

SCOR Papers

By **Michel Dacorogna**
*SCOR Deputy Chief Risk
Officer*

And **Philippe Keller**
Deloitte Switzerland

Texts appearing in SCOR Papers are the responsibility of their authors alone. In publishing such articles, SCOR takes no position on the opinions expressed by the authors in their texts and disclaims all responsibility for any opinions, incorrect information or legal errors found therein.

Principle-based solvency: A comparison between Solvency II and the Swiss Solvency Test

With the adoption of the Solvency II directive, the European parliament has opened up a new area for insurance in terms of solvency regulation. This marks a change in paradigm: instead of relying on a simple, balance sheet-based formula to assess the solvency of a company, the regulators want to push the industry into developing their own risk management and using their own internal models to assess risk. A few years ago, Switzerland opened the way towards this more comprehensive regulatory mindset with the Swiss Solvency Test (SST), which, after a trial period, will be fully enforced in 2011. Both regulations are inspired by the Basel Accord for banks and apply the same philosophy: insurers know their own risks best and should be given incentives to develop their own ways in which to manage them.

SCOR has experience with both regulations. As a European reinsurer, the Group has to comply with Solvency II, whilst already complying with the SST in its Swiss subsidiary. Deloitte Switzerland, as a consulting firm on solvency issues, has also built a strong experience on those subjects. There are parallels and also some notable differences between the two regulations. The theories on which both the SST and Solvency II are based are far from being settled and the financial crisis has underlined many weak points in the financial theory of risk.

Market-consistent valuation of balance sheet is a key factor

Solvency II and the SST share the same conceptual framework. They want to place the market-consistent valuation of balance sheets at the heart of their risk assessment, economically valuing both assets and liabilities. This task is relatively easy when it comes to valuing assets exchanged in liquid markets. Mark-to-market is the solution in this case and nobody questions the validity of such an approach, even though it could induce major volatility in the P&L. The mark-to-market approach becomes more problematic when the assets are structured products or are very illiquid. Such assets are dealt with using a mark-to-model approach and the central question becomes which model is the right one to use. The situation is even worse for insurance liabilities where no market exists outside the reinsurance arena.

The core of both approaches is the market-consistent balance sheet at the period $t=0$ and the possible balance sheets in the future ($t=1$), whereby the Solvency Capital Requirement (SCR) buffers risks over a one-year period. Working on this premise, risk is defined by changes in available capital (own funds) over the period and the available capital itself is defined with reference to an economic, market-consistent valuation. The market value of insurance liabilities, on the other hand, is defined as the best estimate plus a risk margin. The latter covers the cost of the capital needed to buffer non-hedgeable risks during the entire liabilities run-off.

Even though Solvency II and the SST use the same framework, there are fundamental differences. Some have to do with the treatment of hybrid elements in the balance sheet and some are more philosophical. For the SST, the use of internal models should be the norm (for groups and reinsurers), but this is not the case in Solvency II where internal models appear to be the exception rather than the rule.

Treatment of group solvency as a key differentiator

European insurers intending to use an internal model must also use the standard formula in parallel for at least 3 years. The SST proposes that companies use simple standard formulae, while Solvency II will require standard models. The SST does not require these if the internal model is approved. Moreover Solvency II and the SST do not agree on which risks are considered quantifiable and which are not. The SST, for instance, does not consider operational risk to be quantifiable, whereas Solvency II does. The biggest conceptual difference currently lies in the treatment of group solvency. The SST bases solvency requirements on the level calculation (granular approach) of legal entities, while Solvency II is based on the consolidated accounts and has not yet determined how to reflect diversification effects in the concept of group support. The SST requires groups to model all legal entities using their webs of intra-group capital and risk transfer instruments. For the Swiss regulators, a group is solvent if all its legal entities are solvent. Unlike operational risk, the SST considers capital fungibility to be quantifiable, whereas Solvency II does not.

There are other important differences: the SST considers scenarios to be an integral part of the SST, both in Pillar I (quantification of risks) and Pillar 2 (risk management), whereas they are not used by Solvency II. Another important difference that could have serious consequences is the fact that risk margin is computed by legal entity in SST, but by line of business in Solvency II, which does not allow for any diversification. The latter approach will strongly penalize the well diversified groups that underwrite all sorts of risks. Last but not least, the treatment of equity risk is based on one-year market risk for the SST, whereas Solvency II uses a duration approach and treats equity risk as a bond-like risk.

Implementation inconsistencies will lead to calculation variations between available and required capital

It is not the place here to detail all differences but both approaches should more clearly distinguish between their underlying concepts and chosen simplifications. As internal models will be used, they should be assessed not with respect to standard formulae or standard models, but in terms of their foundations. Otherwise, the use of more sophisticated models will be inhibited, which goes against the spirit of the new regulations. This will, however, require the use of a genuinely principle-based approach to supervision, at least for the assessment of internal models.

The current inconsistencies in terms of implementation will lead to inconsistencies in the calculation of available and required capital: between Solvency II and SST, between companies following Solvency II or the SST and between various EU jurisdictions. The future developments of both regulations should ideally resolve inconsistencies by clearly differentiating between the underlying concept and the chosen simplifications.

Currently, both are designed to deal with transitory crises, but are less prepared for structural ones. They are calibrated to past experience over the last 20 years and are focused on easily quantifiable risks. They put forward capital requirements that can act pro-cyclically, whilst being insufficient to deal with structural crises when the global financial system enters a different state. Capital may not be an adequate tool to deal with structural crises, but information will be crucial in pointing out the new ways in which the system is heading and consequently in defining the firm's strategy. This must be sufficiently flexible to be able to survive unexpected events.

Setting the right incentives to run an insurance business efficiently

The current crisis has brought to light a number of more fundamental regulatory and supervisory shortcomings, which should be addressed in the future. Most of these pertain to three aspects:

- Incentives
- Pro-cyclicality
- Systemic Risks

Regulation is ultimately all about setting the right incentives, so that insurers who run their businesses well are rewarded and those who run them badly are punished. There should be greater focus on the consequences of rules and regulations and less on their intentions. The intention to make the insurance business excessively safe by introducing ad-hoc conservative rules invariably leads to inconsistencies in the regulatory framework. Insurers then have an incentive – quite legally – to arbitrage against these inconsistencies. Not only is this a waste of resources, it also leads to intransparency and ultimately to less security. A good example is the current definition of the risk margin within Solvency II, which does not allow for diversification effects between different lines of business. It will probably be quite easy to circumvent the intentions of the regulators by introducing group-based internal reinsurance that is designed to unlock these diversification effects. Other examples include excessively rule-based limits on investment, available forms of capital and so on.

Pro-cyclicality is ultimately linked to the time horizon of a solvency system. Both Solvency II and the SST use a one-year time horizon. This makes using the risk-mitigating effects of diversification over time impossible. More research should be undertaken to develop approaches that allow for the taking into account of diversification over time. This does not mean that an outmoded hold-to-maturity approach to valuation or a framework that would allow excessive risktaking with unrealistic assumptions on future asset performance should be pursued.

For transparency reasons, the actual calculations of required and available capital should be consistent and be based on the most recent parameters and on a market-consistent approach. However, one element of an approach that reduces pro-cyclicality could be for supervisory authorities to lower capital requirements in times of market-wide stress and to increase them in times of irrational exuberance. The difficulty of this approach lies in resisting the impulse during times of exuberance to forgo capital requirement increases. This flexibility is an asset to the insurance industry and should be paid for. The fee for this can be used to build up sufficient reserves, which in times of crisis can be used to pay for bailouts instead of charging the taxpayer.

Addressing systemic risks through regulation

The credit crisis has shown once again that systemic risk is relevant and that for many insurers it is actually the dominant risk. Approaches that consider each insurer as a separate, basically stand-alone entity are not able to assess and quantify systemic risk appropriately. Regulatory frameworks that use market-wide scenarios, such as the SST, are better able to tackle systemic risk. The supervisory authorities obtain information on the financial position of all insurers, given that a pre-defined event shocks the system. Solvency II would benefit from focussing more on scenario analysis so that the European supervisors can gain some insight into potential sources of systemic crises. However, systemic shocks affect not only insurers but most, if not all, market participants. It will be important for banks and other financial institutions to evaluate the impact of the common scenarios. Systemic events often play out over several years, exposing insurers to different and potentially counteracting effects, e.g. periods of very low inflation followed by high inflation. Scenarios capturing systemic risks should therefore describe multi-year events and be used not only to analyse the potential impact on insurers, but also to guide governmental risk management, e.g. monetary policies. Systemic risk will probably be a very fruitful and interesting field of research, involving risk managers developing internal models, alongside regulators, economists and many others.

Solvency II and the SST are under pressure to take on more of the rules and regulations of Basel I and II. However, it might well be that the underlying philosophy of Basel I and II have actually contributed to the crisis rather than mitigated its effects, by placing too much emphasis on the auditability and control of all risks. How Solvency II and the SST will be implemented does not just involve specific rules and regulations, but is also largely about the style of supervision. How will politics support principle-based regulation? Will rules and regulations be mere fig leaves and stay unenforced due to lack of political will? Will foreign subsidiaries be treated equally as local players or will regulation and supervision be used as a tool for protectionism and economic war? Will the supervisory authorities have the freedom to employ sufficient staff to implement principle-based supervision? Good regulation and supervision are expensive and at times painful, but the costs of bad or inappropriate regulation are potentially much higher.



SCOR Papers, edited by SCOR, are one of the tool supporting the SCOR Global Risk Center. The SCOR Global Risk Center gathers and analyses the most interesting resources about risks. It operates as a dual resource center, based both on data and resources produced by SCOR itself, and on all other resources available selected specifically by SCOR. Publications will be available in English, French and/or German.

SCOR Global Risk Center is available on SCOR's website – www.scor.com