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Newsletter

QIS5 raises new challenges for insurers

For many insurers, the technical specifications and the calculation of different solvency measures in QIS5 posed significant challenges and raised a number of poignant questions, which need to be resolved with some urgency given Solvency II's rapidly approaching 2013 implementation date. Jeff Courchene, Peter Franken, Vincent Robert, Fabrice Taillieu and Joël van der Vorst explain the challenges for non-life and health insurers in more detail.

The QIS5 process

The time devoted to the process for the fifth quantitative impact study (QIS5) varied considerably for many insurers relative to previous QIS exercises. Most insurers said that it would have been useful to have had the QIS5 spreadsheet closer to the time when the technical specifications were distributed. The lag in distribution created a situation in which some insurers started to collect information without realising the precise content and level of detail that would be needed for the exercise.

And while many of the initial errors in spreadsheet formulas were understandably a natural outgrowth of the complexity of the process and would be expected to be resolved with time, they did create problems for insurers, many of which had to stop and repopulate parts of their spreadsheets.

We also found that many insurers encountered considerable difficulty in completing the QIS5 spreadsheet. Manual adjustments required in specific cells typically led to errors, as the need for an adjustment was often buried in the requirements. In working with our clients, we discovered a number of insurers were under the impression that they had correctly filled in all the information that was needed, but in fact other adjustments were needed to arrive at the intended results.

A lack of clarity in the technical specifications also caused insurers to fall back on their own interpretations of a number of the definitions. While a principles-based framework is inherently more ambiguous than a formula-based approach, some insurers came away from the technical specifications with widely different interpretations of the many definitions and requirements, which could make it difficult to compare insurers' results.

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Many of these issues created difficulties for small and large insurers alike, but the process of building a balance sheet posed somewhat unique challenges for groups, many of which had to wait for subsidiaries to develop their respective balance sheets before the group could embark on its exercise. In some cases, a lack of coordination among subsidiaries and the group - some of which were unaccustomed to working together - caused delays and provided new motivation to rethink the ways in which they might optimise their corporate structure.

A challenging area for nearly all non-life insurers was the segmentation into specific lines of business (lob), as well as a breakdown into homogeneous groups of risks. For many players in the market, the segmentation in specified lines of business was not granular enough to account for their entire book of business; for others, the definitions of segmentation were simply unclear.

These difficulties may largely stem from the fact that the segmentation used in QIS5 -- while similar to previous QIS exercises for non-life -- is significantly different from the traditional approaches used by insurers, which also vary from country to country. In particular, the segmentation of health business into similar-to-life techniques (SLT) and non-SLT was considerably different in the most recent exercise.

The need for insurers to interpret the segmentation guidance opens up the possibility that lines of business which regulators may have intended to have a high capital requirement might be shifted to categories with a lower capital requirement. Even if unintentional, misclassifications of business seriously jeopardize the process.

Convergence on segmentation is likely to emerge, but at this point more guidance would have been useful, particularly for large specialised lines such as warranty, disability, credit and some sub-sets of assistance business.

New mindset

Some of those ambiguities that have just been discussed stem from the regulatory movement to a principles-based framework and will require insurers to adopt a new mindset at some time. As we worked through the exercise with insurers, it also became clear that, for Solvency II to be implemented with as few disruptions as possible, significant strides still need to be made in streamlining the process, particularly with respect to guidance on methodology, templates, and spreadsheets.

The first step to an improved process might be a discussion of the issues that insurers faced in the recent QIS exercise over the calculation of the best estimate, the production of the balance sheet, the calculation of the different components of the solvency capital requirement (SCR) and an assortment of others matters. These issues are covered below.

Calculation of the best estimate

Claims provisions. In most European countries, the current principles for the valuation of technical provisions differ significantly from the Solvency II requirements. The requirement to provide a discounted best estimate of technical provisions highlights the challenges insurers face. For example, analysis of claims provisions based on incurred loss development data does not automatically yield a payment cash flow that can be readily discounted.

Additional thought had to be given to the methodologies to derive these cash flows for the discounted best estimate.

Insurers also struggled with isolating the information required to develop cash flows by segment, region, and currency, gross and net of reinsurance, making it difficult to arrive at the discounted value of the claims provision.

Premium provisions

A lack of clarity in the technical specifications created confusion about the composition of the premium provision, and forced a number of insurers to use proxies or to resort to their own interpretation of the amount of future premium that had to be taken into account in their calculation. In particular, for many insurers, the technical specifications left them wondering how to define the boundaries of a contract.

Under Solvency II, insurers will need to account for their premium obligations using the moving boundaries of when coverage on each individual policy has been bound or cancelled. This change poses a number of issues.

New challenges in managing the paradigm shift in premium provisions arise from the fact that only a portion of premium paid by an insured is related to future losses. A reasonable portion is tied to profit and expenses, some of which is recognized immediately. As a measure of future cash flows, however, the premium provision should be reduced by some level that reflects immediately recognised expenses and profit. This requirement sets up a new dynamic in management information.

In the not-too-distant future, understanding an insurer's obligations will depend on the ability to split premium components into appropriate buckets and isolate the cash flows that stem from expected payments, expenses and profit. Complex in itself, the issue of premium provisions and its reporting requirements are further complicated when both gross and ceded reinsurance premium elements need to be considered.

Another difficulty, though on a more micro level, arose when insurers tried to differentiate what amount should be considered as premium receivable and what amount should be considered as other debtors, especially on binder contracts on which the insurer was not the lead.

In many, if not most cases, the systems that insurers now maintain are ill-suited to manage the information needs of a Solvency II environment.

Binary events

As insurers move from a prudence-based standard to a market-consistent requirement, many have not fully considered the impact of binary events in calculating of their best estimate. Some insurers based the calculation of the best estimate entirely on historical data, which does not account for the kinds of events that are known but not reflected in the historical data, and ignored the impact of binary events. Others have merely added a minimal flat load.

As we discussed with our clients in working through this calculation, an approach that ignores binary events could produce highly optimistic best estimates when measured against the current definition that is the probability-weighted average of all possible future cash flows.

Expenses. A proper allocation of all the expenses that needed to be considered during the calculation of the best estimate proved to be difficult for the majority of the insurers. Difficulties arose when insurers had to allocate such expenses, on a cash-flow basis, by segment and between the claims provision and the premium provision. As a result, broad-brush assumptions were made.

Risk margin

Insurers' choice of methodology from the five options described in the technical specifications often depended on the time available to work through the various methodologies and the results desired by the insurer. The existence of a choice in methodology is likely to yield risk margins that are difficult to compare from one company to another.

The balance sheet

The technical specifications often left insurers grappling with the type of adjustments that were appropriate to make when moving from their local GAAP balance sheet to an economic format. Questions arose in many aspects of the balance sheet but especially on the following issues.

Capping deferred taxes. The technical specifications leave open the question of whether insurers should cap the adjustment for loss absorbency of deferred taxes in calculating

their SCR to the level of the net deferred tax identified when the company builds its economic balance sheet.

While some insurers decided to cap the adjustment for loss absorbency of their deferred taxes, others did not. We found that huge changes in a company's solvency ratio can result from this one decision, and consequently have the potential to significantly distort the results of QIS5. For example, one insurer's solvency ratio fell 30% merely because the company did not cap its adjustment for loss absorbency of deferred taxes in calculating its SCR.

Treatment of participations. In many ways, the numerous communications that have been exchanged since QIS4 seem to have added to the confusion about how company's participations need to be valued and how their market risks should be treated in the SCR standard formula. Many insurers had considerable difficulty in discerning what constituted a strategic participation, which is an important distinction as this determines which shocks apply. In particular, the guidance describing the five levels of the *nature of participation/subsidiary* did not allow insurers to be confident that their subsidiaries were correctly classified.

Classification of tiers. Interpreting the classifications of capital into tiers tended to be a highly complicated process for insurers, despite the descriptions in the technical specifications. Furthermore, the impact of the thresholds on the eligible capital for the SCR and minimum capital requirement (MCR) was considerable in several cases. For example, classifying letters of credit, which are comparable to cash in the bank, as tier 2 capital was found to reduce an insurer's level of capital eligible for its MCR because of the threshold set forth in the technical specifications for tier 2 elements.

An issue that is perhaps even more pressing than the constraints on letters of credit is the treatment of subordinated debt for insurers that are part of a bank. Many of these insurers found the process of determining whether the debt should be categorised as tier 1 or tier 2 problematic because it was difficult to make the link between the technical specifications and the debt contract.

Other balance sheet issues. For insurers that are part of a non-financial group, it appeared difficult to retreat some inter-company items. For example, some insurers used

to book net asset value but now they will have to separately report inter-company assets (for counterparty credit risk) and inter-company liabilities.

Calculation of SCR

Non-life underwriting risk

Premium and reserve risk

Volume measure -- PP lob¹. The introduction of the new element of the premium volume formula that accounts for multiple year contracts (PP lob) greatly increases premium volume, which in turn translates into much higher capital requirements than the level developed in the QIS4 exercise.

At the same time, future profit derived from these multi-year contracts is disregarded. The inconsistency means that an insurer writing profitable, multi-year business is penalised much more than an insurer writing a small volume of unprofitable business on a one-year basis.

The PP lob was developed to take into account the potential increased risk posed by multi-year contracts that effectively lock insurers into a certain rate, but some parties dispute this rationale.

They argue that under the current PP lob requirements, an insurer that writes only two-year contracts, for example, is required to hold more capital than an insurer that writes one-year contracts but whose volume is twice that of the previous insurer, merely because a portion of multi-year contracts run into the following year. The increase in premium volume creates what is effectively a persistent shock on multi-year business for the remaining life of the policy.

Non-proportional (NP) lob factor. Most insurers found the NP lob factor highly restrictive because it was geared to treaty arrangements that covered all claims for a single line of business. This constraint did not match insurers' treaty arrangements, several of which typically apply to multiple or even all lines of business. For this reason, the simplified formula to which the NP factor was applied was not used by insurers because their reinsurance structures were more complex than the one to which the formula applied.

Highly sensitive to underlying data, the NP lob factor produced widely varying results, which gave insurers limited confidence in the reasonableness of their SCR calculations. Difficulties in gauging the reasonableness of the NP lob factor resulting from the specified guidance, especially compared with the risk premium inherent in excess-of-loss treaties, led some insurers to discard the results it produced and instead take the full penalty.

Undertaking-specific parameters (USPs). Many insurers' efforts to develop USPs that reflected their specific risk profile were hampered by data that often lacked the needed detail because it was the product of IT systems that had seen multiple mergers and acquisitions. A significant hurdle in itself, this constraint was typically complicated, for the calculation of USPs for reserving risk, by the fact that insurers' loss triangles are available on a gross of reinsurance basis rather than net of reinsurance, as was called for in the exercise's methodologies. In practice, reinsurance treaty terms also tend to change from year to year, making construction of historical net claims triangles across years difficult to produce.

When trying to produce net claims triangles, many insurers found the technical specification's requirement that *the data should reflect the reinsurance cover of the undertaking for the following year* was unclear. Insurers frequently questioned the rationale of using the current or future reinsurance programme when measuring the volatility of reserves linked to claims in the past. Moreover, even after data issues were sorted out and the methodology was applied, results tended to be hard to interpret and alarmingly different from the factors in the spreadsheet.

Two of the three USP methodologies for premium risk call for insurers to calculate their best estimate as of the end of each occurrence year, or after 12 months. While these approaches may be viable in the future, they proved to be infeasible for many insurers which have only recently started to calculate their best estimate in an analogous way.

As the third methodology, based on the Swiss Solvency Test, was also considered difficult to implement, some insurers simply developed USPs by using their best estimate for each occurrence year as of the end of 2009 -- a slight deviation from the guidance with respect to the methods -- rather than strictly adhering to the USPs' guidance. The necessity for detailed but often unavailable data -- perhaps contrary to intention -- often left considerable room for interpretation.

On paper, the application of USPs is a welcome approach that insurers could use to develop parameters that match their risk profiles and potentially lower their SCR, but in practice, the optimism with which insurers approached the opportunity was frequently frustrated by untenable requirements.

Catastrophe risk

While issues related to country-based scenarios that insurers had to use in QIS4 were eliminated, others crept into the process. For many insurers, the scenario-based approach was far more time-consuming in QIS5, and the level of catastrophe risk and therefore associated penalties increased compared with the previous exercises.

The level of data needed to develop the different scenarios (for instance, exposure by CRESTA² zone) also was difficult, if not impossible, to retrieve from insurers' IT systems, which often caused many to turn to their reinsurance brokers, who were asked to make the necessary calculation.

While perhaps a necessary step for now, the externalisation of the calculation raises some concern with insurers that could find themselves at a disadvantage in determining the reasonableness of their SCR. As we have worked through the process with our clients, we've found that discussions aimed at understanding the main drivers of risk are a crucial component not only to completing the exercise but more importantly to managing a company's capital requirements.

Insurers that were required to use the factor-based approach also encountered considerable problems when calculating their catastrophe risk. Isolating the specific premium that should be included in the calculation was a tricky process for insurers, largely because the formula called for premium related to a peril, for example storm-related premium, which could not be accessed in insurers' systems that are set up to manage premium by policy type. Similar difficulties arose in isolating the peril linked to policies with worldwide cover.

The factor-based approach also produced unexpectedly high results, which in many cases differed greatly from the results produced by a scenario approach. Both approaches seemed to produce unreasonable results for some particular types of business in cases where no reinsurance arrangement was in place.

Health SLT underwriting risk

Disability risk shock scenario. The application of a combined disability-recovery shock, which was introduced in QIS5, ignores any diversification effect. The result of the dual shock without any adjustment for correlation is a significant increase to the SCR.

Applying the shock (20%) to the recovery rates, rather than to the probability of remaining disabled, can also create variations in the best estimate. For example, if the probability of remaining disabled over the first year is 2%, then the probability of recovering (ignoring the possibility of death) is 98%.

The result of these quite reasonable assumptions, however, produces a probability of remaining disabled over the first year of 21.6% [=1 - 98% °- (1 - 20%)] when the recovery shock is applied. This figure corresponds to what most would consider an unreasonable 980% shock on the annual probability of remaining disabled.

The link between a) the variables considered for calibrating the recovery shocks as per the *calibration paper* (i.e., the coefficient of variation of the variable defined as the *provisions released as a result of recovery as a proportion of total provisions*), and b) the shock of -20%, which is applied on the probability to recover, seems unclear.

The technical specifications also lacked clarity in indicating when the shock should be applied. This ambiguity meant that insurers were left to decide whether to apply the shock on the entry rates as defined by the probability of becoming disabled and remaining disabled long enough to exceed the waiting period, or the probability of becoming disabled without any condition on the duration of the disability.

The same issue also arose with regard to the application of the shock to the recovery rate. Logic would dictate that the approach should be consistent, but given the fact that the two shocks on the entry rate and the recovery rate can have dramatically different impacts, the way in which an insurer defines the variable to be shocked will have a huge impact on its SCR.

Insurers that provide contracts offering both short- and long-term disability also had to decide for themselves whether the risk on short-term disability and unexpired exposure -- the future annuities -- should be dealt with in the health non-SLT sub-module (option 1) or the health SLT sub-module (option 2). This decision can have a significant impact on the SCR.

Modeling management actions. While management actions for life and non-life sectors tend to be quite different, non-life insurers may benefit from some of the techniques used by life insurers to assess their shock scenarios in order to mitigate losses and thus reduce the SCR. This strategy is particularly relevant for long-term disability to which insurers must apply a disability shock scenario in their modelling but which may also have en bloc clauses that allow for premium increases if the extreme scenario occurs. We have had considerable discussion with insurers about the most appropriate way to include this management action in the disability shock scenario.

There is also inconsistency in allowing life insurers to vary their profit-sharing obligations when the shock is applied to protection business but not allowing non-life insurers the same flexibility. This restriction increases the SCR for non-life insurers, which, unlike life insurers, are unable to take into consideration the risk-mitigation effect of varying profit-sharing obligations.

Application of lapse shock to protection business. The technical specifications indicate that different lapse shocks of +/- 20% should be applied to SLT health business while a shock of +/- 50% should be used with life, non-SLT health and non-life lines. While this requirement is a workable approach for many lines with homogeneous characteristics, it is difficult, if not impossible, to apply to some niche lines, such as credit insurance, that encompass disability, unemployment and death covers.

However, the technical specifications ask that different lapse shocks be applied to each cover, which is highly inconsistent with the nature of the line of business and therefore produces strange results. In practice, insurers have typically developed models on credit insurance products that prevent the application of simultaneously different shocks on various covers -- a requirement under the equivalent scenario.

Revision risk. There is a potential double-counting in the shock scenarios for disability and revision risk. Many times, the parameters for disability and recovery are already calibrated taking into account partial disability. When the state of disability is already included in this parameter, several insurers interpreted the revision risk shock with respect to the state of health as not being applicable or as potentially resulting in an overestimation of this risk.

Counterparty risk

The revised methodology developed since QIS4 is admittedly much easier to apply than the previous approach, but other issues have emerged. The most pressing is the severely restrictive factors associated with counterparty risk. The 90% penalty that now kicks in, for type 2 exposure, if a counterparty should delay payment for as little as 91 days was universally viewed as unrealistic and overly punitive by the insurers with which we worked. Additionally, default risk for non-rated companies (in particular, for reinsurers outside the European Economic Area) was seen as being very high.

Other issues

The lack of harmonisation between life and non-life. This issue continues to cause confusion for composite insurers which follow different practices for accounting for life and non-life underwriting risk when calculating their SCRs. The confusion arises because the volume of premium for new business written in $y + 1$ is taken into account when calculating the non-life underwriting risk but the profit potentially derived from the business is not. This approach is considerably different from the approach used by life insurers, where profit derived from future premium is taken into account in cases where future premium is taken into account.

Limitations of the standard formula for insurers with specialised lines or limited liabilities. Not surprisingly, some niche insurers, or those writing highly specialised lines of business, had considerable difficulty using the standard formula. One example of the difficulty that arose involved the calculation of the expected net recoverable, which sometimes was larger than the gross level of claims. Under this scenario, a negative best estimate of net claims had an adverse impact on the SCR and rendered the standard formula effectively useless.

Additionally, some insurers have purchased reinsurance to cap liability amount on a yearly basis, but it is currently not possible in the QIS5 spreadsheet to reflect such a case. For example, calculating premium risk and catastrophe risk separately may lead to an underwriting risk being higher than the limit for the company and therefore would not reflect the true risk of the company.

For insurers with these or other atypical characteristics, for which the standard formula is a crude approximation of their solvency, developing a (partial) internal model might be

solution. But for a much larger number of small niche insurers which have neither the time nor resources to devote to such an investment, increased flexibility in the application of the standard formula or development of a framework within the standard formula to account for these situations would probably be a better alternative.

Joint effort needed

While the number and importance of all these issues are significant, they are not insurmountable. Indeed, we have come a long way in the development of the framework over the past few years.

Nevertheless, there is still much work to be done for Solvency II to be successfully implemented at the beginning of 2013. This work will require a joint effort by EIOPA and the EU, as well as other stakeholders such as the industry, actuarial associations and local regulators. It is only with an enhanced level of cooperation and commitment that we can resolve these issues.

Footnotes:

1. According to the technical specifications, "the present value of net premiums of existing contracts which are expected to be earned after the following year for each line of business (lob)."

2. Catastrophe Risk Evaluating and Standardizing Target Accumulations

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