Discussion Paper

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Financial Services Authority

Insurance Risk Management:

The Path To Solvency II

September 2008

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The Financial Services Authority invites comments on this Discussion Paper. Please send us your comments to reach us by December 31st 2008.

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Alternatively, please send comments in writing to:

Janne Lipponen
Solvency II office
Financial Services Authority
25 The North Colonnade
Canary Wharf
London E14 5HS

Telephone: 020 7066 7604
Fax: 020 7066 7605
E-mail: solvency2@fsa.gov.uk

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1 Introduction

Overview of the Solvency II Directive

1.1 Solvency II is a fundamental review of the capital adequacy regime for European insurers and reinsurers, planned to take effect from October 2012. It aims to establish a revised set of EU-wide capital requirements, valuation techniques and risk management standards that will replace the current Solvency I requirements. The new regime is expected to apply to all insurance firms with gross premium income exceeding EUR5m or gross technical provisions in excess of EUR25m.

1.2 A key objective of the Tiner Reforms[1] was to ensure that insurance firms are well-managed and have adequate financial resources. Many of the advances subsequently made in insurance supervision and firms' prudential management, such as the use of an economic/realistic balance sheet and internally-modelled individual capital assessments based on a defined level of confidence, share some similarities with the Solvency II framework. Firms should note that while the essential concepts and objectives driving the Individual Capital Adequacy Standards (ICAS) regime are similar to those underlying Solvency II, many detailed requirements will differ from those with which they are familiar.

(Annex D provides a glossary of abbreviations used in this paper, which are specific to Solvency II and the prudential regulation of insurers).

1.3 Providing a consistent European standard, Solvency II should help to protect policyholders' interests more effectively, by making firm failure less likely and reducing the probability of consumer loss or market disruption. It should also make it easier for firms to do business across the EU as the current patchwork of varying local standards, established to supplement Solvency I, will be replaced by more consistent requirements.

1 The Tiner Reforms (implemented from 31st December 2004) examined the FSA framework for the prudential regulation of insurance companies.

1.4 Political agreement on the Level 1 Framework Directive is expected by the end of 2008 or early 2009. Subsequently, Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) will produce technical advice to the European Commission on associated implementing measures (Level 2) needed to set up the new regime. That advice, reflecting public consultation, is expected to be submitted by the end of 2009, with the Level 2 provisions due to be finalised by late 2010 or early 2011.

Purpose and format of this discussion paper (DP)

1.5 In December 2004 we introduced ICAS, an improved framework for the prudential regulation of UK insurance companies. Many of its features, notably the emphasis on risk management and market-consistent realistic reserving to strengthen consumer protection, are consistent with key provisions that Solvency II will be setting at European level. But in some key areas, Solvency II will go further than the ICAS reform. So while the UK industry is well-placed to move to the Solvency II regime, there will be significant challenges for all UK firms. Prior planning and preparations by firms, starting now, will be crucial.

1.6 This Discussion Paper (DP) highlights and explains key elements of the Solvency II regime, with the aim of stimulating and helping UK insurers' preparations. It draws primarily from the Solvency II Directive, but is not a summary of the Directive. Instead, it concentrates on some of the key elements of change for UK regulatory requirements and practice and identifies areas in which firms might best focus their preparations through the coming 12-18 months.

1.7 Specific considerations relating to insurance groups are not explicitly addressed, though firms should refer to the joint Treasury/FSA DP on groups issues, published in April 2008[2].

1.8 We will communicate further information as Solvency II implementation approaches. In feedback to this DP, respondents are invited to comment on issues that might be prioritised by the FSA within that process, ie where specific explanation and commentary would be most useful.

1.9 The Board of Directors of each insurance company will need to decide how to discharge their new responsibilities under Solvency II. Within each chapter of this DP, we identify the functions within each firm that will need to be involved in implementing particular requirements, subject, of course, to each firm's particular organisational structure.

1.10 Throughout the DP, we have raised questions on issues where specific feedback is sought, though stakeholders' views on any of the matters addressed will be welcome. These questions are also drawn together in Annex C. We acknowledge the valuable input of the ABI in framing these.

2 Discussion Paper: "Enhancing group supervision under Solvency II", April 2008

1.11 There follows a feedback period running to 31st December 2008, during which stakeholders are invited to provide their responses. Following the close of the consultation period, the FSA will publish a feedback statement. Following the feedback process, the FSA intends, where we have not already done so, to write to each firm by March 2009, asking them to identify the senior individual within their organisation responsible for successful transition to the new regime.

Key messages

1.12 Chapter 2 of this DP is "Key Messages for UK Firms". The Framework Directive sets important responsibilities at the highest level of insurers' governance – their Board of Directors. This chapter aims to provide directors with an indication of the nature and extent of their responsibilities and we suggest that it be tabled for discussion at an early board meeting.

Key elements of the Solvency II regime

1.13 Subsequent chapters cover three critical elements of the Solvency II regime:

- 'Systems of Governance (Pillar 2) and Reporting Requirements (Pillar 3) under Solvency II' applies to all firms, covering their risk management framework and functions, outsourcing, capital add-ons and supervisory reporting.
- 'Demonstrating Adequate Financial Resources (Pillar 1)' applies to all firms and considers key quantitative requirements, including own funds, technical provisions and the Solvency II capital requirements: the Solvency Capital Requirement (SCR) and the Minimum Capital Requirement (MCR).
- 'Use and Approval of Internal Models' addresses the standards and tests to be met by those firms which seek approval to calculate their regulatory capital by means of an internal model.

Implications for supervision under Solvency II

1.14 The final chapter of this DP addresses 'Implications for Supervision', highlighting possible changes to current UK supervisory practice that will be required under Solvency II. Practical issues include supervisory aspects of the Pillar 2 requirements, applying to all insurers and the process for applying for internal model approval. Potential implications for the FSA's ARROW supervisory review process are also considered.

Appendices

1.15 Appendices to this DP cover:

- our outline plans for early engagement with firms looking to seek approval for internal models, taking account of the assumed 31 October 2012 implementation date;
- the scope and process of a future impact assessment for Solvency II;
- a collection of the questions raised within the text to encourage feedback;
- a glossary of abbreviations and acronyms; and
- a bibliography of recommended further reading.

2 Key Messages for UK Firms

Key stakeholders in this section:

Board/senior management – action required

Risk management – active involvement

Finance – active involvement

Actuaries – active involvement

Internal audit – contribute

2.1 This paper outlines key challenges likely to arise for UK insurers in the implementation of the Solvency II Directive. To ensure firms successfully implement this new regime, it is essential that senior management consider now the implications for their business and start planning immediately.

2.2 Planned to take effect from October 2012, this is the long-expected reform and modernisation of the European requirements for the control of prudential risk within insurance companies. This chapter provides a summary of the main messages, set out in a form suitable for circulation to insurance companies' boards and senior management teams, to help them to frame and launch effective arrangements for implementation by their firms. The introduction to each chapter of this DP indicates the key functional areas within firms likely to be most concerned in addressing the particular matters discussed. This may be helpful to senior management in setting implementation accountabilities within their firm.

2.3 Our planning for the implementation of Solvency II takes account of the UK experience with the implementation of the Capital Requirements Directive in 2006, which set new European standards, consistent with the Basel II international framework, for regulatory capital to be held by banks and investment firms. Against that background and taking account of impressions gathered through our recent contacts with insurers and trade bodies, we highlight two key messages for insurance firms as they plan for compliance with Solvency II.

Solvency II will bring changes in UK regulatory requirements

2.3.1 Compared with the current Solvency I European requirements, Solvency II will bring changes directionally similar to and consistent with key aspects of the ICAS reforms in the prudential regulation of UK insurers, which the FSA implemented in 2004. In some respects, however, Solvency II is expected to go further and to set requirements on matters not covered by ICAS (eg, in relation to the Pillar 1 standard formula calculation, the need to obtain prior approval to use an internal model to calculate regulatory capital and public disclosure requirements). This means that compliance will require further development of firms' systems for capital planning and management of prudential risks and of associated disclosure arrangements.

Firms should be making effective plans now for the implementation of Solvency II

2.3.2 Negotiation of the Directive is well advanced and firms should be developing effective implementation plans now. Agreement between the Member States and the European Parliament on the Level 1 requirements is expected in 2008/09. CEIOPS' advice on the more detailed Level 2 implementing measures, to be set by the European Commission, is expected to be published during the course of 2009. Legislation containing the necessary technical implementing measures should be finalised by early 2011 and the Solvency II regime is planned to go live from October 2012.

2.4 To aid their transition from the ICAS regime, we suggest that firms should be undertaking gap analyses now to identify any shortfalls in expected compliance with the emerging Solvency II requirements, as they bear on their operations. Gap analysis should cover at least the areas discussed in this DP.

2.5 We suggest that all firms should assess the potential quantitative impact of the new regime, by assessing the impact on their capital requirements of applying the specification for the standard formula, set for the recent QIS4 exercise. Those firms that did not participate in QIS4 should complete the spreadsheets on a best efforts basis, in order to identify key issues that may arise for them.

2.6 Under Solvency II, the SCR may be calculated either by using a standard formula or through an approved internal model. UK firms will be invited to indicate to the FSA, by June 2009, their plan to seek approval of their internal model, if that (rather than application of the standard formula) is their intended approach to calculation of regulatory capital. Annex A indicates our current thinking on how we propose to engage with such firms prior to them submitting applications for approval.

2.7 In planning their preparatory work, both the FSA and firms need to recognise that the detail of Solvency II standards and their implementation is subject to the uncertainty that accompanies all international negotiations and policymaking. However, although the detail of the European requirements is not finalised, the aim is now clear and the risks of waiting before starting to plan for implementation are considerable in terms of non-compliance in 2012 and/or being forced into costly

high-risk programmes of work at short notice. So starting work now on a measured and flexible basis is the sensible course for regulator and firms alike.

2.8 Firms and groups should ensure that they currently have in place appropriate governance arrangements for implementation of Solvency II, with an accountable individual nominated at board or senior management level, responsible for ensuring effective implementation. In March 2009, where we have not already done so, we will ask firms about their implementation planning and progress made, including details on their governance arrangements and whether they intend to apply for internal model approval.

2.9 The rest of this chapter highlights key areas in which firms should be concentrating their work, pending further progress in defining the Solvency II standard and the consequent additional guidance and commentary on implementation that we will issue from time to time.

Systems of governance (Pillar 2) and reporting requirements (Pillar 3) under Solvency II

2.10 Under Pillar 2, all firms will be required to develop and embed a formal set of governance requirements – though there is freedom as to its organisation and design. Key requirements include:

- an effective risk management system, owned and implemented by senior management, respecting the fact that delegation of responsibilities cannot mean dilution of responsibility;
- implementation of a formalised, Pillar 2, risk-based evaluation of the whole firm, based on management's chosen risk appetite and level of capital required to run the business. The results of this Own Risk and Solvency Assessment (ORSA) will need to be reported to supervisors and could be made public through the annual Solvency and Financial Condition (SFC) report. The ORSA should compare actual capital available against regulatory capital requirements and, where different, the firm's chosen level of economic capital.

Under Pillar 3, disclosure requirements, both public and supervisory will be different from current UK requirements.

Demonstrating adequate financial resources (Pillar 1)

2.11 New or significantly changed requirements under Solvency II include the following.

- The basis specified for calculation of insurance liabilities may be very different from current practice. Some firms produce alternative valuations within a market-consistent framework, but the move to Solvency II will involve a change in methodology for all insurers. This will have implications for actuarial, finance and IT functions.
- Capital items will be assessed against specified characteristics to establish their eligibility and, in particular, their treatment under the tiering approach to the classification of capital resources introduced in Solvency II. Firms need to

consider what implications this might have for existing instruments, as well as for future capital planning.

- All firms will need to be familiar with the standard formula for calculating the SCR, as tested by the QIS exercises. Firms that have participated in the QIS4 exercise have commented that it has been most helpful in assisting their understanding of quantitative issues, as well as helping to inform organisational implications. We strongly recommend that all firms complete the QIS4 spreadsheets, even if only on a best efforts basis. This will help to highlight technical risk quantification issues likely to arise for their business, together with any special challenges for resourcing and organisational structure.

Use and approval of internal models

2.12 Solvency II permits firms to apply for approval to use full or partial internal models for the calculation of their regulatory capital requirements, as an alternative to applying the results of the standard formula. The internal modelling activity is required to be integrated into the risk management activity of the firm.

2.13 In our October 2007 Insurance Sector Briefing[3], we said that the progress firms have made in implementing ICAS means that the UK insurance sector has already made a significant step forward in delivering risk-based capital management. In our September 2008 Insurance Sector Briefing[4] we outline what we have seen more recently in terms of firms' progress in integrating ICAS into their governance structures, business planning and decision making. To meet Solvency II requirements, firms will need to continue to develop their modelling and to integrate their risk and capital management frameworks.

2.14 The following specific issues are important for firms intending to seek approval for their internal model.

- Approval to use an internal model will require the firm to demonstrate compliance with several mandated tests and requirements, including use, statistical quality, data, documentation, calibration and profit and loss attribution. Activities such as sensitivity, stress and scenario testing will also need to be evidenced. Our own work with industry suggests that even the best-prepared firms are still some way short of Solvency II standards in at least some of these areas.
- Annex A of this DP outlines a tentative process for early engagement with firms intending to seek internal model approval. We plan to invite firms to indicate by June 2009 whether they are likely to apply for internal model approval (whether full or partial) under Solvency II.
- Many firms have suggested that they would welcome a period of at least two years' engagement with us, to enable them to develop and refine their internal model practices in preparation for meeting Solvency II requirements. We plan to issue some specific guidance in March 2009 to help firms to understand the

3 *ICAS – lessons learned and looking ahead to Solvency 2*, October 2007 (www.fsa.gov.uk/pubs/other/icas_isb.pdf).

4 *Risk and Capital Management Update*, September 2008 [http://www.fsa.gov.uk/pubs/other/isb_risk_update.pdf.]

preparations they need to have made if they are to benefit from such engagement. As noted in Annex A to this paper, a period of dry-running a model and associated risk management system will help to ensure the completeness of any application for model approval that is subsequently submitted by the firm.

- The costs that the FSA will incur in preparing to engage early with firms considering applying for internal model approval will be recovered through the special project fees to be levied for in 2009/10 and 2010/11. We will be consulting on 2009/10 fees shortly, in the usual way.
- We particularly welcome feedback from firms on practical design issues to be addressed in deciding the process for internal model approval. Through our Insurance Standing Group and discussion with the ABI and other trade associations, we are already in active dialogue with the industry about design of the application process. This will inform our participation in relevant CEIOPS work, as well as helping with the design of UK arrangements specifically.

Implications for supervision of insurance firms

2.15 Solvency II could involve changes to the supervisory process and the FSA has therefore already started its evaluation of future requirements. Supervision is required to be based on a prospective and risk-based approach, aligned with a number of requirements for all insurers[5].

- We will be consulting on changing supervisory requirements during the build-up to Solvency II. The aim is to develop an appropriate regime consistent with effective delivery of the Solvency II standards.
- During 2009 FSA supervisors will begin to engage with their firms about preparations for compliance with Solvency II. Meanwhile, firms need to ensure that they are aware of the requirements and begin to prepare for implementation.

Next steps

2.16 Level 1 (the Framework Directive) sets out the key underlying requirements of Solvency II, although much important detail will be set out in Level 2 (the implementing measures). This DP is designed to help firms to plan their activities through to early 2010 and to provide a basis for feedback, which can help us in the development of the UK implementation programme and of our future supervisory regime.

2.17 We will use this DP to continue dialogue with the industry and FSA supervisors will progressively develop discussions with each group or firm about its preparedness and intentions. The objective is to see UK insurers sustain and accelerate progress in developing their risk-management and capital planning processes, to help them move as seamlessly as possible to compliance with the Solvency II standards as they develop.

5 See CEIOPS' Issues Paper on the Supervisory Review Process and Undertakings' Reporting Requirements published on 18 August 2008.

2.18 We intend to publish a feedback statement in March 2009, summarising comments received on this DP and giving an update on the course of Level 1, the development of implementing measures and the timeline for future developments.

2.19 Up to the implementation date for Solvency II, the ICAS and other provisions of the FSA Handbook, as may be amended from time to time, will continue to apply fully. In general, we are not planning to anticipate Solvency II through Handbook amendments ahead of 2012. We would consult on the usual basis in any area where changes might be proposed. Outcome-focused application of current Handbook requirements could, within the scope of those requirements, take account of the impending application of Solvency II standards as the fact and detail of the new regime become certain.

3 Systems of governance (Pillar 2) and reporting requirements (Pillar 3) under Solvency II

Key stakeholders in this section:

Board/senior management – action required

Risk management – action required

Finance – key responsibility

Actuaries – key responsibility

Internal audit – contribute

3.1 One of the drivers behind Solvency II is the promotion of improved and consistent risk management standards. There is specific reference in Level 1 to the system of governance (including risk management) insurers are required to maintain (Article 43) along with provisions on supervisory reporting and public disclosures.

3.2 Together those requirements have wide-ranging implications for a number of different activities performed within firms.

3.3 This chapter addresses some of the main elements of the Pillar 2 and Pillar 3 regime that firms should be aware of and begin planning for.

System of governance

Risk management system

3.4 Effective risk management and enterprise-wide governance are cornerstones of a sound solvency system. In December 2002, the Sharma Report[6] concluded that, while it is necessary for insurers to hold adequate capital, the decisions of senior management and the quality of group controls are potentially even more crucial for an insurer's long-term health. It demonstrated that weaknesses in such areas made

6 *Prudential supervision of insurance firms* (December 2002) for the Conference of the Insurance Supervisory Services of the Member States of the European Union.

firms susceptible to an external ‘trigger event’ that caused adverse financial outcomes. It is, therefore, significant and welcome that the requirement for a robust risk management system underpins much of the proposed Solvency II regime.

3.5 Article 43 requires firms to have an effective risk management system. Specifically, it requires firms to consider all risks to which they are or could be exposed and for the risk management system to be fully integrated into the organisation as a fundamental part of the running of the firm. Further, it explains the role that risk management systems must play in any internal model the firm presents for approval, as a means of calculating regulatory capital. The firm must consider all risks that are included in the calculation of the SCR as well as the risks that are not, or not fully, captured in the calculation (for example, liquidity or reputational risks). To fulfil these requirements the firm must first be able to monitor and understand all the risks to which it is exposed, by having a robust risk management system in place.

3.6 In November 2006, the FSA published an Insurance Sector Briefing on Risk Management in Insurers[7]. This highlighted the importance of improved risk management as providing benefits to UK firms and their policyholders. The briefing also identified key areas of risk management practice that firms’ senior management should consider. Those priorities remain important, as part of normal best practice, rather than as a response to Solvency II. For example, one of the observed shortcomings was that: ‘Board members and senior managers are sometimes unaware of the limits of the remit of their risk management functions and may therefore place inappropriate reliance on outputs’. Under Solvency II, senior management is clearly responsible for the risk management system and ensuring that it is used in managing the business, including how it influences business decisions.

3.7 Besides these specific requirements, Solvency II will necessitate full integration of risk and capital management activities, so that any internal model is embedded within the business, consistent with the ‘use test’[8]. The public reporting requirements, established under Solvency II through an SFC report, also include descriptions of how firms manage their risks (see below).

Own Risk and Solvency Assessment (ORSA)

3.8 Under Article 44, as part of the risk management system, firms are required to undertake an assessment of the risks they have within their business and the level of solvency required to mitigate those risks. As stated in CEIOPS Issues[9] paper the ORSA ‘can be defined as the entirety of the processes and procedures employed to identify, assess, monitor, manage and report the short and long term risks a (re)insurance undertaking faces or may face and to determine the own funds necessary to ensure that the undertaking’s overall solvency needs are met at all times’. A robust risk management function will assist the firm to undertake a robust ORSA, which links together the firm’s own view of the risks it has within its business and its own solvency needs.

7 Risk Management in Insurers, November 2006. http://www.fsa.gov.uk/pubs/other/isb_risk.pdf

8 For further details here please see the chapter on internal models.

9 CEIOPS’ Issues paper on the Own Risk and Solvency Assessment (May 2008) which provided further guidance to firms about what could be envisaged for the ORSA.

3.9 The ORSA is an internal risk assessment process that aims to ensure senior management have conducted their own review of the risks to which they are exposed and that they hold sufficient capital against those risks. The ORSA must reflect the firms' own risk appetite, which means that many firms may wish to target a higher confidence level (or a longer time horizon) than the level at which we currently give Individual Capital Guidance (ICG) under the ICAS regime (99.5%) and at which the SCR is set under Solvency II.

3.10 The concept of managing risk using an economic capital model will already be familiar to many UK firms and in an ICAS context we have been encouraging firms to develop their thinking and practices in this area. Many firms are making good progress and we would observe that those who have moved furthest to embrace the principles underlying ICAS will find Solvency II requirements less of a step-change than those firms who are less advanced.

Q1: What views do firms have on the process for the transition from ICA to ORSA?

3.11 The ORSA should be an integral part of managing the business against the company's chosen strategy and it should thus be an important tool in assisting strategic decision-making. Demonstration of this activity will be important. Given the requirement for the integrated management of risk and capital, when making changes (for example, to their business strategy and/or the firm's risk tolerance) senior management should demonstrate that they have considered the effects on their solvency needs and record this in their ORSA.

3.12 The CEIOPS issues paper indicates that the sophistication and extent of the ORSA should be proportionate to the nature, scale and complexity of the risks within the firm. While there may be firms using the SCR standard formula (for which, owing to the size and complexity of their business, the ORSA process is relatively sophisticated) this will not be the case for all firms.

3.13 Based on the experience with the ICAS regime, we envisage many UK insurers are likely to apply for internal model approval. Integration of the internal model and the ORSA will be important. As stated in the CEIOPS issues paper, an internal model is in itself a tool for the firm's assessment of its own risks. While different outputs may be required for economic and regulatory capital levels, the same assumptions should be used in both the ORSA and the internal model to ensure consistency.

3.14 The ORSA will provide supervisors with an early indicator of the firm's solvency position, as the insurer may breach its economic capital target level before it breaches its regulatory capital requirement. The ORSA should enable the supervisor to draw conclusions regarding the ability of the insurer to review its own risks.

3.15 Firms should start considering how they will meet the ORSA requirements and the additional processes they will need to put in place.

Q2: How should supervisors respond to breach of targeted economic capital?

Internal audit function

3.16 Currently, FSA Handbook guidance states that it may be appropriate for a firm to have an internal audit depending on the nature, scale and complexity of its business[10]. By contrast, Solvency II will require every insurance firm to have an internal audit function[11], which 'shall provide for an effective and permanent internal audit function' and 'include an evaluation of whether the internal control system of the firm remains sufficient and appropriate for its business'.

3.17 Although day-to-day operation of this function can be outsourced, insurers will need to have sufficiently skilled personnel in-house to oversee and challenge as necessary, the work of the organisation to which internal audit functions have been outsourced. Those firms that already have an internal audit function will have to ensure that it complies with the minimum requirements of Article 46 and any future implementing measures.

Actuarial function

3.18 The requirement for an actuarial function will also represent a change for many UK firms. Currently the FSA Handbook[12] has requirements for the use of actuaries in life insurance firms, while nothing is prescribed for firms writing non-life business (other than at Lloyd's, where formal actuarial opinions are required of all syndicates). The Directive[13] requires all insurance firms to have an actuarial function and Article 47 is explicit about the roles that the actuarial function is required to undertake. Some of these roles may not traditionally be within the remit of the actuarial work within firms. UK insurers should be preparing to introduce an actuarial function if they do not currently have one and for it to be involved in the specified areas and any future implementing measures.

3.19 CEIOPS views access to actuarial knowledge as 'indispensable to an adequate system of governance'[14]. It may not be necessary for this function to be carried out by someone with specific vocational or professional training[15], but should be 'carried out by persons with sufficient knowledge of actuarial and financial mathematics and… able where appropriate to demonstrate their relevant experience and expertise…'

Capital add-ons

3.20 The Directive gives supervisors the ability to set a capital add-on in those circumstances where the supervisor believes a firm is not holding adequate capital. Although in some ways similar to the existing ICG, the capital add-on will no longer be guidance and, in due course, will be published (see paragraph 3.29).

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10 SYSC 3.2.16 G

11 Article 46 of the Directive Proposal.

12 SUP 4

13 Article 47 of the Directive Proposal

14 Consultation Paper No. 24– Advice on the Principle of Proportionality in the Solvency II Framework Directive Proposal

15 For example, has earned the occupational title 'actuary'.

3.21 The capital add-on, plus the firm-calculated SCR, will replace the original SCR to become the new capital requirement firms must meet. Capital add-ons may be appropriate in various circumstances as outlined in Article 37. For example, the standard formula might not sufficiently match a firm's risk profile. The ORSA may indicate to supervisors that an insurer's SCR, set at a 99.5% confidence level over one year through the standard formula or internal model, is lower than its risk profile should merit.

3.22 In these circumstances, a capital add-on may be applied by the supervisor to ensure that the amount of regulatory capital a firm is required to hold delivers the 99.5% confidence level over one year, as specified. If material divergence is expected to persist between the results of applying the standard formula and capital requirements that properly reflect the firm's risk profile, Article 117 enables the supervisor to require the firm to build an internal model (or partial internal model) covering the relevant risks.

3.23 In addition, Article 37 provides for a capital add-on in situations where the system of governance within a firm does not meet the standards required. Effective governance systems are essential for the long-term health of the firm. A capital add-on under Article 37 should, therefore, be viewed as a short-term measure to give the firm an incentive to remedy its governance deficiencies and help protect policyholders in the interim. This is an approach that we already follow under our ICAS regime.

Outsourcing

3.24 Outsourcing will be possible and Solvency II imposes a requirement that firms remain fully responsible for outsourced activities. UK firms will be required to notify the FSA 'prior to the outsourcing of important activities'. This should not be a significant change as firms should already be doing this to be compliant with Principle 11 (Relations with Regulators) of the Principles for Businesses.

Implementing Measures

3.25 CEIOPS is developing advice to the European Commission about implementing measures relating to other articles on outsourcing, fit and proper requirements, internal control and responsibility of the administrative or management body. General governance requirements are also being developed further through CEIOPS.

Supervisory reporting and public disclosure

3.26 Transparency through public disclosure (Pillar 3) is aimed at harnessing market discipline in support of regulatory objectives. This is an important element of the new regime and firms should be prepared to disclose more information publicly than is currently the case[16]. Solvency II is intended to ensure consistency of supervisory reporting and public disclosure across Europe, which is likely to lead to significant changes in the types of information that UK insurers are required to report to supervisors. It is too early to judge what the nature of the detailed reporting

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16 See CEIOPS' Issues Paper on the Supervisory Review Process and Undertakings' Reporting Requirements published on 18 August 2008.

requirements will be, as discussions in Europe are at an early stage. As part of this process CEIOPS is looking to design new standardised regulatory reporting forms, which would succeed the existing FSA annual regulatory returns.

3.27 UK firms should begin to prepare for the greater transparency of Solvency II and the effect this may have on the way their business is run. Solvency II is likely to require two different types of report: the public, annual Solvency and Financial Condition (SFC)[17] report; as well as further information[18] that is considered inappropriate to disclose publicly but is needed for the purposes of supervision.

3.28 As part of their public SFC report, firms will be required to disclose annually their regulatory capital requirements, including any material breaches of their MCR and SCR, even if subsequently resolved, as well as (after a proposed five-year transitional period) the details of a capital add-on if applicable. In addition to key financial information, firms will have to provide, publicly, a description of their business and financial performance, their systems of governance and the different risks they face, including for each risk category the risk exposure, concentration, mitigation and sensitivity.

3.29 Article 52 provides for non-disclosure of information, but only on the grounds of avoiding significant undue competitive disadvantage, or where disclosure would breach policyholder or other counterparty confidentiality obligations. Information exempt from public disclosure on such grounds will then be privately reported to the FSA as the UK supervisor. The Level 2 implementing measures and, in due course, the Level 3 guidance may elaborate further on what types of information can be treated in that way.

Proportionality

3.30 Proportionality is a key consideration in designing the future Solvency II regime and CEIOPS has published a Consultation Paper on this topic[19]. This Consultation Paper clarifies that the proportionality principle could not justify an insurer's systems of governance and risk management as being inadequate for the nature, scale and complexity of its risks.

17 Article 50 of the Directive Proposal.

18 Provided for in Article 35 of the Directive Proposal.

19 CP 24 – details on CEIOPS website.

4 Demonstrating adequate financial resources (Pillar 1)

Key stakeholders in this section:

Board / senior management – be aware

Risk management – contribute

Finance– action required

Actuaries – action required

Internal audit – be aware

Introduction

4.1 The Pillar 1 elements of Solvency II set out the quantitative requirements that insurers must satisfy to demonstrate they have sufficient financial resources. This chapter describes how components of the new Pillar 1 framework compare to the existing UK regime and the implications for firms.

4.2 We also outline some of the steps firms could be taking now to prepare for changes in how capital requirements and the quality and quantity of capital resources will be assessed under Solvency II.

Components of the Pillar 1 requirements under Solvency II

4.3 The table below sets out the key components of our existing prudential regime and compares them to the envisaged Solvency II requirements. Direct comparison between the two regimes has to be treated with a degree of caution as, in a number of areas, the underlying calculations in our current regime are different from those expected under Solvency II.

	Current UK Pillar 1 regime		Solvency II equivalent
	Life insurers	Non-life insurers	All insurers
Assets	Calculated under IFRS/UK GAAP, excludes goodwill, inadmissible assets and assets in excess of market and counterparty limits.	Calculated under IFRS/UK GAAP, excludes goodwill, inadmissible assets and assets in excess of market and counterparty limits.	Make consistent with fair value (QIS4 excludes goodwill as a suitable asset).
Non-insurance liabilities	Calculated under IFRS/UK GAAP.	Calculated under IFRS/UK GAAP.	Market consistent/fair value
Insurance liabilities	Peak 1: Calculated to include prudence Peak 2: Calculated on a market consistent basis, including constructive obligations (but excess over Peak 1 is treated as a capital requirement, the WPICC).	Calculated under IFRS/UK GAAP with discounting not general practice; equalisation provisions required in accordance with INSPRU1.4	Calculated at transfer/market value. Where a risk cannot be replicated by using financial instruments, the liability needs to be separated into a best estimate and risk margin
Capital resources	Tier 1 and Tier 2 capital used to meet capital requirements	Tier 1 and Tier 2 capital used to meet capital requirements	Introduces terminology distinguishing basic and ancillary own funds and Tier 1, 2 and 3 capital
Minimum Capital Requirement (MCR)	Factor-based Long-Term Insurance Capital Requirement (LTICR) plus Non-realistic reporters: resilience requirement Realistic reporters: WPICC	Factor based General Insurance Capital Requirement (GICR)	Calculation designed to give a capital requirement at a confidence level of 80% to 90%.
Solvency Capital Requirement (SCR)	None, but ICAS applies – confidence level of 99.5% over 1 year, but significant differences from SCR (see text)	None, but ICAS applies – confidence level of 99.5% over 1 year, but significant differences from SCR (see text)	Risk-based calculation designed to give a capital requirement at a confidence level of 99.5% over 1 year – through a standard formula or an internal model.

Valuation of assets and liabilities

4.5 Under Solvency II, the fair valuation of assets and liabilities is based on the amount for which the asset or liabilities could be exchanged between knowledgeable willing parties in an arm's length transaction. Elements of the methodology differ from current practice in the UK and, accordingly, firms need to understand how these differences will affect them.

4.6 Liabilities are divided into:

- technical provisions (or insurance liabilities) – obligations relating to policyholders and beneficiaries of insurance contracts; and
- non-insurance liabilities – other obligations such as amounts payable, tax liabilities (current and deferred) and employee benefits or wholesale funding obligations, including senior and subordinated debt securities or other loan arrangements.

4.7 The approach used to calculate technical provisions is described in the Directive as "the best estimate shall be equal to the probability-weighted average of future cash-flows, taking account of the time value of money". For many firms, this is likely to require material changes to their provisioning methodology. Significant differences are likely to include the following.

- For all firms: Technical provisions need to be divided into a best estimate and a risk margin. The risk margin calculation is based on the cost of holding regulatory capital for risks considered non-hedgeable ('cost-of-capital' methodology).
- For non-life insurers: Technical provisions will include an allowance for the time value of money (a discounted basis) but this is unlikely to be the only difference from present UK requirements. In particular, definition of the 'best estimate' is expected to differ from present methodologies.
- For life insurers: There will be explicit valuation methodologies for discretionary benefits and for financial options and guarantees. Firms reporting a 'realistic balance sheet' may already have developed methodology along these lines, but there is still potential for change.

4.8 The Directive aims to be compatible, where possible, with international accounting developments and in this respect the articles relating to the valuation of assets and liabilities, including technical provisions, appear to be consistent with the development of IFRS Phase Two by the IASB. However, although consistency will be achieved where possible, the accounting and regulatory approaches may not prove identical.

4.9 QIS4[20] provides the most useful current guide to valuation approaches under Solvency II. These specifications were set on a fit-for-purpose basis to assist firms participating in the QIS exercise and therefore may not mirror the final requirements[21]. Firms need to consider how they will develop an economic 'Solvency II balance sheet', through the establishment of appropriate valuation techniques and

20 Section 12 of the QIS4 Technical Specification

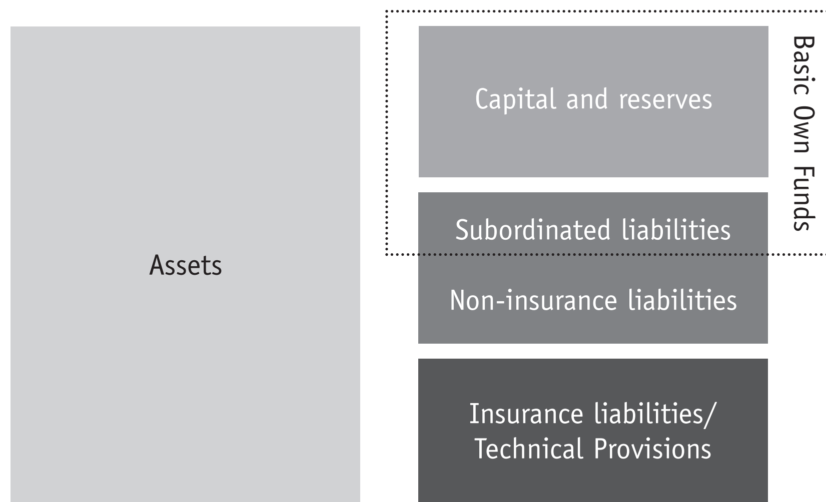
21 For example, some material was included in the specification as a proxy for a market consistent value to assist the completion of QIS and this would be unlikely to be consistent with the Directive.

development of systems and processes, to generate and analyse the information they will need to report to supervisors and the market.

> Q3: What steps are firms taking to develop the appropriate valuation systems needed to calculate technical provisions under Solvency II? How is this work linked to the implementation of IFRS standards?

Own funds

4.10 The concept of 'own funds' under Solvency II equates to what we currently refer to as 'capital resources' in the General Prudential Sourcebook (GENPRU). Under Solvency II a distinction is made between basic own funds and ancillary own funds. From a balance sheet perspective, basic own funds are defined as the excess of assets over liabilities (net assets)[22] and subordinated liabilities. This is shown in the diagram below.



4.11 Ancillary own funds are defined as any capital resources that could be called up to absorb losses, ie contingent capital items[23]. These own funds will be off-balance sheet and could include capital items such as letters of credit, guarantees and supplementary calls. Under Solvency II, this type of capital cannot be included in Tier 1, nor can it be used to meet a firm's MCR.

4.12 Basic and ancillary own funds are classified into tiers by reference to defined characteristics[24]. The use of tiers to differentiate between different types of capital with different qualities is conceptually similar to the current UK approach, but the tier structure under Solvency II will be different.

4.13 The own funds articles in Solvency II are designed to ensure that firms have the right quality capital to meet their regulatory capital requirements. It is crucial that firms understand how these operate and that they have sufficient own funds to back their capital requirements. Firms must consider the implications that changing eligibility criteria will have for their existing capital instruments, as well as for their future

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22 Article 87

23 Article 88

24 Articles 93 and 94

capital planning. While it is possible some grandfathering of existing instruments may be introduced, this should not be assumed to be the case and, even if it is, the grandfathering may be subject to limitations.

Valuation

4.14 The valuation principles that apply to all assets and liabilities under Solvency II underpin the definition of excess of assets over liabilities (Article 74 and Article 87 (1)). The current draft of the Directive requires that the valuation of all liabilities, including subordinated liabilities that may be eligible as own funds, should not take account of the firm's own credit standing at any time. This would represent a change from the current valuation approach in the UK in respect of non-insurance liabilities, which takes into account the credit standing at the time of issue, but not subsequent changes. This change is likely to result in a valuation of liabilities at a higher amount than the funds a firm actually raises, potentially reducing capital resources. European discussions on this issue are continuing.

Own funds and quantitative impact studies

4.15 Experience with the QIS3 exercise, the results of which were reported in November 2007, highlighted the importance of a clear approach to own funds and the need for the industry to have certainty of regulatory treatment. Solvency II classifies own fund items based on their characteristics. Firms questioned how these characteristics should be applied in practice and commented that a number of the characteristics appeared to overlap. They also commented that the characteristics could relegate some existing capital instruments, currently qualifying as Tier 1, down to Tier 3. This lack of certainty led many firms in their QIS3 submissions to classify all of their capital as Tier 1. This is inconsistent with the intention of the directive as only the highest quality capital should be included in Tier 1.

4.16 Following similar responses across Europe the QIS4 technical specifications were drafted to clarify the characteristics of own funds and make them more practicable for firms to apply.

4.17 Pending development of implementing measures, the QIS4 technical specifications are currently the best guide to the treatment of own funds under Solvency II.

Own funds and QIS4 – Characteristics

4.17 The QIS4 technical specifications eliminate any overlapping by splitting the five characteristics set out in the original directive into six. They also distinguish more clearly between the two main purposes of capital. The first purpose is to enable firms to continue operating as a going concern, eg to withstand unexpected losses without triggering insolvency. The characteristic that reflects this purpose is referred to as full loss absorbency on a going concern. The second purpose is to protect creditors in the event of insolvency. This is achieved by subordination. This means that, in the event of firm failure, the first losses are suffered by the providers of capital rather than by policyholders. This is sometimes referred to as loss absorbency on winding-up or on a gone concern.

4.18 The two loss absorbency characteristics are fundamental to the distinction in the directive between Tier 1 and Tier 2 capital. Tier 1 capital must have full loss absorbency on a going concern basis (as well as in a winding-up). Tier 2 capital must provide loss absorbency in a winding-up.

4.19 The remaining four characteristics can be seen as factors to be taken into account when assessing the ability of capital to absorb losses. They are:

- the instrument is of sufficient duration in relation to the insurer's insurance obligations;
- the instrument is free from requirements or incentives to redeem the nominal amount;
- the instrument is free of mandatory fixed charges; and
- the capital is free from encumbrances.

4.20 The characteristics set out are principles-based and can therefore be applied regardless of the capital structure of a firm or the type of business it underwrites. This approach should ensure that the capital regime is adaptable to changing circumstances and does not frustrate market innovation, where this does not undermine the quality of capital for prudential purposes.

4.21 In order to be regarded as Tier 1 basic own funds, capital must be loss- absorbent both on a going and a gone concern basis. One of the main changes from our current capital resources rules[25] is that, under Solvency II, dated capital instruments can be included in Tier 1. This is, however, conditional on the instrument being of sufficient duration in relation to the firm's insurance obligations. Further details will be provided in Level 2 (implementing measures) on how this and all the other characteristics should be met in practice. However, firms should note now that Level 2 may result in hybrid capital instruments and subordinated liabilities (as currently structured) being ineligible as Tier 1 or Tier 2 capital under Solvency II. Another feature likely to be taken into account when assessing the eligibility of dated Tier 1 and Tier 2 capital, is the presence of lock-ins preventing the redemption of capital, where to do so would result in a breach of requirements.

4.22 Items that display all of the characteristics above, but are ancillary own funds (ie they are off-balance sheet) are notched down to Tier 2. Ancillary own funds cannot be eligible Tier 1 under Solvency II.

4.23 Under Solvency II, Tier 2 basic own funds need not absorb losses in a going concern, but must absorb losses in a gone concern and satisfy all of the other characteristics. Basic own funds that are deeply subordinated (ie subordinated to all policyholders and senior creditors) but do not meet the characteristics for eligibility as Tier 2 capital, will be classified as Tier 3. Ancillary own funds that meet the Tier 2 characteristics, will also quality as Tier 3 – again this reflects a notching down as compared with basic own funds of the same quality. Tier 3 is a new concept, as our current capital resources rules only distinguish between Tier 1 and Tier 2. Liabilities

25 The current capital resources rules for insurers are set out in GENPRU 2.2 and GENPRU 2 Annex 1.

that are not deeply subordinated to all policyholders and senior creditors and are therefore not loss absorbent, will not be eligible own funds.

Limits

4.24 Once own funds have been classified into tiers, the Directive prescribes[26] the amount of each tier of capital that is required to meet the capital requirements (the MCR and SCR). Only Tier 1 and Tier 2 basic own funds are eligible to meet the MCR and at least one half of the capital needed to meet the MCR must be Tier 1. All tiers are eligible to meet the SCR, but at least one third must consist of Tier 1 and no more than one third can be Tier 3. The use of Tier 3 to meet capital requirements is a change from the current approach under our rules. Firms should note that the terms of this article are still under discussion and that there may be changes before the Directive is finalised.

4.25 It is crucial that firms be aware of what type of capital can be used to meet which requirements under Solvency II.

> Q4: What steps have firms taken to consider whether they have the right quality capital to meet the capital requirements?

Regulatory capital requirements – MCR and SCR (standard formula)

4.26 Solvency II introduces new risk-based capital requirement calculations of the MCR and the SCR. The MCR is designed to be the lower solvency calculation. This corresponds to a solvency level, below which policyholders and beneficiaries are exposed to an unacceptable level of risk, if the insurer were allowed to continue its operations. The QIS exercises have tested a number of alternative methods to calculate the MCR – all intending to meet criteria of a ‘clear and simple’ calculation method and to be consistent with a ‘confidence level in the range of 80% to 90% over a one-year period’.

4.27 The SCR aims to reflect a level of eligible own funds that enables insurers to absorb losses to a confidence level of 99.5% over one year. Firms not using an approved internal model will be required to use a standard formula calculation (or a simplified version derived from it) provided in implementing measures to determine the level of capital they will be required to hold as SCR. The European Commission will propose the formula taking account of CEIOPS advice and following feedback from the QIS exercises. Firms with an approved internal model will still be required to provide an estimate of the standard formula result for a period of two years following the date of internal model approval.

4.28 Accordingly, all firms should be familiarising themselves with the structure and application of the SCR standard formula. The QIS4 technical specifications are currently the best articulation of how the formula is likely to be applied in practice. Even firms that did not participate in the QIS exercise should be reviewing that specification now, to understand the likely implications for their business.

26 Article 98

4.29 It is important that firms writing simpler business, or writing business on a smaller scale, begin looking at the SCR standard formula. Article 108 of the Directive makes explicit provision for possible simplifications to be developed to the standard formula, allowing firms to use simplified proxy calculations for all or part of the standard formula. In order for firms to use simplifications they must be able to demonstrate that the resulting calculations are appropriate to the 'nature, scale and complexity' of the risks involved in their business. Firms will also be required to demonstrate that the results of the simplified calculations remain consistent with an overall confidence level of 99.5% VaR over one year.

4.30 It is also important that firms writing simpler business, or writing business on a smaller scale, begin looking at the SCR standard formula. The Directive makes explicit provision for possible simplifications to be developed to the standard formula in Article 108, allowing firms to use simplified proxy calculations for all or part of the standard formula. In order for firms to use simplifications they must be able to demonstrate that the resulting calculations are appropriate to the 'nature, scale and complexity' of the risks involved. Firms will also be required to demonstrate that the resulting calculations are consistent with an overall confidence level of 99.5% VaR over one year.

4.31 Reflecting the need for supervisors to take timely action on any breach, the MCR is to be reported on a quarterly basis, whereas the SCR is reported on an annual basis (more frequently where material changes arise). The obligation on firms to comply with capital requirements is continuous, even though regular reporting is quarterly or annual.

Q5: What further guidance, in addition to that in the QIS4 technical specification, would be useful for firms on the application of the SCR standard formula for their business?

Framework for supervisory action

4.32 The Directive lays down responses to be applied by supervisors where an insurer does not comply with the requirements of the new regime. Breaches of the requirements surrounding the quality of capital, technical provisions, the SCR and the MCR all trigger specific supervisory action and impose obligations on firms. Senior management should be aware of the legal framework within which the FSA will manage its relationship with firms.

Where the firm has insufficient own funds available to cover the SCR

4.33 Firms will be required to notify supervisory authorities as soon as they identify that they have insufficient own funds to meet the SCR, or where there is a risk of this occurring in the next three months.

4.34 Once reported, the Directive specifies timelines within which firms must re-establish compliance. Within two months of a breach, a firm must submit to its supervisor for approval a 'realistic recovery plan' for re-establishing compliance with the SCR within six months. This is likely to set out either how the firm intends to increase its

eligible own funds, or its proposal for reducing risks so as to reduce capital requirements. Firms should note that if supervisors consider there to be a risk of the financial situation of a firm in breach deteriorating further, the Directive provides the supervisor with powers to intervene directly.

4.35 The existence of the lower MCR as an absolute floor does not make the SCR a 'target' level of capital. The SCR will be a hard requirement; firms will need to demonstrate to supervisors their current and prospective compliance with this standard. A breach of the SCR has to be treated as a serious event by the supervisor.

Where the firm has insufficient own funds available to cover the MCR

4.37 Breaches of the MCR will automatically trigger supervisory action. The firm must submit a short-term realistic finance scheme within one month. However, supervisors must withdraw a firm's authorisation to conduct insurance business if the supervisor considers the firm's finance scheme to be manifestly inadequate, or if the firm fails to comply with the approved scheme within three months of the breach. This reflects the fact that the MCR is calibrated to reflect the level of capital beneath which a firm's policyholders and beneficiaries are being placed at unacceptable risk, leading supervisors to intervene decisively if the requirement is not met.

Preparation for Solvency II

4.38 Firms must ensure they develop and maintain systems and processes to enable them both to calculate the capital requirements and to monitor compliance with those requirements, both in real time and prospectively. Firms will be required to calculate and report their SCR to supervisors at least annually and their MCR at least quarterly. Firms should consider how they will design and implement the systems and controls necessary to meet these requirements.

Q6: How do you think firms could best demonstrate compliance with the Pillar 1 requirements on a real time and prospective basis?

5 Use and approval of internal models

Key stakeholders in this section:

Board/senior management – be aware

Risk management – key responsibility

Finance– active involvement

Actuaries – action required

Internal audit – be aware

Introduction

5.1 Under Solvency II, firms will be able to calculate the Solvency Capital Requirement (SCR) using their own full or partial internal model, as approved by the relevant supervisory authorities. Partial internal models can be used to calculate the SCR for one or more risk modules or sub-modules[27] and for one or more major business units. Using a full or partial internal model is an alternative to using the standard formula to calculate the SCR, as detailed in Chapter 4.

5.2 This chapter sets out areas firms should consider when planning the development and implementation of their own internal model ahead of their application for approval. These considerations are based on the Directive, where some high level requirements for approval are set out. While acknowledging that the Directive envisages further detail to be determined at Level 2, we have, pending development of and agreement of such measures, drawn on relevant European and international publications, such as the following.

- Advice from the CEIOPS[28].
- The joint Groupe Consultatif/CEA glossary[29].

27 This includes also the capital requirement for operational risk and the adjustment for the loss-absorbing capacity of technical provisions and deferred taxes.

28 http://www.ceiops.eu/media/docman/public_files/consultations/consultationpapers/AdviceonProportionality.pdf

29 http://www.cea.eu/uploads/DocumentsLibrary/documents/Glossary%20Final.pdf

- The guidance on the use of internal models for regulatory capital purposes from the International Association of Insurance Supervisors (IAIS)[30].
- The Chief Risk Officer Forum Benchmarking Study of Internal Models[31].

We have also referenced relevant UK material.

- INSPRU 7 – Individual Capital Assessment[32].
- FSA October 2007 Insurance Sector Briefing – ICAS – Lessons learned and looking ahead to Solvency II[33].
- FSA November 2006 Insurance Sector Briefing – Risk Management in Insurers[34].
- Individual Capital Assessment – A guide to the ICA process for insurers, published by insurance trade bodies in February 2007[35].

Background

5.3 For an internal model to be approved for deriving the SCR, the firm will need to satisfy the tests in Articles 118 to 123, as well as other requirements related to internal models. Integration into the firm's risk management activity (described in chapter 3 of this DP) will be a key requirement. The internal model is owned by a firm's risk management function, such that there is a strong link between an internal model used for Pillar 1 (calculating the SCR) and Pillar 2 (the ORSA, the supervisory review process and the SFC report).

5.4 It is clear that developing, implementing and maintaining an internal model will require a cross-functional team within a firm. By way of example the FSA might expect this to comprise finance, actuarial, risk and IT functions as a core team, plus subject matter experts in investment, tax and reinsurance. Alongside this, it is important that firms' senior management and Board members ensure that they can demonstrate an understanding of the development of the internal model, as well as of its processes and outputs, and a commitment to embed the internal model into business decision-making.

5.5 Our October 2007 Insurance Sector Briefing gave a high-level outline of the process firms might expect to follow in developing an internal model. It indicated that development of an internal model is a medium to long-term project (up to five years) following an iterative process. Many UK firms looking to apply for internal model approval in Solvency II are already part of the way thanks to their development of models in support of their Individual Capital Assessment (ICA). In this section we set out the requirements for model approval under Solvency II. We would encourage

30 http://www.iaisweb.org/__temp/2_2_7_Guidance_paper_on_the_use_of_internal_models_for_risk_and_capital_management_by_insurers.pdf

31 http://www.croforum.org/publications/benchmarkingstudyinternalmodels_resource/File.ecr?fd=true&dn=bmsreportfinal

32 http://fsahandbook.info/FSA/html/handbook/INSPRU/7/1

33 http://www.fsa.gov.uk/pubs/other/icas_isb.pdf

34 http://www.fsa.gov.uk/pubs/other/isb_risk.pdf

35 http://www.abi.org.uk/BookShop/ResearchReports/ICAS_Guide.pdf

firms to use this to undertake a gap analysis and identify what more they need to do in order to meet these requirements. We discuss implementation timescales in more detail in Annex A.

Internal model definition

5.6 A firm's internal model should be integrated within its overall risk management and decision-making activities. Most importantly, an internal model should be used to quantify risks and assess a firm's economic capital. The Directive does not define an internal model, however, in our view those firms that have followed the IAIS[36] definition of an internal model are unlikely to find their work incompatible with the future Solvency II requirement. This definition is:

> '… internal model refers to "a risk management system developed by an insurer to analyse the overall risk position, to quantify risks and to determine the economic capital required to meet those risks. An internal model may also be used to determine the insurer's regulatory capital requirements on the basis of the insurer's specific risk profile and the defined level of safety of the solvency regime.'

> Q7: To what extent does this description reflect firms' current and planned future internal models?

5.7 The IAIS guidance paper on internal models suggests that firms should develop internal models for their own risk and capital management purposes, to derive their required economic capital position. The paper continues to say that they should be able to use the same model to determine their own regulatory capital (ie, to the 99.5% confidence level proposed under Solvency II). The IAIS guidance defines economic capital as 'the capital which results from an economic assessment of the insurer's risks given the insurer's risk tolerance and business plans'.

5.8 This IAIS guidance material takes the concept of an internal model away from the narrow focus of assigning capital purely to meet regulatory requirements and defines it instead as a wider risk and capital management tool, relevant for the needs of the insurer based upon its individual risk profile. The Directive specifically acknowledges this wider application in Article 118, which requires firms to demonstrate that the internal model is 'widely used' in their economic capital assessment.

5.9 Firms' economic capital might differ from their regulatory capital as a result of a different calibration of the regulatory capital requirement compared with the firm's risk appetite. For example:

- the risk metric may be different, eg, TvaR, or more exacting VaR standards than the implied BBB rating, of a 99.5% one year VaR metric;
- the time period considered may be more than one year, particularly for technical provisions (which may be considered to run-off);
- margins in their provisions may be different to the regulatory level;

36 Guidance Paper on the Use of Internal Models for Risk and Capital Management Purposes by Insurers, October 2007, http://www.iaisweb.org/__temp/2_2_7_Guidance_paper_on_the_use_of_internal_models_for_risk_and_capital_management_by_insurers.pdf

- the risk appetite may include, for example, external ratings or profit volatility at a different confidence level or assessed over a different time period.

5.10 For internal model approval, where firms develop their economic capital models to assess required capital at the level of their own risk appetite, they would then need to recalibrate to different levels, including the regulatory level of 99.5% over one year (SCR). This could form part of normal validation of the internal model, as well as highlighting some of the scenarios that management may have to deal with. By way of example, the use of the internal model to inform wider areas of financial management – such as management of earnings volatility – is not a regulatory requirement, but would be useful evidence of model embeddedness.

5.11 Firms do not need supervisory approval for the use of their internal models when determining their own economic capital needs or management. Differences, if any, between economic capital and regulatory capital requirements should be explicit and capable of being explained by the insurer to the Board and its supervisor. It would be useful if the internal model included reconciliation between the modelling criteria used by the firm for its own economic capital and the modelling criteria used for regulatory capital.

5.12 As stated in the CEIOPS advice on the principle of proportionality, firms are not bound by a single modelling approach. Overall, a balance has to be struck between the avoidance of unnecessary complexity of the internal model and demonstrating that firms' obligations will be met as they are due. Irrespective of the internal modelling approach chosen, the 99.5% VaR confidence level over one year is the common requirement to be met through regulatory capital. This level of safety represents one of the core components of the new regime, which will help to establish a level playing-field among insurers within the EU for the purposes of policyholder protection[37].

> Q8: Solvency II is likely to require clear and demonstrable integration between capital measurement systems and capital management. How should firms demonstrate the link between or integration of their internal model and their risk management framework?

Use test

5.13 The use test requires the insurer to demonstrate that there is sufficient discipline in its internal model development and application such that it is 'widely used in and plays an important role in' the management of the firm. Through this, supervisors can be sure that an internal model is appropriate to the business, if it is widely used and plays an important role in how the firm measures and manages risk in its business. Demonstrating compliance with this test is a condition of model approval and, in order to make a successful application, we anticipate that firms will need to develop their practices in this area.

37 This is consistent with Article 120 of the Solvency II Directive Proposal. Insurance and reinsurance firms may use a different time period or risk measure for internal modelling purposes as long as the outputs of the internal model can be used by those firms to calculate the SCR in a manner that provides policyholders and beneficiaries with a level of protection equivalent to the VaR of the basic own funds subject to a confidence level of 99.5% over one year.

5.14 If the internal model were used only for regulatory purposes, firms would have fewer internal incentives to keep the model and its parameters accurate and up-to-date. In contrast, the use of internal models in internal decision-making creates a need to ensure sufficient quality of the internal model and of the data fed into it. Firms are responsible for complying with the use test and, in accordance with Article 123, they must document how they demonstrate this compliance.

5.15 The IAIS guidance paper on internal models is aligned with this concept, as it says that:

> 'In order for the insurer's internal model to be most effective it should be genuinely relevant for use within its business for risk and capital management purposes'[38].

Both the risk management system and capital management activities are central to the efficient working of the internal model and embedding it in business. Both the inputs to and outputs from the internal model should link to key decisions made in these functions. Risks identified by the risk management function are also a key input into the capital model[39] in order to reflect the nature of the business and the environment in which the firm operates. The internal model should include an assessment of all the material risks highlighted on the risk register, or other risk assessment/risk monitoring tool.

5.16 To satisfy the use test, the internal model must reflect the realities of the business and the operational processes of the firm, hence the integration of the firm's risk management processes. To embed the model into the business, it is first necessary to embed the business into the model.

5.17 To assess whether the internal model plays an important role in managing the business, the use test looks at the processes by which the firm uses it within business decision-making, in terms of inputs to and output from the model. Key decision-makers within the firm will need to be able to demonstrate their understanding of the key elements and results from the internal model. The use test would therefore be based on the firm's assessment of required economic capital, as that is the level used to run the business.

5.18 As highlighted by Article 118, there are a number of different components to the use test that the firms should take into account in developing and implementing an internal model.

- Integration of the internal model in the risk function (Article 43) and capital management function (Article 44).
- Use of the internal model in other key functions within the business.
- The system of governance and review of the internal model (Articles 41 and 45–48).

38 http://www.iaisweb.org/__temp/2_2_7_Guidance_paper_on_the_use_of_internal_models_for_risk_and_capital_management_by_insurers.pdf

39 The capital model is the element of the internal model that performs the technical calculations that produce an assessment of the firm's required economic capital.

5.19 An important part of the risk management function is to allocate economic capital at an appropriate level of granularity (eg, by business unit, line of business, homogeneous risk group) to enable management to use this within internal reporting (eg, return on risk-adjusted/allocated capital). This process ensures that the capital allocation reflects the risks inherent in each area of the business.

Q9: i. Does this outline cover all the key dimensions of capital management activities within the industry?

ii. How does this compare with current industry practice?

5.20 As well as being embedded in the risk and capital management activities, the internal model should be used in the operation of other functions in the firm. A firm should assess the possible impacts of its decision-making by running alternative courses of action through the internal model. Examples of internal model use are suggested below. Firms should note that further guidance may be provided in due course by CEIOPS.

- Reinsurance – analysis, design and purchase of the reinsurance programme.
- Underwriting – pricing of the business through the allocation of capital to lines of business and linking to the firm’s business plan targets.
- Investment management – determining the possible effects of investment decisions.
- Product development – understanding the potential impact of new product developments and developing alternative business plan projections.
- Management information – understanding the risks in the business plan and sensitivities to key assumptions, and how this fits with the firm’s risk appetite.
- Strategy / planning – assessing the possible impact on the risks and capital of the business of various strategies and objectives.
- Corporate finance – assessing the possible impact on the risks and capital profile of the business of potential mergers, acquisitions and disposals.
- Finance function – risk based performance reporting using measures such as return on risk adjusted capital (RORAC).

5.21 Given that each insurer writes different business, has a different risk profile, a different corporate structure, different operational processes and a different risk management framework, each internal model will be different and used in a different way.

5.22 Each function within the organisation should be expected to understand how its decisions affect the risk and capital profile of the firm, just as they might be expected to contribute to the scope, design, operation and development of the internal model itself. Each relevant part of the organisation is then involved in feedback loops to ensure that the internal model remains applicable for the business. Alongside this, each function retains responsibility for relevant elements of the validation process.

5.23 Where operational functions are outsourced (Article 48) the firm retains full responsibility for the identification, assessment and remediation of the risks in the outsourced function(s). A firm will wish to consider the extent to which it may be able to rely upon the outsource provider for assistance in these endeavours.

Statistical quality standards

5.24 The Directive sets out high-level requirements for the statistical quality standards underlying an internal model. This requirement aims to ensure that the methodology underlying the model is sound. The standards apply to:

- the methodology used to select, fit and, where appropriate, combine statistical distributions (probability distribution forecasts);
- data quality;
- model dependencies and diversification effects;
- risk mitigation techniques;
- the treatment of financial guarantees and options; and
- future management actions.

5.25 Firms seeking internal model approval will need to have accurate, complete and appropriate data, as well as be able to justify assumptions and judgment.

5.26 High quality data is essential for modelling. Firms should pay particular attention to this requirement as experience under the FSA's existing regime has indicated that the current quality of data in many UK firms may fall short of both existing and Solvency II requirements. We recommend that firms review the following for internal and external sources of data.

- Data collection processes to make sure all data items required are collected.
- Data resolution to ensure data is stored and accessible at a level appropriate for the design of the internal model.
- The quality of data to ensure data items are correct and validated as far as possible.
- Access to data, to ensure it can be easily and accurately retrieved by relevant users.

5.27 The internal model provides a projection into the future of the firm's finances, and even a firm with complete historical data will need to consider what adjustments may be required to reflect current and future conditions. The firm also needs to make assumptions about future conditions, anticipated volumes and pricing of new business, based on past experience and own judgment.

Q10: i. What are firms doing to evaluate and improve data?

ii. What further work (including industry-wide initiatives) might be helpful (for example, flood claims, large motor claims) to improve the completeness of firm data along the lines of the Operational Risk Insurance Consortium (ORIC)[40]?

5.28 There are various techniques in current use for assessing the data, assumptions and statistical quality of the internal model. These include:

40 http://www.abioric.com/

- identifying the most financially significant variables;
- ensuring the parameters used are up-to-date at the time of the valuation;
- maintaining a record of changes to the parameter estimation;
- maintaining adequate records in a form easily accessible for use within the internal model;
- using goodness-of-fit tests to assess whether an internal model is appropriate; and
- where possible, use of back-testing and its link to validation.

Q11: What further guidance would be useful on good practice in respect of data (for example, illustrative examples of the above or other activities?)

5.29 The Directive refers to a 'probability distribution forecast' underlying the model and defines this as a mathematical function, which assigns to an exhaustive set of mutually exclusive events, a probability of realisation[41]. This could be interpreted as a requirement for the internal model to produce an estimate of the capital requirement, or other appropriate metric, at different levels of probability. This assists in deriving the economic capital and the regulatory SCR would be a further key output of the internal model.

5.30 The Directive does not prescribe methods for assessment of the probability distribution forecast. However, there is a requirement to use adequate actuarial and statistical techniques. We understand 'adequate' to mean mathematically sound and reflective of the potential severity of the risks being examined. The methods used by the firm to calculate the probability distribution forecast must also be consistent with those used to calculate technical provisions, demonstrating the importance of linking reserving activities with the capital measurement function.

5.31 Firms may choose from a variety of approaches to assess capital requirements. These can range from a fully stochastic capital model (where each assumption is modelled using a simulation approach based on a statistical distribution) to a scenario-based approach (where the assessment of economic capital requirements is based on a series of extreme scenarios). Such approaches may be focused on the key drivers of the firm's risks, with a more simplistic approach applied for other, less risky elements, in line with the proportionality principle.

5.32 CEIOPS have issued advice on applying the proportionality principle to internal models[42]. A firm's chosen modelling approach must be considered in relation to the nature, scale and complexity of the risks it faces. This principle should also be understood to apply within a firm's internal model, such that a firm might model significant, complex risks in more detail than smaller, less complex risks.

5.33 A firm's modelling should be supplemented by scenario analysis in order to assess the impacts of extreme events, including the combined effects of such events on the insurance book, reinsurer creditworthiness, financial market conditions and the

41 Article 13, para 32

42 http://www.ceiops.eu/media/docman/public_files/consultations/consultationpapers/AdviceonProportionality.pdf

firm's physical and human resources. The extreme events should be based on historical and hypothetical events and should include 'ripple effects' where an event can have impacts in unexpected areas under extreme conditions. The use of scenario tests for extreme events is well developed and an important element of validation of model output. We are aware that some firms take this a stage further, by developing non-stress scenarios to assist with calibration of less extreme parts of the probability distribution (eg, at a one-in-five year or one-in-ten year level).

5.34 We would expect firms' internal models to enable justification of correlations, aggregations and dependencies, as well as allowing for diversification benefits in their assessment of capital requirements and also to take account of fungibility restrictions.

5.35 Firms should recognise that co-dependencies between risks are not consistent throughout the distribution – in particular, co-dependency is likely to be substantially higher in the tail of the distribution (and indeed, may not exist at all at lower levels).

5.36 We consider that firms should continue to review academic or industry material on copulas, correlation matrices and tail adjustments, in order to consider the most appropriate approach for their internal model.

5.37 Many firms already identify the major methods (such as reinsurance, hedging of market and credit risks, securitisation) that they use to manage and mitigate risk and the threats to the effectiveness of that risk mitigation. The effects of such risk mitigants should be allowed for in capital modelling.

5.38 The Directive allows firms to include the effect of future management actions in their assessment of the internal model SCR. In our view, where management actions have been allowed for, the firm should be able to quantify the impact of these management actions and demonstrate the circumstances in which they would be implemented.

Q12: Which approaches do firms use within their capital model? How and why are these approaches used? ('Approaches' can be defined or applied at a high level, eg, stochastic/deterministic)

Q13: Do you consider that there are areas where industry or the professions should be focusing their research capabilities to improve internal models? Please provide examples.

Calibration standards

5.39 Firms using an internal model to calculate their SCR may derive the SCR using a different time period or risk measure to that set out in the Directive as long as they can demonstrate to the supervisory authorities that policyholders and beneficiaries are provided with an equivalent level of protection. A number of firms have already embraced this concept, adapting their economic capital models for ICAS purposes.

5.40 Firms may use a different accounting basis for their own internal purposes than that used for external reporting. This basis could be used in the internal model design and reporting. In such a case, an insurer may need to provide an analysis of the

differences and demonstrate that their calculation of the SCR was equivalent to that required by the Directive, noting in particular the need for a market-consistent basis.

5.41 The Directive allows supervisors to require firms to run benchmark portfolios through their internal model. As an alternative, it may be more practical to use a sensitivity testing approach, which would consider the impact of changing certain key assumptions and/or variables within the internal model. Firms are required to estimate and report the standard formula SCR for the first two years after receiving internal model approval; firms should be able to explain how the SCR from standard formula differs from that produced by their internal model.

5.42 We anticipate that regulators will develop methodologies for benchmarking and comparing internal model output.

> Q14: i. Firms are invited to comment on how explicitly their risk appetite links to their credit rating, where applicable.
>
> ii. How do you think we should test the adequacy of internal models – for example, should we require evidence of peer review, benchmark by industry sector, require external audit, run benchmark portfolios or develop our own capital model? What other possibilities do you consider appropriate?

Profit and loss attribution

5.43 Article 121 requires firms to review their causes and sources of profit and loss for each major business unit. Firms must do this analysis at least annually and show how the risk categorisation in the internal model explains the sources and causes of profit and loss.

5.44 The Article 121 provisions relate to the need for models to be back-tested[43]. We understand that the aim of the provision is to assess whether a model is adequately predictive in the light of the firm's experience, which means the model should be sufficiently granular to have flagged sources of profit and loss at an early stage and the risk of a firm not meeting its own targets, whether absolute or in terms of volatility.

5.45 The internal model should have a control cycle that ensures actual experience is applied to review the structure of the model and the assumptions underlying it, such as underlying forecasts.

5.46 Firms using an internal model will need to demonstrate that the internal model generates output figures that are consistent with actual experience. The firm will need to be able to explain the changes it has made to the internal model as a result of its analysis of experience.

> Q15: How do firms presently carry out this activity and how will it be developed towards Solvency II implementation?

43 Comparing actual experience to that predicted by the internal model to refine the model assumptions/design.

Validation standards (Article 122)

5.47 Firms should review and validate their internal model, demonstrating that appropriate risk and capital management processes are in place. Validation is an iterative process, by which a firm using an internal model demonstrates how it arrived at its risk estimates and confirms that its processes for assigning risk estimates are likely to work as intended. For the model to be used by management to inform its decision-making, it must first be understood to be a robust representation of prospective risk, not just at firm level but at component and sub-component level. Securing that outcome is likely to involve a range of people within a firm, including some not traditionally involved in capital management and modelling activities.

5.48 The validation standard links to the use test, in particular the requirement for the firm's senior management to be responsible for the continued appropriateness of the model[44]. The validation standard also links to Article 114, which requires the firm's senior management to have systems that ensure the model operates properly on a continuous basis.

5.49 To achieve an effective validation, objective challenge is essential. Proper independence of the validation function will therefore be important, whether internal or external. Individuals performing the validation must possess the necessary skills, knowledge, expertise and experience. For some firms, use of external validation, at least in part, may be a suitable approach.

5.50 Responsibility for the design and continued operation of the internal model is the responsibility of the Board (Article 114) and is linked to the risk management function. The Board needs to consider the nature of the validation process adopted and how their responsibilities might be delegated and reported back, including:

- responsibility for the validation process;
- regular management information on the validation of the internal model being presented to the Board and challenged by it;
- model documentation being adequate to allow independent validation of the internal model.

5.51 As part of the internal model design, the firm must include a regular cycle of validation and necessary updates of the internal model. However, firms may need to update their internal models more frequently than they had planned in some circumstances, for example, as a firm's situation changes (new management, new strategy, new lines of business, new competitor action, unexpected loss emergence, etc).

> Q16: How do firms validate internal models currently – and to what extent do their processes meet the above indicated criteria?

44 Article 118, last para

Documentation

5.52 Documentation of all internal models (both partial and full) should be thorough, sufficiently detailed and sufficiently complete enough to allow knowledgeable third parties to understand the internal model.

5.53 Documentation should set out the current and historical situation of the model and enable new staff to understand and effectively use the model. It should also record the rationale for decisions on assumptions and parameters. The supervisor needs to understand that the firm has adequate documentation, but it is not yet established whether the supervisor will be required to review every part of the internal documentation as a matter of course. However, the supervisor will have the right to ask for more details as part of the approval process.

5.54 The Directive requires firms to set out a detailed account of the theory, assumptions and the mathematical and empirical basis underlying the internal model, though it does not prescribe the media. Firms might consider innovative ways of documenting, using electronic media in addition to paper-based documentation. It would be useful to include reference to papers and other research that have informed the model design, as this would give further evidence of the technical standard of the model. Version control of documentation is an important consideration.

5.55 Firms are required to document where the model does not work effectively. This will show that the firm really understands the limitations of its model; there may be circumstances that the model cannot reflect, for example, extreme market circumstances beyond quantifiable levels, or future (unknown) changes in legislation affecting claims payments.

5.56 Firms are required to agree a model change policy with their supervisor. Firms should note their overriding responsibility to achieve full documentation.

5.57 We have noted that when some insurers have developed their ICA models, they have tended to leave documentation to the final part of the process. In some cases, firms have not implemented processes to keep their documentation up-to-date. We would expect firms to address any documentation gaps as part of their ongoing improvements to their ICA processes. For many firms intending to apply for internal model approval under Solvency II, this may require a substantial effort.

Q17: i One simple guideline for documentation might be that it is extensive enough for the firm to replicate its model in a different platform, and in the absence of original developers. To what extent do firms already have this in place?

ii What do you consider should be the balance between hard and soft copy documentation?

iii Where do you consider the balance should rest between internal model documentation and the ORSA requirement – for example, should use-test compliance be primarily a matter for internal model documentation or for the ORSA?

External models and data

5.58 The use of a 'model or data obtained from a third-party' is as acceptable as the development of in-house tools and this is recognised by the Directive. However, the use of a model or data obtained from a third-party does not exempt firms from complying with the internal models requirements.

5.59 Use of external models and data underlines the importance of management, control, documentation and operational transparency – all of which can be more difficult when using external data or an external model. Integration of external models and/or outsourced modelling activity into the firm's own capital model will be a key area of interest for supervisors, especially with regard to appropriateness to their business, transparency, correlation with other risks and associated sensitivity and scenario testing.

5.60 External data usage (eg, mortality tables, operational risk databases, market knowledge of size of major losses) reflects existing industry practice and contributes to many aspects of risk management. Use of external data to supplement a firm's own data may be useful, especially where this provides additional data points for referencing.

5.61 There is a link between the statistical quality standards, the validation standards and the documentation standards. A firm using an internal model needs to have good data underlying the model and a clear understanding of how far it is able to rely on the data for assessing capital requirements and decision-making. This means that the firm may need to supplement data with expert judgement in some areas and will need to document the extent of this.

5.62 For instance, in life assurance, a firm may use external mortality tables to give the shape of the mortality curve, but use its own experience to provide the overall mortality. Alternatively, firms might use a credibility adjustment to interpolate between its experience and the standard table. The standard table may be adjusted to reflect expected changes in mortality.

5.63 In non-life insurance, adjustments may be needed to reflect a changing business profile, firm-specific terms, conditions and limits as well as the nature of the insured risks.

5.64 It should be noted that most packages/systems/databases include an element of expert judgement, applied in adjusting the data, classifying the data or providing a usable piece of information:

Type of external data	**Element of judgement**
Mortality data	Development of the mortality table, projection of future mortality.
Economic scenario generator	Underlying distributions, calibration to past data, relevance to own business.
Catastrophe model	Probability of extreme events, vulnerability assessments, model scope and application.

5.65 A model obtained from a third-party could take one of several forms, such as:

- licensing a commercial capital management platform from a software supplier (where the firm has to scope, design and programme its tailored version before populating the internal model with data);
- licensing a commercial capital management platform from a software supplier (where the firm outsources the scoping, design and programming of its tailored version before taking over to populate the internal model with own data); and
- licensing specialist software to model specific types of risk (eg, asset risk, credit risk, non-life catastrophe risk, reinsurance optimisation) and/or the outsourcing of such modelling activities

5.66 External model usage can have several advantages, such as:

- access to expert modelling techniques and experience, which might apply to any element of a firm's business or risks (eg, asset models, natural hazard catastrophe models) and provide an enhanced understanding of risk;
- outsourcing of the modelling of specific risks, enabling a firm to concentrate internal resource on the development of critical risk modelling activities; and
- outsourcing of the modelling of minor risks, where a firm does not have the expertise or resource to develop such models itself and where it is preferred not to use the standard approach to setting the SCR.

5.67 Outsourcing creates an additional interface for the firm to manage and it will retain responsibility for the standard of modelling and compliance with all requirements in that context.

Governance of the internal model (all internal model articles)

5.68 Article 118 also touches briefly on the governance of the internal model. The Board of the firm is required to be responsible for the design and operation of the internal model. This body is also responsible for ensuring that the internal model continues to reflect the risk profile of the firm. The Board/administrative body should have within it a good working knowledge of the internal model, including which parts of the business it covers and which decisions it is used in.

5.69 The firm's internal audit function (Article 46) will review control procedures applying to the internal model to ensure that it is up to date, uses reliable data, is developed and operated by competent persons and has appropriate controls, etc, as part of their duty to evaluate the internal controls of the firm. The internal audit function should also review any external elements of the internal model to make sure they are fit for purpose and are being used properly. Finally, the internal audit function should also check that an appropriate segregation of duties and challenge process routinely operates for all areas of the internal model.

5.70 The firm's actuarial function (Article 47) must contribute to the effective implementation of the risk management system (Article 43) in particular with respect to the design, calibration and build of the internal model, with a feedback loop being

used to improve the model. The actuarial function should use the outputs of the internal model, for example in providing an improved understanding of its reserve volatility and may well use the internal model to assess the firm's technical provisions.

5.71 Where elements of the internal model are outsourced (Article 124) the firm will need to ensure that the quality of any outsourced work meets its requirements (as if it were not outsourced) and is appropriate to the nature of their business.

> Q18: Should the internal model be subject to formal independent challenge? If so, what form should this take – for example, peer review, internal audit or external audit?

5.72 Firms using economic capital models should assess their economic capital regularly, both in terms of what is required and what is available (own funds) reflecting changes in risks, asset values, liability values and changes in their business and the external environment. A firm with a complex internal model may run the capital model element in full infrequently and update parts of it where necessary more frequently. Nonetheless, the assessment of the SCR should be run in full at least once a year, as detailed in Article 102. More frequent runs are generally appropriate where outcomes might be expected to differ to a statistically significant extent from the previous mean forecast of the model, or where a firm's own funds are close to regulatory capital requirements. The cycle of re-runs should fit with the firm's own risk reporting processes and systems.

5.73 Designing, building and maintaining an internal model requires expertise in risk management, capital management, regulatory requirements, finance and actuarial knowledge. This may be found entirely within the firm or, in part, externally. The firm should decide on the appropriate balance, given the nature, scale and complexity of the risks it bears.

> Q19: How might firms ensure that senior executives acquire the relevant knowledge and understanding to fulfil the duties imposed upon them in respect of internal models review under the risk management framework? How might this be demonstrated?

6 Implications for supervision of insurance firms

Key stakeholders in this section:

Board/Senior management – be aware

Risk management – active involvement

Finance – contribute

Actuaries – active involvement

Internal audit – be aware

6.1 Solvency II presents changes in the supervision of insurance firms, as well as for firms themselves. We have therefore started our own preparations, to plan for known and anticipated changes in the regulatory regime. While it is too early to specify exactly what will be required, this chapter sets out what we envisage are likely to be some of the more significant implications of Solvency II for us.

Own risk and solvency assessment (ORSA)

6.2 Like many of the requirements of Solvency II, the details of the ORSA process are currently being debated. It is envisaged that the ORSA, which shares many characteristics with ICAS, will become a key supervisory tool.

6.3 As the ORSA has, in certain respects, a wider scope than an ICA, its review will require the development of new processes and new analytical resources in order to assess economic capital modelling and the interaction of risk and capital management. This will require training and resource planning, to ensure that we are able to supervise compliance with ORSA requirements under Solvency II.

Supervisory review

6.4 The Directive highlights the importance of convergence of supervisory practices. CEIOPS will be assessing the practicalities of ensuring consistency of approach between the 27 Member States.

6.5 While the debates on the detail of the Supervisory Review Process (SRP) continue within CEIOPS, we will take the opportunity to review our current ARROW[45] process and guidance to ensure that we can meet future requirements. It is likely that new processes and potentially greater use of cross-disciplinary teams to carry out review assessments will be required.

SCR – the information system (IS) impact

6.6 Firms will need to calculate the standard formula SCR, even once they have obtained internal model recognition. The Directive imposes a requirement for firms to estimate their standard formula SCR for a period of two years after having received approval to use an internal model. Firms that have participated in the QIS exercises should recognise that calculating the standard formula SCR will be more exacting than the 'best efforts' basis usually employed for QIS.

6.7 As the SCR is a new calculation, investment in systems within the FSA will be required to collate this information and allow for analysis, including benchmarking, by type of firm and type of risk/business to ensure consistency and identify possible outliers.

Supervisory approval of internal models

6.8 Under Solvency II, we are required to provide prior approval for the firm to use its internal model for regulatory capital calculation – approval is at the level of the model itself – including its use. In order for a model to be approved, firms need to demonstrate that they satisfy key tests and requirements outlined in the Directive and discussed in Chapter 5. For each requirement placed on firms, there is an equivalent action that will need to be followed up from a supervisory viewpoint.

6.9 The approval process is likely to involve the following as a minimum.

- Demonstrating that there is sufficient discipline in the internal model development and on-going use, such that it is used in the management of the insurer (eg, the internal model is used as a tool for managing the business and therefore the internal model reflects the nature of the business).
- Adequate governance and control surround the internal model (including documentation and data requirements).
- Meeting, among other areas, the use test, statistical quality standards, validation standards, documentation standards and calibration standards for internal model approval.

6.10 Supervisors have an obligation to assess all of these elements. We anticipate the need for additional expertise in this area to match the additional internal model requirements compared with ICAS and hence training of our supervisory and actuarial staff.

6.11 We have carried out a survey of firms' intentions for internal modelling under Solvency II, including when they believe they might be ready to present a draft

45 Advanced Risk Responsive Operating Framework (ARROW).

application for model recognition. This has been carried out in association with the QIS4 exercise. Feedback from stakeholders has been used to help to inform our views on the approvals process for internal models and associated timelines. This is addressed in Annex A.

6.12 Our experience under the Capital Requirements Directive (CRD) has suggested that we should engage with firms for an extended period prior to final model application. This will help to ensure that firms have developed and tested their risk measurement system, capital calculation models and have embedded the necessary supporting systems, risk management and controls into their business operating environment. It should also help to ensure that their internal model is integrated into their risk management activity and reflected fully in their ORSA. This process would help to identify where additional work could be required by firms ahead of a formal application for model approval, thus providing useful messages for firms, as well as facilitating the eventual approval itself. This process may help stagger the approval process and assist both firms and FSA to adapt to the new regime.

6.13 For the avoidance of doubt, this does not mean that we intend to introduce Solvency II early, though we do recognise that some firms might wish to develop their activities in anticipation. We are encouraging firms to adopt this stance and to consider when they anticipate seeking model approval.

Personalisation of elements of the standard formula

6.14 Under the Directive, firms may replace parameters with those that are specific to their circumstances when calculating the life, non-life and special health underwriting risk modules. The Directive requires that personalisation of any parameters will require supervisory approval and that when granting approval supervisors must verify the completeness, accuracy and appropriateness of the data used. For supervision, this is a new activity, which will require setting up new processes and training.

Systems of governance

6.15 The Directive covers requirements on the systems of governance that firms are required to maintain, as set out in Chapter 3. CEIOPS is working towards preparing draft advice to the Commission on appropriate implementing measures. The eventual requirements may well result in changes to existing requirements.

6.16 As the scope of these implementing measures becomes clearer we will be in a better position to assess the potential implications in terms of supervisory work practices, resource, systems and training.

Internal models approval process: early engagement with UK groups and firms

1 Solvency II will require firms to apply for supervisor approval if they want to use an internal model to calculate their regulatory capital. Unless a firm gains approval with effect from implementation of Solvency II – currently planned for 31 October 2012 – then from that date it must follow the standard formula approach for calculation of regulatory capital. This DP has indicated in Chapter 5 the high-level technical and operational standards that firms will need to meet in order to achieve internal model approval. From a practical perspective, we need to start planning the process for considering applications for model approval. We are aware, from discussions in CEIOPS, that other EU supervisors are also starting their planning.

2 It is likely to be advantageous for many firms to secure internal model approval if they can, as it provides a way of combining the required standard of consumer protection with efficiency in the use of capital. However, the standards which are required to be met before model recognition can be granted are rightly demanding. We are therefore committed to working with the industry, to help firms understand what is required and to give useful guidance to help firms with their preparations.

3 Development of the internal models approval process will run alongside the development of the internal models standards themselves, as expressed in the Directive and associated implementing measures. The Directive requires that, for an ensuing period of two years, firms that have received internal model approval will also be required to estimate what their SCR would have been under the standard formula.

Timeline

4 The provisional timeline shows milestones leading up to the implementation of Solvency II that are relevant to preparations for model approval. The Directive provides that once it is implemented, supervisors should decide on applications for model approval 'within six months from the receipt of the complete application' (Article 110.4). We consider that many firms might find it helpful to liaise with us beforehand, as they develop and embed their internal models and prepare their application for approval.

5 It would not be mandatory for firms intending to seek model approval to engage with us early. But many firms have indicated that they would appreciate such engagement and it should help firms to make their applications complete.

6 Firms considering preparation and submission of a request for modelling approval are encouraged to liaise with their supervisor to explain the methodology underpinning their internal model and the role it plays within their business decisions. This will help facilitate the subsequent approval process and enable supervisors to start from an informed position when reviewing internal models for approval.

7 We envisage that firms looking to participate in a first batch of submissions (provisionally timed for receipt by the end of October 2011) would be invited to commence a period of model 'dry-running', provisionally to start between June and November 2010. We plan to reach a view on such first-batch dry run submissions on an informal basis (see paragraph 10 below) by April 2012. That will leave six months for those firms judged unlikely to gain model approval from 31 October 2012 to get in place the arrangements necessary to apply the standard formula for calculation of regulatory capital.

8 We envisage a second batch of early submissions, to be received from April 2012, from firms that had been dry-running from November 2011. There can be no assurance that we would be able to reach a view on such submissions by 31 October 2012. So, firms applying in the second batch should plan for use of the standard formula. The same will apply for all firms planning to apply subsequently to the second batch.

9 Chart A.1 also includes provisional milestone data for the early engagement process, recognising that final European requirements may not emerge before dry-running begins. If the European timetable for adoption and/or implementation of Solvency II shifts from current assumptions, then the timeline will need to be adjusted.

10 As with similar arrangements made for supervisory review of banks' modelling approaches ahead of implementation of the Capital Requirements Directive, we see the plans outlined in this annex as an appropriate use of our resources in the FSMA context. The aim is to provide firms with early feedback on and progressive certainty about, the fitness-for-purpose of their internal modelling, recognising that formal approvals can be given only once the Solvency II provisions are implemented.

11 Firms' views on the practical design of this approach are welcomed.

Stakeholder participation

12 We have been pleased with the contributions made by many firms, the ABI and other stakeholders in our Internal Model Expert Group (IMEG) which is a sub-group of our Industry Standing Group. We welcome participation in the IMEG from any interested firms. The provisional approach outlined in this annex takes account of firms' views expressed in that group.

13 Any firm may apply for internal model approval for calculation of regulatory capital. The internal models regime provides for the use of partial models and applies the

same high level requirements, with some modifications, as for full internal model use. In deciding whether and when to apply, each firm will need to judge its own readiness, taking account of the Solvency II requirements and relevant FSA guidance. Under certain circumstances set out in the Directive supervisors may require a firm to develop an internal model (Article 117).

Fees

14 Firms will need to pay a fee, on which we will consult in advance, accompanying any early modelling submission that they put to us for consideration ahead of the implementation date for Solvency II. We would consult at the same time on any fee payable at the commencement of dry-running by firms planning to make such submissions. We will also consult, in due course, on fees to accompany model approval applications made on or after the implementation date.

Process

15 We will engage with firms as they prepare their internal model applications. Just as for firms themselves, ICAS experience will prove useful to us as we develop our capabilities to meet Solvency II standards.

16 We plan to ask firms in March 2009 to notify us by June 2009 whether they plan to apply for internal model approval and if so when and whether they intend to take advantage of the early engagement process, as outlined in this DP. In March 2009, we also intend to publish feedback received on this DP and more detailed indications of the benchmarks that firms seeking early engagement should plan to have achieved beforehand (see paragraph 17). We understand CEIOPS plans to publish in April 2009 its draft advice on the internal model approval process, with further draft advice being published in subsequent months. This further information should be helpful to firms in making their plans and notifying us about them by June 2009.

Firms' readiness for a dry-running period

17 To make participation in the proposed dry-running meaningful for firms, it will be important that they have made some worthwhile initial progress in preparing internal models. We shall be discussing with the industry, in the IMEG and elsewhere, what kind of qualifying benchmarks should be set in that regard. They are likely to include provision of evidence that, by the point when dry running commences, the firm has:

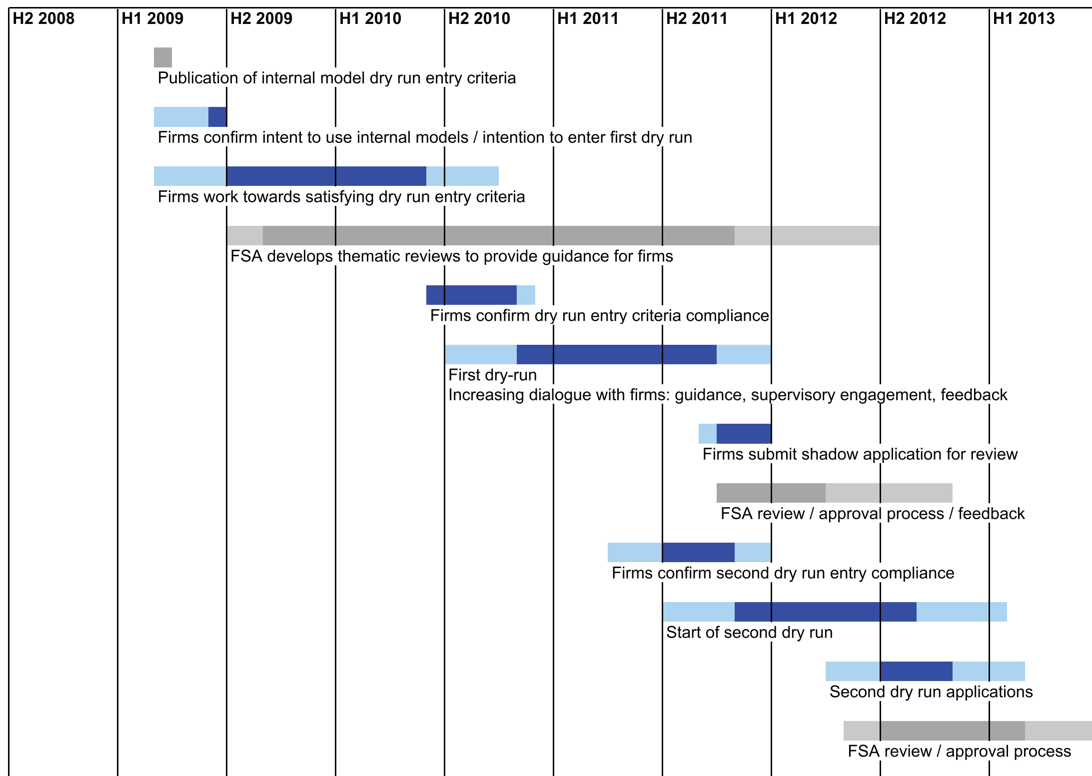
- completed, in respect of its business, the QIS4 spreadsheet, specified by the European Commission in April 2008 and designed to assess the results of applying the standard formula and, additionally, has applied any QIS spreadsheet subsequently specified by CEIOPS or the Commission;
- made substantial progress towards documentation of its model, including an indication of progress towards satisfying the various requirements to be set;
- prepared a Solvency II implementation plan, to get its modelling, risk management and associated systems embedded and fully compliant;

- prepared a plan to develop iteratively its internal model, including periodic recalculation of its SCR, through a systematic process designed to ensure continuing compliance with requirements.

18 We would welcome views on any aspect of that intended approach. In our March 2009 feedback statement we plan to set out some more detailed indications of the benchmarks that firms should aim to have achieved before entry into dry-running.

EEA groups

19 The internal models approvals process for cross-border EEA insurance groups is being discussed within CEIOPS. It is likely to involve supervisors working closely with other regulators, within supervisory colleges. We see this as a positive development and will issue guidance on internal model approval for such groups as the CEIOPS work progresses.



Impact assessment – scope and process

1 Solvency II will involve a number of changes to the way in which insurance firms calculate their regulatory capital and demonstrate operation of their risk management activities, as well as change the way in which they are supervised. Consequently, firms will incur costs both in implementing the changes and in maintaining ongoing requirements. Ahead of the implementation of Solvency II we are legally required to estimate the likely additional costs[46] that firms will face as a result.

2 Firms will face additional costs in two broad categories: capital costs and non-capital (implementation and maintenance) costs. Additional (or reductions in) capital costs may arise from differences between current capital requirements and Solvency II requirements. The recent QIS4 exercise undertaken by CEIOPS provided a preliminary estimate based on the standard formula for the SCR, though further work will be undertaken to measure the potential capital impact more accurately once more detail on future capital requirements is known. This DP does not seek any further enumeration of these additional capital costs.

3 This DP sets out a number of areas where firms could expect to incur additional non-capital costs in preparation for Solvency II. Indications of the costs of developing systems and controls to implement and maintain these issues will be sought from firms.

4 At this stage, we recognise that firms will not be able to provide accurate assessments, but they might be able to provide us with indications of the likely scale or range of costs that might be incurred, or at least identify the process that they will adopt in order to quantify such costs in the future.

5 The following list summarises those areas discussed in this paper that we expect may generate more than minimal additional costs for some firms.

Governance arrangements for Solvency II (Chapter 3):

- risk management system
- own risk and solvency assessment (ORSA)

46 Additional costs are only those costs that firms will incur in implementing Solvency II. For example, a firm that currently uses an internal model may incur costs to adapt this model for use under Solvency II. The additional costs are only those costs of adapting models for use under Solvency II and not the entire cost of developing and maintaining the model, which would be incurred regardless of the introduction of Solvency II.

- internal audit function
- actuarial function
- use of outsourcing
- supervisory reporting and public disclosure
- investment in information systems

Demonstrating adequate financial resources (Chapter 4):

- valuation of assets and liabilities
- regulatory capital requirements – MCR and SCR (standard formula)

Use and approval of internal models (Chapter 5):

- integration with risk management function and framework
- use test
- statistical quality standards
- profit and loss attribution
- validation standards
- documentation
- external models and data
- governance of the internal model

Implications for supervision of insurance firms (Chapter 6):

- own risk and solvency assessment
- supervisory review
- SCR – information system impact
- supervisory approval of internal models

> Q20: Which of these issues do you expect to generate additional costs of more than minimal significance for firms and how do you intend to approach quantification of those costs?
>
> Q21: Which of these issues do you expect will generate the most significant additional costs for firms?
>
> Q22: Where these issues are likely to generate additional requirements to your firm's current regulatory commitments, what do you think the benefits are to firms and their customers?

Questions for feedback

Chapter 3 – Systems of governance (Pillar 2) and reporting requirements (Pillar 3) under Solvency II:

Q1: What views do firms have on the process for the transition from ICA to ORSA?

Q2: How do firms consider supervisors should respond to breach of targeted economic capital requirements?

Chapter 4 – Demonstrating adequate financial resources (Pillar 1)

Q3: What steps are firms taking to develop the appropriate valuation systems to calculate technical provisions under Solvency II? How is this work linked to the implementation of IFRS standards?

Q4: What steps have firms taken to consider whether they have the right quality capital to meet the capital requirements?

Q5: What further guidance, in addition to that in the QIS4 technical specification, would be useful for firms on the application of the SCR standard formula for their business?

Q6: How do you think firms could best demonstrate compliance with the Pillar 1 requirements on a real-time and prospective basis?

Chapter 5 – Use and approval of internal models

Q7: To what extent does this description reflect firms' current and planned future internal models?

Q8 Solvency II is likely to require clear and demonstrable integration between capital measurement systems and capital management. How should firms demonstrate the link

between or integration of their internal model and their risk management framework?

Q9 i. Does this outline cover all the key dimensions of capital management activities within the industry?

ii. How does this compare with current industry practice?

Q10: i. What are firms doing to evaluate and improve data?

ii. What further work (including industry-wide initiatives) might be helpful (for example, flood claims, large motor claims) to improve the completeness of firm data along the lines of the Operational Risk Insurance Consortium (ORIC)?

Q11: What further guidance would be useful on good practice in respect of data?

Q12: Which approaches do firms use within their capital model? How and why are these approaches used? ('Approaches' can be defined or applied at a high level, eg, stochastic/deterministic)

Q13: Do you consider that there are areas where industry or the professions should be focusing their research capabilities to improve internal models? Please provide examples.

Q14: i. Firms are invited to comment on how explicitly their risk appetite links to their credit rating, where applicable.

ii. How do you think we should test the adequacy of internal models – for example, should we require evidence of peer review, benchmark by industry sector, require external audit, run benchmark portfolios or develop our own capital model? What other possibilities do you consider appropriate?

Q15: How do firms presently carry out this activity [profit and loss attribution] and how will it be developed towards Solvency II implementation?

Q16: How do firms validate internal models currently and to what extent do their processes meet the indicated criteria?

Q17: i. One simple guideline for documentation might be that it is extensive enough for the firm to replicate its model in a different platform and in the absence of original developers. To what extent do firms already have this in place?

ii. What do you consider should be the balance between hard and soft copy documentation?

iii. Where do you consider the balance should rest between internal model documentation and the ORSA requirement – for example, should use test compliance be primarily a matter for internal model documentation or for the ORSA?

Q18: Should the internal model be subject to formal independent challenge? If so, what form should this take – for example, peer review, internal audit or external audit?

Q19: How might firms ensure that senior executives acquire the relevant knowledge and understanding to fulfil the duties imposed upon them in respect of internal models review under the risk management framework? How might this be demonstrated?

Annex B: – Impact assessment – scope and process

Q20: Which of these issues do you expect to generate additional costs of more than minimal significance for firms and how do you intend to approach quantification of those costs?

Q21: Which of these issues do you expect will generate the most significant additional costs for firms?

Q22: Where these issues are likely to generate additional requirements to your firm's current regulatory commitments, what do you think the benefits are to firms and their customers?

Glossary of abbreviations and acronyms

ABI – Association of British Insurers

ARROW – Advanced Risk Reporting Operating Framework

CEA – European Insurance and Reinsurance Federation

CEIOPS – Committee of European Insurance & Occupational Pensions Supervisors

CP – Consultation Paper

CRD – Capital Requirements Directive

DP – Discussion Paper

GENPRU – General Prudential Sourcebook

GICR – General Insurance Capital Requirement

IASB – International Accounting Standards Board

IAIS – International Association of Insurance Supervisors

ICA – Individual Capital Assessment

ICAS – Individual Capital Adequacy Standards

ICG – Individual Capital Guidance

IFRS – International Financial Reporting Standards

INSPRU – Insurance Prudential Sourcebook

LTICR – Long Term Insurance Capital Requirement

MCR – Minimum Capital Requirement

ORIC – Operational Risk Insurance Consortium

ORSA – Own Risk & Solvency Assessment

QIS – Quantitative Impact Studies (QIS4 is the fourth such exercise)

RORAC – Return on Risk Adjusted Capital

SCR – Solvency Capital Requirement

SFC – Solvency & Financial Condition Report

UK GAAP – United Kingdom Generally Accepted Accounting Principles

VaR – Value at Risk

WPICC – With Profits Insurance Capital Component

Useful publications

- Directive of the European Parliament and of the Council on the taking up of the pursuit of the business of insurance and reinsurance – Solvency II (the Directive) http://ec.europa.eu/internal_market/insurance/docs/solvency/proposal_en.pdf
- Insurance Sector Briefing: Risk and capital management update, September 2008 http://www.fsa.gov.uk/pubs/other/isb_risk_update.pdf
- Insurance Sector Briefing: ICAS – lessons learned and looking ahead to Solvency II, October 2007 www.fsa.gov.uk/pubs/other/icas-isb.pdf
- Insurance Sector Briefing: Risk management in insurers, November 2006 www.fsa.gov.uk/pubs./other/isb_risk.pdf
- CEIOPS' Issues Paper on the Supervisory Review Process and Undertakings' Reporting Requirements published on 18 August 2008 http://www.ceiops.eu/media/docman/public_files/consultations/CEIOPS-IGSRR-18-08%20Issues%20Paper%20on%20SRP%20and%20Reporting-final.pdf
- CEIOPS' Issues Paper on the Own Risk and Solvency Assessment (ORSA) http://www.ceiops.eu/media/docman/public_files/consultations/IssuesPaperORSA.pdf
- Prudential supervision of insurance firms (December 2002) for the Conference of the Insurance Supervisory Services of the Member States of the European Union http://ec.europa.eu/internal_market/insurance/docs/solvency/impactassess/annex-c02_en.pdf
- CEIOPS Consultation Paper (CP24) Advice on the Principle of Proportionality in the Solvency II Framework Directive Proposal http://www.ceiops.eu/media/docman/public_files/consultations/consultationpapers/AdviceonProportionality.pdf

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The Financial Services Authority
25 The North Colonnade Canary Wharf London E14 5HS
Telephone: +44 (0)20 7066 1000 Fax: +44 (0)20 7066 1099
Website: http://www.fsa.gov.uk

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