

April 2011

Succeeding Under Solvency II

Corporate Governance (Pillar Two) and Disclosure (Pillar Three)

The previous report in our Succeeding Under Solvency II series focused on the capital requirements associated with Pillar I. In this briefing, we concentrate on the second and third pillars – which we refer to as a combined “Pillar V” (Pillar II plus Pillar III) requirement.

Introduction: Preparing for “Pillar V”

Implementation of the Solvency II regime is approaching rapidly. The directive is expected to take effect in January 2013 and will mostly affect, but not be limited to, (re)insurers operating in or covering risks in Europe. It is built on three fundamental pillars: Pillar I addresses the quantification of capital requirements for insurers; Pillar II focuses on governance and risk management; and Pillar III deals with disclosure and transparency requirements.

While the final form of Solvency II has yet to be ratified, a great deal of preparatory analysis has been undertaken and the likely effects of the directive are becoming understood. Pillar I will have a profound impact on capital requirements, potentially affecting company-wide strategic decisions. Companies will also likely increase investments in areas related to the determination and reporting requirements of Pillars II and III: specifically, corporate governance and disclosure. These elements of Solvency II could create a significant increase in workload and management for European (re)insurers.

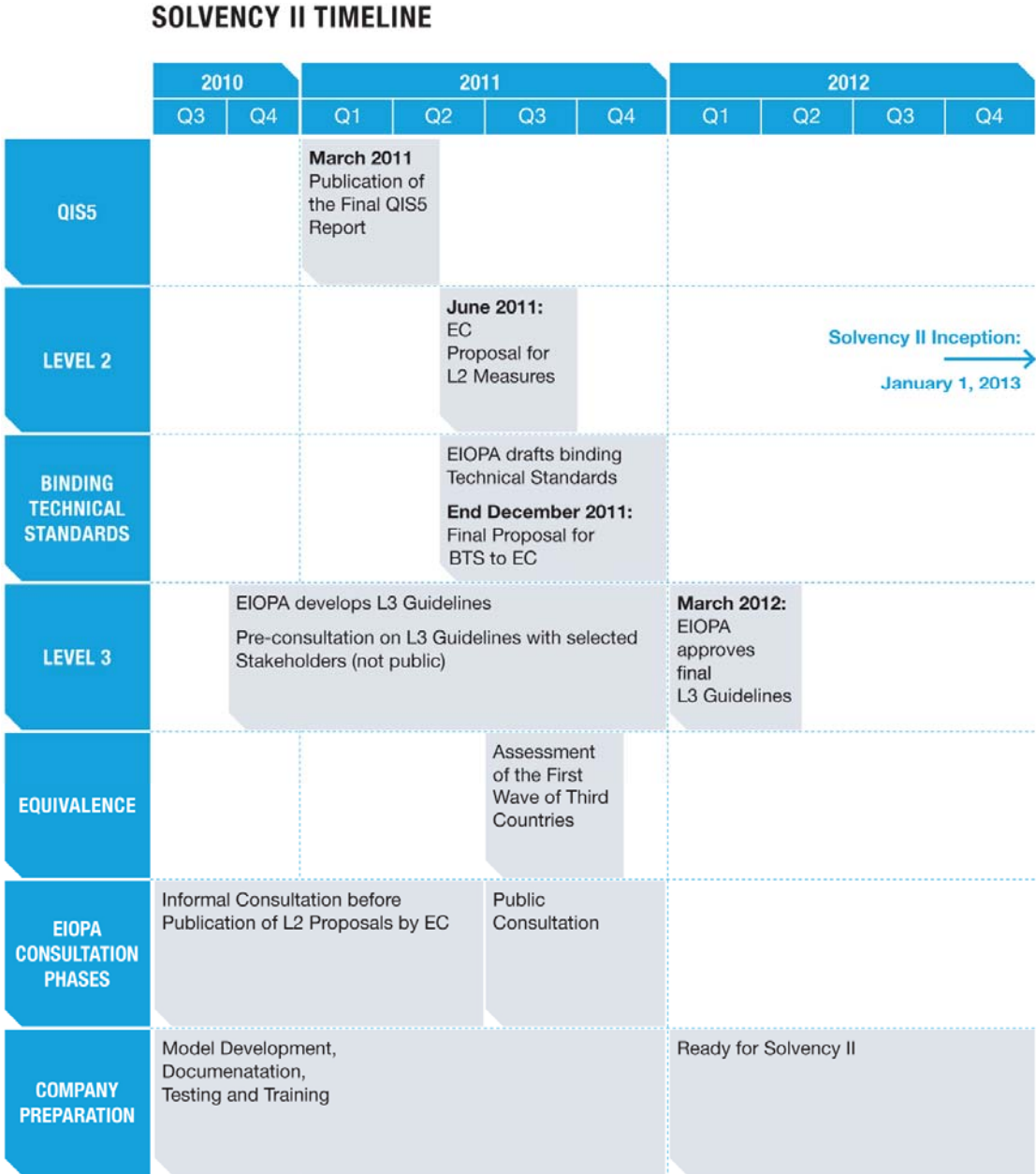
The previous report¹ in our Succeeding Under Solvency II series focused on the capital requirements associated with Pillar I. In this briefing, we concentrate on the second and third pillars – which we refer to as a combined “Pillar V” (Pillar II plus Pillar III) requirement. In addition to a potential increase in expenses for carriers, the Pillar V requirement may also instigate the adoption of an underlying business and capital discipline that leads to a clear competitive advantage in a marketplace that is already mature. Mastering Pillar V, therefore, means more than mere compliance: it translates to a leading edge in a competitive environment where there are few operational opportunities to stand out.

An extensive series of preparatory steps leading up to Solvency II’s official inception is already underway (see Figure 1). Developed under the European Union’s (EU) Lamfalussy

¹ Guy Carpenter & Company, LLC. *GC Briefing: Succeeding Under Solvency II; Pillar One: Capital Requirements*, March 2011.

process², the different stages of this process have been managed by the European Insurance and Occupational Pensions Authority (EIOPA, formerly known as the Committee of European Insurance and Occupational Pensions Supervisors, CEIOPS). EIOPA has met with the various stakeholders in the risk supply chain and developed recommendations that will be reviewed by the European Commission (EC). The EC has the authority to define the final principles and is set to enforce the directive in January 2013.

Figure 1



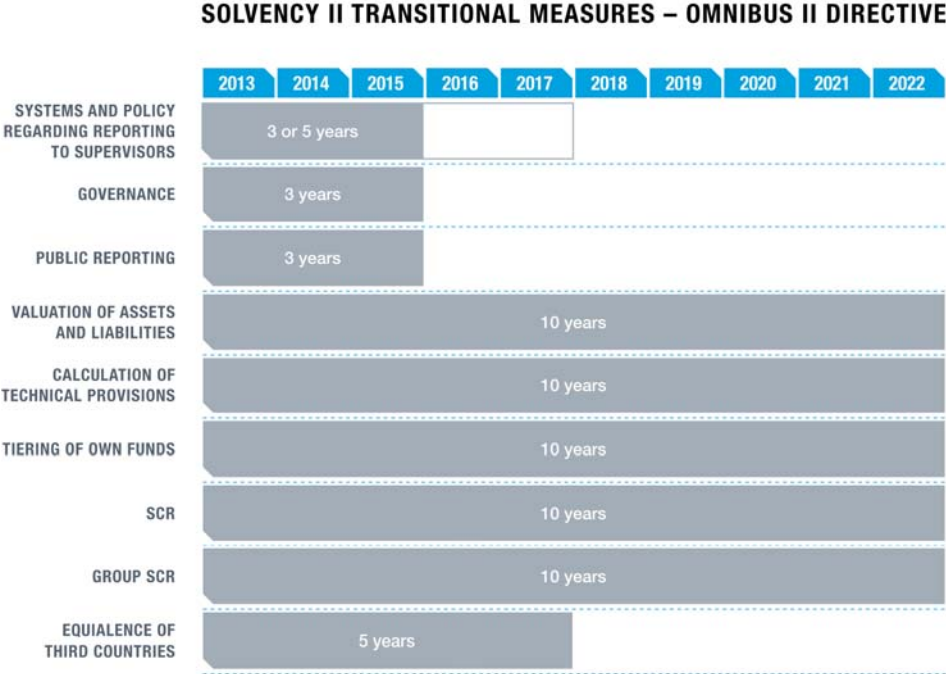
Source: EIOPA, Guy Carpenter & Company

² The Lamfalussy Process is an approach to the development of financial service industry regulations used by the European Union. The four-level process includes the following - level 1: framework principles; level 2: implementation measures; level 3: guidance regarding day-to-day supervision; level 4: enforcement.

At the same time, both companies and regulators are assessing the results of Solvency II’s fifth Quantitative Impact Study (QIS 5), the last in a series of test studies used to develop the standard formula and ultimately the basis for determining the Solvency Capital Requirement (SCR) for EU insurers and reinsurers. The results were released in March 2011. The results demonstrated that the financial position of European (re)insurers remains relatively comfortable when assessed against the QIS 5 Solvency Capital Requirement. Insurers’ eligible own funds resulted in an excess by EUR395 billion³ over the SCR amount implied by the QIS 5 study.

The implementation of Solvency II is likely to be executed transitionally. On January 19, 2011 a provisional draft of the so-called “Omnibus II” directive was published, which will, if adopted, amend the Solvency II directive to provide for a phased rollout. Omnibus II proposes a number of areas where the EC may adopt transitional measures and sets out the maximum duration of those measures (see Figure 2).

Figure 2



Source: Draft Omnibus II Directive, Guy Carpenter

Under Omnibus II, the EC has the option to apply different measures to support the transition of the (re)insurance industry to Solvency II for up to ten years after the introduction of the directive in order to accommodate several areas.

Still, the transitional approach would likely benefit smaller companies, as they are expected to face the biggest challenges in meeting the new capital requirements by January 2013. Some components of the Omnibus II proposals may give these carriers more time.

³ EIOPA QIS5 Report, page 6 - https://eiopa.europa.eu/fileadmin/tx_dam/files/publications/reports/QIS5_Report_Final.pdf

QIS 5 results revealed variations in the SCR values obtained when using an internal model against the standard formula across all individual insurers. Large and medium-sized insurers tended to achieve greater capital benefits from using an internal model than smaller insurers – 289 individual insurers out of the 309⁴ who responded to the question stated that they were currently working on implementing an internal model for Solvency II. For groups, however, internal models showed a capital requirement of 80 percent of that calculated using the standard formula, where best results in capital reductions were obtained by well diversified groups. Nonetheless, only 29 out of 167⁵ groups that participated in the QIS 5 exercise claimed to be developing an internal model. Philippe Guijarro, a partner at PwC, states that, "QIS 5 demonstrates there are still a number of areas where insurers face implementation challenges." He added, "The low use of internal models in QIS 5 suggests insurance groups may not be as prepared as they could be."⁶

Pillar II: Corporate Governance

To support Solvency II compliance, (re)insurers need to implement rigorous corporate governance programs that address all areas of the company, from the tone and activities of company leadership through granular risk and capital management activities. The corporate governance framework should define a clear and robust organizational structure – including an adequate operational structure, the clear allocation of tasks and responsibilities, organizational transparency and efficient information systems across all business activities. The structure should delineate a clear separation between the risk management function and the audit function. There should be a clearly apparent independence of the two functions from each other. Management's responsibilities must be evident.

Four Core Functions

Under Solvency II's Pillar II, corporate governance consists of four core functions:

1. Risk management
2. Actuarial
3. Internal audit
4. Internal controls.

Risk management: This function is comprised of underwriting and reserving, asset and liability management (ALM), investment, liquidity and concentration – all explicitly for reinsurance and other risk mitigation and transfer techniques. Carriers are forced to embed reinsurance into the risk management process. The process should include defining risk appetite and implementing a limit system with reinsurance (for both treaty and facultative) – as instrumental to managing underwriting limits.

Even though reinsurer concentration is typically discussed in regards to Pillar I (i.e., capital requirements to cover counterparty default risk), it is equally important to evaluate in terms of risk management under Pillar II. It is especially important if a company's limit system, derived from its risk appetite, involves a maximum limit per reinsurer or a band of default probabilities. Another equally important element

⁴ EIOPA QIS5 Report, page 106.

⁵ EIOPA QIS5 Report, page 123.

⁶ InsuranceERM. "QIS 5: capital, calibrations and controversy", March 17, 2011 - <http://bit.ly/hsHHmZ>

regarding reinsurer concentration involves a limit system derived from market risk. This may apply, for example, to maximum equity holdings in a reinsurer counterparty or loans with a specific reinsurer).

Actuarial: This function is comprised of methodologies and procedures to assess the sufficiency and uncertainty of technical reserves, among other concerns. Carriers will need reliable and deep actuarial support (particularly from reinsurance intermediaries, for example) with tested superior tools used to identify and model risk for prudent capital allocation as well as management decisions.

Internal audit: This function must be kept independent within the organization.

Internal controls: These are used to ensure the effectiveness and efficiency of the company's operations regarding its risk, the availability and reliability of information and compliance with relevant regulations.

Under Pillar II, affected (re)insurers are permitted to outsource operational functions as well as insurance and reinsurance activities. Catastrophe modeling exercises are included in this area because the results may serve as input for internal models or actuarial analysis. Nonetheless, the company remains ultimately responsible for those functions as outsourcing itself does not provide any compliance risk mitigation benefit. Additionally, the service provider engaged in outsourced activities on behalf of a (re)insurer must be knowledgeable about the processes it executes – such as documentation – in order to provide the necessary risk management and control systems for its (re)insurer client.

Own Risk and Solvency Assessment

Solvency II's Pillar II includes a requirement that every company conducts its "own risk and solvency assessment" (ORSA). This includes a regular assessment of the company's solvency needs and its compliance with those needs going forward. The (re)insurer should highlight areas where the assessment deviates significantly from its SCR assumptions. Where an internal model has been used, it should recalibrate in a way that transforms the internal results to make them consistent with the SCR calibration.

ORSA requires companies to implement proper processes for identifying and quantifying their risks in a coherent framework. The companies will also need to demonstrate that the assessments are integrated into their strategic decision-making processes and are not merely "check-the-box" exercises.

Importantly, the ORSA serves as the link between the quantitative Pillar I and the more qualitative Pillar II by requiring (re)insurers to self-evaluate their capital needs and embed the results in daily management operations and decisions. For companies that already use internal models, this exercise is likely to lead to stronger alignment of internal models used for value-based management with the results they submit for regulatory purposes. (Re)insurers using the standard approach will find that ORSA makes them go beyond the pure standard approach in the assessment of their solvency.

ORSA is also likely to help (re)insurers optimize their underwriting and reinsurance processes through data quality and control. Information used for the development of the standard formula or an internal model has to be complete, pertinent, precise, traceable and auditable, according to Solvency II guidelines. The process of securing

and using data has to be clear and integrated into the development of the standard formula or internal model. After all, defining risk tolerance and risk metrics are among the primary challenges most companies will face in complying with Solvency II – and it is a prerequisite.

The Internal Model Approval Process

Under Pillar II of Solvency II, internal model approval and use – as an alternative to using the standard formula to determine a company's SCR – is an end-to-end undertaking. Rather than being limited to model development and implementation, approval extends to reporting internal model results sufficiently. Consequently, a rigorous, integrated process is necessary for meeting the requirements of the directive.

When a (re)insurance company submits an internal model to the appropriate regulator for approval, it should be accompanied by the results of the company's most recent ORSA, as this will reflect the end-to-end nature of the Solvency II internal model approval requirement. Additionally, a justification for the rationale underlying the internal model will be necessary, along with a self-assessment of its readiness. Companies will have to demonstrate that the measures and processes regarding the structure and completeness of the models have been in place for a reasonable period prior to the application submitted to regulators – and that the model has been used as an authoritative instrument for a reasonable period.

The scope of the model will need to be defined in the formal application, which will need to include a summary of the company's strategies for risk management and the business as a whole. The carrier will have to demonstrate that it understands the sources and nature of the risks it has identified, with a qualitative description and the exposure measurement for each risk. Also, the self-assessment process will likely require the inclusion of technical details, such as scope, design, build, integrity and details on the model application. Specifically, it should address the reconciliation process to assure accuracy of input data and transfer to the internal model.

Ultimately, the technical environment used for internal modeling and Solvency II compliance must be tested based on: reasonableness, accuracy, completeness and comprehensiveness. Additionally, the self-assessment should show that the model and its output are appropriate to the company's risks and operations. The process's limitations and shortcomings should be identified, along with steps to address them.

What will the regulatory organizations want to see? Primarily, they will be looking at the scope and coverage of the internal model, methodology and documentation, data quality, quantitative procedures, qualitative procedures and the technical environment. They also will want to examine the use of catastrophe models from external firms, as long as they are noted for the regulators.

During the approval process, companies will need to detail for the regulators the types of changes expected in the model. Two levels of changes are defined. Minor changes are those that will not require full approval of the model. Major changes to the model require the company to submit the model and modeling process details as if it were a new model.

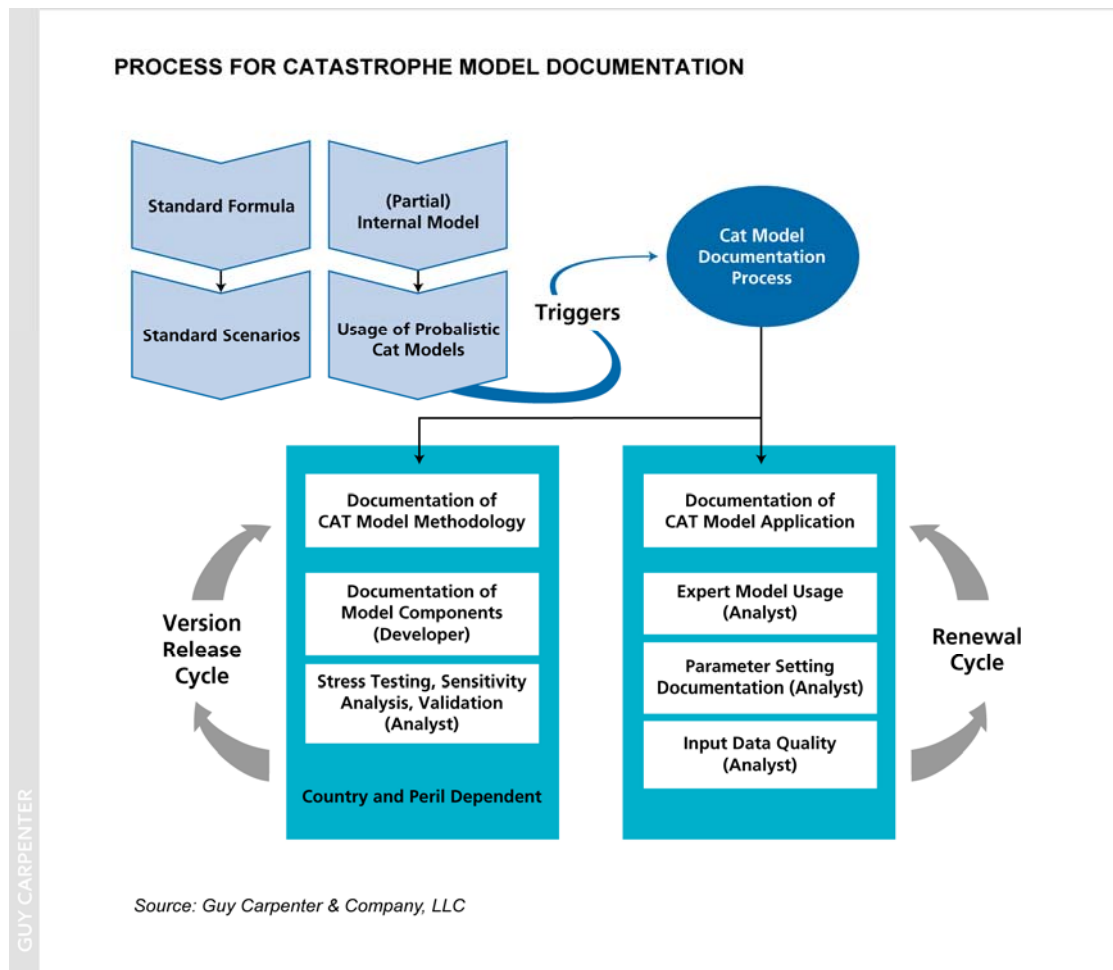
There are no exemptions to the approval criteria for carriers using models or data from external vendors. The company will still need to demonstrate suitability for use in an internal model.

Catastrophe Modeling Documentation Requirements

The documentation of catastrophe model functionality and development details are a crucial part of Solvency II compliance, irrespective of the use of a full or partial internal model (see Figure 3). Examining regulators will ensure that all necessary information has been captured to demonstrate that the catastrophe modeling software is of sufficient quality and it functions correctly. Further, they are likely to require a record of appropriate model usage for the determination of capital requirements.

New model releases and upgrades over the years are likely to pose challenges, as the results might change significantly and thus require updated internal modeling approaches and changes in documentation. If the modifications are vast enough the carrier may need to submit the model and attendant processes to regulators for approval anew.

Figure 3



Model documentation for regulatory approval should follow a strict methodology that reflects key factors. These include the use of any external vendors, the company’s procedures for managing risk and capital and the specifics of the model’s upgrade or release roadmap. It should outline how the probabilistic catastrophe model components and output fulfill the quality requirements under Solvency II for corresponding markets and perils.

Model results are driven by the accuracy of the underlying components and data. The model developers and vendors control the quality of each component. Thus, components can vary significantly by country and peril. Under Solvency II, the (re)insurer is still responsible for providing sufficient documentation to the appropriate regulatory authority.

The obligation of the carrier to provide thorough documentation to the regulator may be hampered by the fact that a vendor may treat the modeling components it has created as intellectual property. When this is the case, the (re)insurer may not have full access to all model details. Consequently, a carrier's catastrophe modeling analyst will be able to provide a high-level summary of the catastrophe model technology based on the information that the vendors have shared with the public. Further, a major part of the information required pertains to how the carrier uses the vendor's technology, including its use of controls with historical events and stress testing to quantify the impact of key features (and limitations) of each component (see Table 1).

Table 1

KEY FEATURES OF MODEL VENDOR TECHNOLOGY COMPONENTS	
GUY CARPENTER	Hazard Resolution
	Regional Loss Ratio Maps
	Geocoding Accuracy
	Vulnerability Sensitivities
	Impact of Secondary Building Characteristics (Height, Age, ...)
	Reasonability Checks Based on Historic Event Losses
	Impact of Demand Surge and Loss Amplification Techniques
	Implementation of Secondary Perils (Fire Following, Storm Surge, ...)
	Identification of Non-Modeled Components
	<i>Source: Guy Carpenter & Company, LLC</i>

Catastrophe model vendors and regulators encourage companies to apply stress tests and sensitivity analyses to validate procedures as a way to better understand risk and uncertainty. Guy Carpenter’s GC AnalyticsSM team typically conducts these analyses for (re)insurers.

Beyond the model itself, carriers will be expected to show full documentation on how portfolio data was processed and subsequently used in catastrophe models. The major subjects to be covered include:

- Date and completeness of raw data
- Currency, units and rates of exchange archive
- Data cleansing
- Total insured value (TIV) summary by line and coverage
- Geocoding levels and changes (year to year)
- Portfolio data changes (year to year)
- Assumptions on splits and missing data
- Application of policy information (deductibles and limits)
- Parameter setting and mapping
- Results and result changes (year to year)
- Reasonability checks of results (historic losses)

Pillar III: Disclosure

Two levels of disclosure are required under Pillar III of Solvency II: regulatory and public. The details discussed above about Pillar II reflect the corporate governance disclosures necessary under the directive. Pillar I requirements address the disclosure of risk and capital levels to regulators. Additionally, (re)insurers affected by Solvency II will have to disclose risk and capital information – as well as modeling details – to the public.

Among the challenges associated with both the calculation and disclosure are the rules around accounting. Carriers will need to disclose the differences in accounting methods used for Solvency II and other financial reporting until the directive and IFRS are more closely aligned.

The use of mark-to-market practices may be particularly problematic for carriers complying with Pillar III. The view of mark-to-market under Solvency II is at odds with the majority of accounting practices in Europe, creating a reporting gap that will likely lead to additional disclosure and reporting effort. However, the current accounting regulations for insurance contracts under IFRS (referred to as “IFRS Phase 4”) use a similar “fair value” approach to that in Solvency II. The challenge is the differences in some accounting results – e.g., regarding the measurement of reserves and

recognition of profit. Currently, there is a lack of clarity as to how (re)insurers and regulators will deal with these inconsistencies.

How Guy Carpenter Can Help

Directly or indirectly, Solvency II will change the insurance industry worldwide – the impact will not be limited to carriers located in or covering risks in Europe. Unprepared for the regime, some companies may be challenged (and possibly even fail). However, (re)insurers that have prepared sufficiently may actually become more successful under Solvency II.

Guy Carpenter is the reinsurance broking authority on Solvency II and is ready to assist its clients in getting ready for the challenges and opportunities associated with Solvency II. Since every carrier's situation is different, we offer a number of tailor-made solutions – each designed to be achievable and deliver measurable value – from compliance cost management through the creation of shareholder value.

Under Solvency II, a well-considered competitive compliance strategy can enable companies to operate relatively more effectively and profitably both in Europe and globally. Pillars II and III, in particular, present opportunities for risk carriers to obtain competitive advantages pursuant to better governance, transparency and disclosure. For those companies with an effective strategy, Solvency II compliance can transform carriers' operations to make the company more competitive.

Our solutions are focused on the targeted validation of critical components and assumptions in our clients' capital models using our broad industry experience, technical capabilities, proprietary software and intellectual capital. We provide clients with the crucial "second pair of eyes" and sensitivity testing that is mandated by the Solvency II regulatory requirements.

Among the services we offer our clients are:

Capital Model Implementation (Partial or Full) - MetaRisk®

MetaRisk is Guy Carpenter's proprietary stochastic reinsurance and capital modeling platform. It is a uniquely powerful, flexible and transparent solution that enables us to model clients' entire portfolios rapidly, accurately and reliably.

MetaRisk's capabilities span all risk modules of the SCR. Thus, it can serve as a full or partial internal model for Solvency II.

MetaRisk provides a highly realistic way of modeling reserve risk, which reflects (re)insurers' own reserving practices. This is particularly useful for Solvency II compliance, given the new regulations' acute focus on loss reserves.

By building a parallel version of a client's underwriting risk model (gross losses, ceded premium and ceded losses) in MetaRisk, we can undertake comprehensive validation and sensitivity testing as required under Solvency II. MetaRisk employs sophisticated algorithms that most closely replicate the treatment of secondary uncertainty by RMS so that the platform's estimation of extreme losses (e.g., 1-in-200-year events) is nearly exactly the same as that produced by the actual vendor model.

MetaRisk's simulation speed empowers carriers to compare any desired metric for multiple alternative selections for loss frequency and severity. Consequently, they can sensitivity-test their original assumptions around loss ratio, premium growth, underwriting cycle and inflation.

MetaRisk is able to simulate clients' underwriting risk (losses and reinsurance) with a sufficient number of simulations within a relatively short timeframe. This allows an assessment of the impact of potential simulation error within the main capital model on key extreme scenarios, such as the 1-in-200-year underwriting result.

Alternative Catastrophe Modeling

Guy Carpenter's Model Development Team, established in 2004, has developed a number of industry-leading proprietary catastrophe models for peril-regions for which no other models exist by the established model vendors (RMS, AIR, EQE), or where market-wide modeling technology is still not as advanced as the Guy Carpenter proprietary alternatives.

Man-made Catastrophe modeling

In addition to the modeling of natural perils, GC Analytics has acquired an expertise in the modeling of man-made catastrophes. This is accomplished through both the use of commercial modeling platforms and the development of proprietary tools. The wide range of services offered covers the assessment of man-made events for conflagration and terror – including the uncertainty associated with the geocoding of risks – casualty events, pandemic, events that may hit a life portfolio and for marine cargo accumulations.

Actuarial Expertise

GC Analytics' expertise and industry leading modeling proprietary software can help carriers:

- Parameterize their portfolios
- Supplement their existing data with more from the industry
- Enhance model performance through additional technical knowledge and capabilities

GC Analytics teams can propose a number of tailor-made solutions to assist (re)insurers with their implementation of Solvency II frameworks. These solutions have been kept targeted and specific, as opposed to our offering them as a "general Solvency II advisory" service. This ensures that the solutions are achievable and deliver measurable value.

Experience and Exposure-Based Parameterization of Risk Losses

Guy Carpenter can use MetaRisk® Fit, our advanced proprietary curve-fitting software, to fit clients' historical loss histories to up to 33 different distributions, in order to serve as a second opinion to their own fittings. Furthermore, all the MetaRisk® Fit data includes calculation of the parameter uncertainty associated with fitting to limited sample sizes, providing an element of sensitivity testing.

A Range of Customized Advisory Services

Guy Carpenter offers deep advisory expertise in areas that many clients will find useful in their Solvency II preparations, including reserve risk modeling, enterprise risk management and reinsurance counterparty risk exposure.

For more information, please contact:

David Flandro

Global Head of Business Intelligence

+44 207 357 3267

David.flandro@guycarp.com

P. Claude Lefebvre

Head of GC Analytics EMEA Region

+44 207 357 3814

Claude.lefebvre@guycarp.com

Eddy Vanbeneden

Head of GC Analytics France & Benelux

+32 2 674 98 11

Eddy.vanbeneden@guycarp.com

Frank Achart

Managing Director

+49 89 2866 03361

Frank.achtert@guycarp.com

Guy Carpenter & Company, LLC provides this report for general information only. The information contained herein is based on sources we believe reliable, but we do not guarantee its accuracy, and it should be understood to be general insurance/reinsurance information only. Guy Carpenter & Company, LLC makes no representations or warranties, express or implied. The information is not intended to be taken as advice with respect to any individual situation and cannot be relied upon as such. Please consult your insurance/reinsurance advisors with respect to individual coverage issues.

Statements concerning tax, accounting, legal or regulatory matters should be understood to be general observations based solely on our experience as reinsurance brokers and risk consultants, and may not be relied upon as tax, accounting, legal or regulatory advice, which we are not authorized to provide. All such matters should be reviewed with your own qualified advisors in these areas.

Readers are cautioned not to place undue reliance on any historical, current or forward-looking statements. Guy Carpenter & Company, LLC undertakes no obligation to update or revise publicly any historical, current or forward-looking statements, whether as a result of new information, research, future events or otherwise.

This document or any portion of the information it contains may not be copied or reproduced in any form without the permission of Guy Carpenter & Company, LLC, except that clients of Guy Carpenter & Company, LLC need not obtain such permission when using this report for their internal purposes.

The trademarks and service marks contained herein are the property of their respective owners.

Guy Carpenter Briefing

© 2011 Guy Carpenter & Company, LLC

**Securities or investments, as applicable, are offered in the United States through GC Securities, a division of MMC Securities Corp., a US registered broker-dealer and member FINRA/SIPC. Main Office: 1166 Avenue of the Americas, New York, NY 10036. Phone: (212) 345-5000. Securities or investments, as applicable, are offered in the European Union by GC Securities, a division of MMC Securities (Europe) Ltd., which is authorized and regulated by the Financial Services Authority. Reinsurance products are placed through qualified affiliates of Guy Carpenter & Company, LLC. MMC Securities Corp., MMC Securities (Europe) Ltd. and Guy Carpenter & Company, LLC are affiliates owned by Marsh & McLennan Companies. This communication is not intended as an offer to sell or a solicitation of any offer to buy any security, financial instrument, reinsurance or insurance product.*