is lower than many expected and the size of the gap seems to be limited;
- Within the non-life underwriting risk module, the catastrophe risk sub-module was the most criticised. This was the case especially for inward reinsurance and business written outside the EEA where Method 2 (factors applied to premiums) came in for particular criticism for many reasons including there being no allowance for any

geographical diversification. For exposures captured by Method 1 (the scenario methodology for EEA business including inward proportional reinsurance) the feedback differed between the natural catastrophe and man-made scenarios. For natural catastrophe the issues were mostly about the calibration, especially in respect of flood in parts of Eastern Europe. For the man-made scenarios the issues were more fundamental, for example the methodology causing difficulties due to lack of data or the wide range of different exposures captured in a single reporting class. Particular problems arose for the Credit & Surety and Liability classes. To some extent the feedback on catastrophe risk was conflicting in that it was felt to be both (a) too complex and (b) not risk sensitive enough;

- Whilst the explicit recognition of non-proportional reinsurance in QIS5 was welcomed by the industry, the actual specifications used have proved complex and difficult to apply due to data (un-)availability. In ten countries no QIS5 participant actually calculated non-proportional reinsurance adjustments. In other seven countries, no more than seven participants in any line of business did so. Even those respondents who were able to take non-proportional reinsurance into account in their solvency ratios encountered a range of problems, from lack of historical claims data to difficulty in accounting for reinstatements. Problems were also created by the limited precision of location data for insured risks and by the lack of recognition of facultative reinsurance.

In sum, more work needs to be done by supervisors and insurers alike in the area of non-proportional reinsurance, CAT risk and CAT reinsurance to allow primary insurers to claim the full benefit of their reinsurance programmes in terms of a lower SCR.

6. Conclusions – which way forward?

In January the European Commission presented a draft Directive ('Omnibus II') including transitional rules which would allow it to water down Solvency II capital requirements for a period of up to 10 years. The QIS5 results just published apparently weaken the need for a long transitional period. In our view, however, a gradual transition to the new regime remains likely for the following reasons:

- The QIS5 results for solvency ratios are subject to a margin of error which cannot be quantified at the moment, but may be significant for some risk modules in general and for some insurers, groups and countries in particular. The Commission is probably not willing to take any chance to rock the markets in the current environment, especially if material capital gaps surface in some countries (Greece is the obvious example);
- The new rules have proved difficult to understand and complex to apply. Differences in interpretations between respondents and across countries have emerged. Some time is probably needed to make sure that everyone is on the same page, national regulators included;
- Third-country equivalence is still an open issue, with only few countries (Switzerland, Bermuda and Japan but, crucially, not the U.S.) likely to be treated as 'equivalent' from the beginning. This may cause problems for European groups with operating subsidiaries in 'non-equivalent' countries;
- EIOPA itself has expressed its preference for the adoption of a set of transitional measures regarding, in particular, third-country equivalence, hybrid capital and subordinated liabilities, and discount rates on technical provisions. But transitional measures should, according to EIOPA, be strictly limited in scope and time to avoid excessive 'dilution' of the new regime;
- Progress on internal models, which Solvency II is meant to favour at least for larger insurers, has been slow and haphazard until now. Most insurers are still struggling with model construction, validation and documentation. Supervisors, on their part, do not look ready yet to deal with the huge workload that is going to be imposed on them by the approval process (the amount of paper received by one national regulator in the internal model pre-approval process is rumoured to be in the range of a hundred thousand pages);
- The area of catastrophe risk continues to be one of the trickiest to resolve. The scenarios within Method 1 cannot easily be made more risk-sensitive without significant complication. In respect of natural catastrophe risk, EIOPA seems resolute that industry standard catastrophe models (which in general produce more meaningful results than a standard formula will ever do) cannot be used except under the internal model framework. However, how the internal model approval tests will work in practice in respect of catastrophe models remains unclear. We believe that whilst there are some obvious improvements (geographical diversification for Method 2 being a self-evident case), a more fundamental review is needed. For example, Undertaking Specific Parameters (USPs) could be introduced for catastrophe risk in such a way that both EIOPA and insurers can be satisfied; EIOPA being comfortable that insurers cannot cherry pick from models while the results produced are consistent with the industry's view of the risk;
- Solvency capital requirements are the first component of Solvency II, but Pillars II and III may prove a bigger challenge than initially expected by many. Governance, risk management systems and policies, the Own Risk and Solvency Assessment (ORSA) process and reporting requirements are now seen by supervisors and insurers as areas which will require an increasing amount of work and resources in the run-up to Solvency II. Interestingly, the maximum transitional period for Pillars II and III rules envisaged by the Omnibus II Directive is three years, not ten.

So is the European insurance industry ready for Solvency II? Our answer is: no, but it is getting there. The QIS5 test has been passed, on the whole, but the results may prove less satisfactory at a closer (and harder) look. Moreover, a lot of work remains to be done on Pillars II and III. Transitional measures appear increasingly likely now, but European authorities are well aware of the risks of reducing the pressure on insurers by adopting too long a transitional period.

Therefore, we see three years as the most likely duration of a transitional period at the moment. It would be a good compromise between the opposing needs of giving breathing space to insurers and avoiding market disruption, on the one hand, and maintaining the incentives to steady progress towards full compliance with Solvency II rules, on the other. Three years is also the maximum transitional period for the ORSA and other Pillar II requirements, which are a crucial part of Solvency II, so it provides a natural reference point for both insurers and supervisors.

7. How can Willis Re help?

Willis Re's core strength and expertise is reinsurance. We recognise that each client is unique. Solvency II may be a common European standard but its impact on insurers will vary, given their size, type, financial strength, business written and assets held. As clients' needs are different, so will their reinsurance requirements be different too. Willis Re recognises that one size does not fit all. We will work with you to develop the optimal reinsurance solution for your company.

But Willis Re's offering is broader than just reinsurance, reflecting the organisational and practical impacts that Solvency II will have on an organisation.

Solvency II is not just a compliance issue, and software alone will not provide the answer. The new supervisory regime will affect your business in many multi-faceted ways. Willis Re's 'One Flag' approach allows us to deploy teams to assist you with the right mix of local market understanding, specialist knowledge and technical skills to deliver solutions which are practical and (relatively) pain-free.

- EIOPA has now clearly indicated that QIS5 will be the last full quantitative study but that there will be targeted consultations and exercises to test improvements to the formula.

Willis Re will monitor these developments and will be available to assist any clients affected.

- As the final standard formula settles down, we can assist you in quantifying its impact on your firm, in particular how reinsurance structures may be optimised to manage the SCR number whilst remaining consistent with your broader business objectives.

Willis Re has the experience, tools and skills to help you.

- Many clients will have, or will be considering, internal models in circumstances where the standard model does not accurately reflect their risks.

Willis Re can assist not only in the provision of software but, far more importantly, in model parameterisation and the justification of selection of third party natural catastrophe models.

- Internal models also allow much greater scope for reinsurance optimisation. For groups, optimisation will be required at both group and entity level.

Willis Re is well placed to help you develop optimal, practical, placeable reinsurance solutions.

- We expect a greater focus on the ORSA in the coming year. Not only will the ORSA define the practical and organisational issues around internal model approval, but in addition your firm will need to clearly define its objectives and demonstrate that its reinsurance is fit for purpose.

Willis Re's integrated modelling and reinsurance expertise can provide clear, concise advice.

- The ORSA will also include a requirement to define appropriate stress tests. You will also be asked to prove that your company, and your reinsurance, is sustainable over a three to five year period.

Willis Re has the experience and the tools to help you demonstrate the robustness of your strategy, risk management and reinsurance programme.

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