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Insurer Solvency Assessment – Towards a Global Framework

by Stuart Wason, chair, IAA Insurer Solvency Assessment Working Party

A significant report on insurer risk assessment for solvency purposes is expected to be released publicly later this spring. The report entitled, *Insurer Solvency Assessment – Towards a Global Framework*, is currently available to all actuaries in the members-only section of the Web site of the International Actuarial Association (IAA) at www.actuaries.org.

The report was prepared by the IAA Insurer Solvency Assessment Working Party (WP) to:

- describe principles and methods to quantify total funds needed for solvency
- provide a foundation for a global risk-based solvency capital system consideration by the International for Association of Insurance Supervisors (IAIS)
- identify best ways to measure the exposure to loss from risk and any risk dependencies
- focus on practical risk measures and internal models

The WP members consisted of volunteers from around the globe, 20 in total. There were four WP members from Australia and Asia, eight from Europe and eight from North America. The WP contained strong representation from life, health, non-life, reinsurance, supervisory and academic backgrounds.

The IAA considers the report to represent useful educational material. The report is not intended to express a unique or absolute point of view with regard to the issues which surround the topic of insurer solvency assessment. The materials contained in the report will need to be enhanced over time in light of new developments. The report itself is supplemented with several appendices, including life, non-life and health case studies to illustrate the practical implementation of the principles developed in the report.

In the course of its mandate, the WP made several presentations on the work before a variety of insurance supervisory and professional actuar-

ial meetings. The WP met with the IAIS Technical Sub-Committee on Solvency and Other Actuarial Issues, the insurance internal market directorate of the European Commission, the Conference of European Insurance Supervisors, as well as numerous professional actuarial associations. Feedback from these presentations has been both positive and constructive.

To assist in the development of a global framework for insurer solvency assessment and the determination of insurer capital requirements, the WP proposes a number of guiding principles to be used in their design. These principles are summarized in the following paragraphs.

“Three Pillar” Approach

The WP believes that a multi-pillar supervisory regime is essential for the successful implementation of the global framework proposed in the report. The conclusions of the report are consistent with the three pillar approach to the regulation of financial service entities that is reflected in the Basel Accord for the regulation of banks internationally.

The approach envisaged would have three pillars consisting of:

- Pillar I:** Minimum financial requirements
- Pillar II:** Supervisory review process
- Pillar III:** Measures to foster market discipline

The definitions of these pillars need to reflect the specific features of insurance.

Pillar I (minimum financial requirements) involves the maintenance of a) appropriate technical provisions (policy liabilities), b)



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(in alphabetical order)

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appropriate assets supporting those obligations and c) a minimum amount of capital (developed from a set of available and required capital elements) for each insurer. Of primary interest to the WP in the report are the capital requirements. To the greatest extent possible given the sophistication of the approach chosen and the insurer's ability to model them, it is the WP's view that these calculations must reflect a comprehensive view of the insurer's own risks.

Pillar II (supervisory review process) is needed, in addition to the first pillar, since not all types of risk can be adequately assessed through solely quantitative measures. Even for those risks that can be assessed quantitatively, their determination for solvency purposes will require independent review by the supervisor or by a designated qualified party. This is especially true for those determined using internal models. The second pillar is intended to ensure not only that insurers have adequate capital to support all the risks in their business, but also to encourage insurers to develop and use better risk management techniques reflective of the insurer's risk profile and in monitoring and managing these risks. Such review will enable supervisory intervention if an insurer's capital does not sufficiently buffer the risks.

Pillar III serves to strengthen market discipline by introducing disclosure requirements. It is expected that, through these requirements, industry "best practices" will be fostered.

The actuarial profession can assist supervisors within the second pillar by providing independent peer review of the determination of policy liabilities, risk management, capital requirements, current financial position, future financial condition etc., where these entail the use of substantial judgement or discretion. Assistance can also be provided within the third pillar in the design of appropriate disclosure practices to serve the public interest.

The WP believes that while customization of the individual pillars is needed as they are applied to insurers, the use of a three-pillar approach, similar to that used by the banks, makes sense and is extremely useful, given:

- the common features shared by the two financial sectors
- that many insurance supervisors are part of integrated financial supervisory agencies, and are well acquainted with the Basel Accord.

Some reasons for the differences in approach to be used for insurance would include 1) the nature of insurance risks and the techniques to assess them in Pillar I, 2) the need for multi-period review under Pillar II and 3) the definition of relevant information for purposes of disclosure in Pillar III.

Principles versus rules-based approach

Solvency assessment should be based on sound principles. Implementation of solvency assessment will require rules developed from these principles. However, the WP considers that the rules used should include provisions to allow their adaptation to current or unforeseen circumstances with the prior agreement of the relevant supervisor.

Total balance sheet approach

The application of a common set of capital requirements will likely produce different views of insurer strength for each accounting system used because of the different ways accounting systems can define liability and asset values. In the view of the WP, these definitions may create a hidden surplus or deficit that must be appropriately recognized for the purpose of solvency assessment.

The WP believes that a proper assessment of an insurer's true financial strength for solvency purposes requires appraisal of its total balance sheet on an integrated basis under a system that depends upon realistic values and consistent treatment of both assets and liabilities, and does not generate a hidden surplus or deficit.

Degree of protection

It is impossible for capital requirements, by themselves, to totally prevent failures. The establishment of extremely conservative capital requirements, well beyond economic capital levels, would have the impact of discouraging the deployment of insurer capital in the jurisdiction.

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In forming its recommendation for an appropriate degree of protection for insurer solvency assessment purposes, the WP considered the role of rating agencies in assessing insurers and the substantial volume of credit rating and default data available from these agencies. The WP also noted the relation between the degree of protection and the time horizon considered. In addition, the specific manner of applying the capital requirement risk measure may also affect the degree of protection chosen. The WP's recommendation for degree of protection is therefore linked with its recommendation for an appropriate time horizon for solvency assessment as shown in the following paragraphs.

Appropriate time horizon

A reasonable period for the solvency assessment time horizon, for purposes of determining an insurer's current financial position, is about one year. A longer time horizon of a few years (e.g., perhaps five years for life insurance and two years for general insurance) may be a reasonable period for assessing an insurer's future financial position. This assessment time horizon should not be confused with the need to consider, in such an assessment, the full term of all of the assets and obligations of the insurer.

The WP recommends that capital requirements be determined in a manner consistent with the overall goal for the confidence level of Pillar I capital requirements. Specifically, the WP recommends that the greater of two measures be held.

a. The amount of required capital must be sufficient with a high level of confidence, such as 99 percent, to meet all obligations for the time horizon as well as the present value at the end of the time horizon of the remaining future obligations (e.g., best estimate value with a moderate level of confidence such as 75 percent).

b. Due to the long-term and complex nature of some insurer risks, the insurer should consider valuing its risks for their lifetime using a series of consecutive one-year tests with a very high level of confidence (say 99 percent) and reflecting management and policyholder behavior (but no new business). Alternatively, this test can be conducted with a single equivalent, but lower (say 90 percent or 95 percent), level of

confidence for the entire assessment time horizon. This lower level of confidence over a longer time horizon is consistent with the application of a series of consecutive higher level one-year measures.

Types of risk included

In principle, the WP recommends that all significant types of risk should be considered (implicitly or explicitly) in solvency assessment. However, there may be valid reasons why certain risks do not lend themselves to quantification and can only be supervised under Pillar II. The WP believes that the types of insurer risk to be addressed within a Pillar I set of capital requirements are underwriting, credit, market and operational risks.



Appropriate risk measures

A risk measure is a numeric indicator that can be used to determine the solvency capital requirement for an insurance company. The most appropriate risk measures for solvency assessment will exhibit a variety of desirable properties (e.g., consistency). Of course, it is difficult for one risk measure to adequately convey all the information needed for a particular risk. One risk measure that exhibits several desirable properties for various (but not all) risks is tail value at risk (also called TVAR, tailvar, conditional tail expectation, or even policyholders' expected shortfall). In many situations, this risk measure is better suited to insurance than value at risk (VAR), a risk measure commonly used in banking, since it is common in insurance for their risk event distributions to be skewed.

Risk dependencies

The solvency assessment method should recognize the impact of risk dependencies, concentration and diversification. This has implications for the desirable properties of the appropriate risk measure.

Risk dependencies within an insurer can have a very significant impact on the overall net effect of its risks (compared to the gross effect without taking account of their dependencies). Even the most basic fixed-ratio method should implicitly allow for risk dependencies. Currently,

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required capital formulas in Japan and the United States incorporate some recognition of dependencies, concentration and diversification. However, in many countries, diversification between different risk types is not recognized in the formulas for required capital.

Risk management

The solvency assessment method should appropriately recognize the impact of various risk transfer or risk sharing mechanisms used by the insurer. Some of the ways in which an insurer can manage its risks, beyond the fundamentals of prudent claim management, include:

- risk reduction
- risk integration
- risk diversification
- risk hedging
- risk transfer
- risk disclosure

While many of these types of risk management serve to reduce the risk in question, it is important to note that some of them create additional risk related to the technique itself. For example, both hedging and reinsurance create counterparty risk, which is a form of credit risk.

Regardless of the risk-management process used by the insurer for its risks, including full retention of its risks, effective management of these risks is encouraged by appropriate disclosure of the extent of the risks and their management by the company. Appropriate audiences for such disclosure include the stakeholders of the insurer including the supervisors.

Standardized approaches

Many of the discussions comparing different solvency assessment methods (e.g., fixed-ratio versus risk-based capital (RBC) versus scenario-based, etc.) do not adequately explain the optimum conditions that must be present for each method to be reliable. Supervisors considering new methods should be alerted to the conditions needed for the new methods to be a success.

Simple risk measures are appropriate when it is recognized that the risk in question is important

from a solvency perspective but a generally accepted view of how the risk should be assessed does not currently exist. They are also appropriate if the risk is of minor importance.

Sophisticated risk measures are appropriate for material risks where one or more of the following conditions exist:

- the risk in question is very important from a solvency perspective and cannot be adequately assessed through the use of simple risk measures
- there is sound technical theory for the risk to be assessed and the risk measure to be used
- sufficient technical skills and professionalism are present among the staff
- relevant and sufficient data is present or the knowledge about the risks is otherwise reliable
- the risk is actually managed in accordance with the risk measure used
- risk management practices are evident to a high degree

Advanced (company-specific) approaches

For stronger, more technically able companies with effective risk-management programs, it may be appropriate to introduce advanced (or company-specific) models that can incorporate all types of quantifiable risks. An internal model can also incorporate all types of interactions among risks if those interactions are understood and quantifiable. However, in practice, many aspects of risk are not well understood, particularly in the case of extreme events for which little history exists (and that are most important for solvency assessment). Hence, internal models provide a model of risks faced by an insurer that can, at best, be described as representing reality in an approximate way. In building an internal model, care must be given to capture the most important risk variables.

Required capital can be thought of as a second line of defense protecting an insurance company's solvency and its policyholders. The first line of defense is solid risk management. If trouble develops that cannot be prevented through management of a risk, then capital should be available to cover the financial losses

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Chairperson's Corner

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- Monitor and share best practices for risk management
- 4. The Risk Management Section will work to increase the profile of the actuarial profession in the risk management field.
 - Promote the value of ERM and CRO, and the actuary in that role
 - Encourage a focus on risk management for business decision making
- 5. The Risk Management Section will be a key participant in the process of setting standards of practice for risk management.
- 6. The Risk Management Section will encourage appropriate standardization of risk metrics and capital adequacy measures.
- 7. The Risk Management Section will work favorably to influence regulators in the formation of risk management regulations so that they conform to emerging best practices, working with the American Academy of Actuaries.

Underlying this vision of the section's activities is the belief that risk management is a holistic activ-

ity that covers a broad spectrum of risks, including credit, market, operational and insurance/hazard, and that risk management must integrate measurement, monitoring, strategy development, tactical execution and risk preferences.

From this base, we will be working to select some additional projects that the section will undertake. Our starter list has over 40 items. There is no doubt that we will be coming back to you asking for more support and help in one way or another. Anyone who has any suggestions for the section is encouraged to send them to the section council and/or to this newsletter.

My hearty thanks to everyone who has participated in all aspects of this process so far. If you ask me if I think that actuaries will again be recognized as the leading professionals in modeling and management of financial risks, all I can say is that with all this enthusiasm and the high quality of people involved, "You gotta believe!" ♦

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that emerge. It follows that in order for a supervisor to be content with a lower amount of required capital under a company-specific approach, there must be some assurance that the particular source of risk is under control, its effects are well mitigated and there is a reduced need for the required capital. Therefore, in approving a company's use of an advanced or company-specific approach, the supervisor should confirm that the company has in place appropriate risk management processes together with a satisfactory reporting structure.

A particular strength of internal models is their ability to capture the impact of combinations of risks beyond a simple aggregation of individual risk factors that cannot accurately assess risk interaction effects.

Market efficient capital requirements

It is the WP's view that excessive minimum capital requirements, while affording additional solvency protection, will also serve to impede capital investment in insurers because of the perceived additional cost of capital required in the business, beyond that required by economic levels of capital, that may not be recoverable in product pricing. ♦

Comments on the WP report are actively welcomed and can be sent to the author at swason@mow.com.

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