Society of Actuaries in Ireland

Creating Effective Actuarial and Risk Management Functions under Solvency II

March 2013

Contents

1. Introduction

1.1 This discussion document was prepared by a cross-practice working party of the Society of the Actuaries in Ireland to consider:

- how the Actuarial Function and Risk Management Function under Solvency II might operate including the interaction between the two functions,
- the challenges that companies might face in transitioning to new organisational and governance structures under Solvency II, and
- what competencies and skills will be required of individuals discharging the responsibilities of these functions.

1.2 The members of the working party are:

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1.3 The structure of this paper is as follows:

- Section 2 provides an executive summary of the paper.
- Section 3 provides an overview of the current roles of actuaries in (re)insurance companies.
- Section 4 considers the responsibilities of the Actuarial and Risk Management Functions under Solvency II.
- Section 5 assesses governance challenges for organisations in structuring Actuarial and Risk Management Functions under Solvency II.
- Section 6 paints a ‘year in the life’ picture of actuarial and risk management cycles.
- Section 7 summarises feedback from practitioners regarding the key challenges that their organisations face in transitioning to Solvency II requirements.
- Section 8 considers the competencies and skills required in the Actuarial and Risk Management Functions.
- Section 9 sets out the working party’s conclusions.

1.4 As a preface to the rest of this document, we note that Solvency II is designed to be a risk-based prudential supervisory regime involving an enterprise-wide view of risks and a risk-based capital system. Solvency II will be a more complex regime than the current regime (Solvency I) with greater oversight requirements. The requirements of Solvency II will be enshrined at three different levels:

Level 1	Solvency II Directive adopted by the Council of the European Union and Parliament
Level 2	Delegated Acts issued by the European Commission
Level 3	Technical Standards and Guidelines issued by EIOPA[1]

1.5 This paper focuses on creating effective Actuarial and Risk Management functions under Solvency II. (Re)insurance undertakings will also need to take account of the requirements for Internal Audit and Internal Control functions when designing their organisational structures under Solvency II.

1.6 References to the current regulatory environment in this paper are to the current Irish regulatory regime (e.g. Appointed Actuary and Signing Actuary systems) and different considerations could apply for (re)insurance undertakings whose head offices are located in other jurisdictions.

[1] European Insurance and Occupational Pensions Authority

2. Executive summary

2.1 The Solvency II Directive formally introduces the concept of an “Actuarial Function” and a ”Risk Management Function” for the first time:

2.1.1 The “Actuarial Function” regime will replace the current statutory Appointed Actuary and Signing Actuary regime for life insurers and non-life/(re)insurers respectively. While the activities required to discharge the new Solvency II responsibilities assigned to the Actuarial Function do not mark a large departure from the activities typically performed by actuaries for life insurers, non-life insurers and reinsurers, the Board will ultimately be responsible for signing off on the solvency balance sheet. This is in contrast to the current Appointed Actuary regime for life insurers where the Appointed Actuary is responsible for certifying policyholder liabilities.

2.1.2 The Solvency II Directive formalises risk management responsibilities under the ambit of the Risk Management Function. In more recent years, there has been a greater focus on formalisation of risk management structures. In addition, the corporate governance code introduced by the Central Bank of Ireland brought in a requirement for Irish (re)insurers to put a Board Risk Committee in place where one did not already exist[2]. Some companies already have risk management functions, although the responsibilities and activities of these functions vary significantly at present. Therefore, the transition for those involved in supporting or discharging the Risk Management Function at present could be more significant relative to their counterparts involved in Actuarial Function transitions.

2.1.3 It is evident from the Solvency II responsibilities assigned to both the Actuarial and Risk Management Functions that an effective risk management system will require input from the Actuarial Function. The requirement for the Actuarial Function to *“contribute to the effective implementation of the risk management”* and for the Risk Management Function to *“facilitate the implementation of the risk management system”* under Solvency II does not necessarily mean that both functions must be organised as separate organisational units. A full or partial integration of these functions could be possible subject to meeting the requirements of Levels 1-3 of the Solvency II framework and addressing any potential conflicts of interest.

2.2 This paper considers four possible organisational options for the governance of the Actuarial and Risk Management functions:

2.2.1 Option 1: A person with responsibility for the Actuarial Function only; a second person with responsibility for the Risk Management Function,

2.2.2 Option 2: The same person is responsible for the Actuarial Function and other business activities (but not the risk management control activities),

[2]The code provides for the possiblity that the Board could carry out the functions that would otherwise be delegated to a Risk Committee, subject to prior approval from the Central Bank of Ireland.

2.2.3 Option 3: The same person is responsible for both the Actuarial Function and the Risk Management Function but with no other responsibilities, and

2.2.4 Option 4: The same person is responsible for both the Actuarial Function and the Risk Management Function and also has other responsibilities.

2.3 The governance challenges posed by the four organisational structures above are considered with particular emphasis on the conflicts of interest that may arise within and between functions under Solvency II.

2.3.1 The structure set out in Option 1 above should not pose any conflicts of interest between the functions but could be difficult to achieve on proportionality grounds for smaller to medium sized (re)insurers.

2.3.2 To the extent that the responsibilities of the Actuarial Function under Option 2 above also involve business operations, an organisation would need to consider the conflicts of interest that could arise and manage these accordingly. In particular, consideration should be given to whether personal performance is based on measures that could conflict with, for example, the technical provisions related role of the Actuarial Function.

2.3.3 In Option 3 above, where the two functions are integrated, the 'two pairs of eyes principle'[3] will be important even if the person responsible for the integrated function has no other responsibilities or is not conflicted because of personal performance measurement. Where required, independence within the structure will be important. For example, if an internal model is used, different people should be responsible within the integrated function for (a) designing and implementing the model compared with (b) testing and validating the model.

2.3.4 To the extent that the responsibilities of the integrated function involve business operations as well as risk and control operations in Option 4, an organisation will need to consider the conflicts of interest that may arise and manage these accordingly. In particular, consideration should be given to whether the measurement of personal performance could conflict with the risk and control aspects of the Actuarial and Risk Management Functions. Depending on the circumstances, any such conflicts could potentially be managed through Executive or Board committee oversight, external review or a combination of approaches.

2.4 The Solvency II responsibilities of the Actuarial and Risk Management Functions will require various activities to be undertaken by these functions, with resulting deliverables. We have developed a sample schedule of activities and deliverables plus illustrative timings in order to provide food for thought to companies from a planning perspective. This illustrative schedule, which we have labelled "a 'year in the life' of the actuarial & risk management cycles", is set out in section 6.

[3] We use this term to mean that one person carries out a particular task and a second person checks the work for quality assurance, where both people are suitably competent for the task in question.

2.5 In conclusion, the skills and competencies required within the Actuarial and Risk Functions are considered.

2.5.1 Solvency II will require greater formalisation of processes and documentation and this is likely to be an area where actuaries will need to enhance their skillsets in transitioning from current actuarial roles to the Solvency II Actuarial Function role.

2.5.2 From a risk management perspective, the Risk Management Function will need to be satisfied that it has access to relevant skills and core competencies including:

- the qualitative and quantitative assessment of risk across all risk types,
- a solid understanding of the core business and a capacity to understand risk in this business context, and
- a strong technical understanding of the internal model or standard formula and how it can be deployed in setting the Risk Appetite of the organisation.

Where an internal model is in use, there is a necessity to understand its assumptions and limitations and the rationale for all risks covered/not covered therein. Finally, the Risk Management Function will need to be able to articulate complex concepts to the Board and internal/external stakeholders.

3. Actuarial & Risk Management roles

3.1 Actuaries have long played roles in the sound management of insurance and reinsurance companies, including for example reserving, capital management, pricing and risk management related roles.

3.2 Some of these roles stem from statutory requirements. At present, the formal actuarial statutory responsibilities are different between life insurers, non-life insurers and reinsurers. In particular, Appointed Actuaries of life assurance companies play a continuous role in monitoring and reporting on the solvency position of life assurance companies and assessing the financial consequences of management proposals and decisions and the potential exposure of the company to the uncertainties of the external environment. On the other hand, the regulatory role of Signing Actuaries is to provide an opinion on the amount of the reserves and, in the case of companies writing reinsurance business, to verify the calculation of the solvency margin annually.

3.3 The roles that individual actuaries play may be directly in support of the statutory responsibilities of Appointed Actuaries in the case of life insurers and Signing Actuaries in the case of non-life insurers and reinsurers. For example, an actuary working in a valuation department will be directly involved in the calculation of technical provisions/reserves, which is central to the statutory certifications provided by both Appointed Actuaries and Signing Actuaries.

3.4 In other cases, the role of individual actuaries may either indirectly relate to statutory responsibilities or may be quite separate from statutory responsibilities. For example, the work of a life product development actuary would support the opinion given by the Appointed Actuary in relation to premium adequacy for life insurers, but this would not be the case for a non-life or reinsurance product development actuary as there is not currently an equivalent statutory premium adequacy opinion required of Signing Actuaries.

3.5 In more recent years, there has been a greater focus on formalisation of risk management structures, including the development of risk management departments separate from actuarial departments. In addition, the corporate governance code introduced by the Central Bank of Ireland brought in a requirement for Irish (re)insurers to put a Board Risk Committee in place where one did not already exist[4]. We are seeing actuaries and other risk management professionals working closely with each other on risk management matters and we are seeing Board Risk Committees becoming more prominent in risk management governance.

[4] The code provides for the possiblity that the Board could carry out the functions that would otherwise be delegated to a Risk Committee, subject to prior approval from the Central Bank of Ireland.

3.6 Companies organise themselves internally in different ways for a variety of reasons – culture, history, size etc. Larger companies may have a number of departments with different actuarial and risk management responsibilities e.g. valuation, product development, reinsurance, operational and so on. Smaller companies might have a single actuarial department responsible for valuation and product development work.

3.7 In some cases, the Chief Actuary may be the same person as the Appointed Actuary or Signing Actuary while in other cases, they may be different people. The Chief Risk Officer might be the same person as the Chief Actuary or there may be separate individuals with responsibilities respectively for actuarial and risk management departments.

3.8 Furthermore, some companies outsource actuarial and risk mangement roles. In the case of actuarial roles, this can range from outsourcing the Appointed Actuary or Signing Actuary role supported by internal company actuarial resource to outsourcing the full 'actuarial function', including the statutory reserved roles.

3.9 Given the range of models outlined above, it is not surprising that the term 'actuarial function' can mean different things to different people at present. Solvency II will formally introduce the concept of an Actuarial Function for the first time. In this context, the Actuarial Function will be defined by responsibilities (or tasks) assigned to it under the Level 1 text[5] rather than being a general term that would mean different things to different people. However, companies will still have flexibility in how they structure themselves from an organisational point of view (e.g. single/multiple departments, internal/external resource), provided that there is clarity regarding where and with whom the responsibilities of the Actuarial Function lie and conflicts of interest are managed appropriately.

3.10 The recitals to the Solvency II Directive make reference to key function holders in the context of fitness and probity. Although not explicitly stated, this suggests that there should be a person who will be responsible for ensuring that the Actuarial Function discharges its responsibilities – or more than one person; the framework does not appear to preclude the possibility of dividing the responsibilities between different persons (provided, in our view, that there is clarity regarding the division of responsibilities), e.g. one person could be responsible for coordinating the calculation of technical provisions while another person could be responsible for providing the required opinions on the overall underwriting policy and the adequacy of reinsurance arrangements. However, this person or persons will not be required to provide external annual certification on an annual basis in the same way that Appointed Actuaries and Signing Actuaries currently do. The responsible person(s) will instead be required to report (internally) to the Board and it is the Board who will have responsibility for signing off on the company's external solvency reporting.

[5] And expanded on under Level 2 and Level 3 texts

3.11 Similarly, the Solvency II Directive will introduce a formal requirement for (re)insurance companies to have a Risk Management Function, the responsibilities of which are defined in the Level 1 text. Some companies already have risk management functions, although the responsibilities and activities of these functions vary and may correspond to greater or lesser degrees to the responsibilities of the Risk Management Function under Solvency II. For example, the current risk management function might have a wide ranging holistic role in the management of all risks across the company. In other cases, the current risk management function might have a narrower brief, e.g. responsibility for operational risk only.

3.12 That is not to say that these companies do not manage their other risks - notably financial and insurance risks – but rather that the management of these risks takes place in different areas or departments of the company. For example, actuarial and finance departments will typically play central roles in managing finance risks. Under Solvency II, there will be a need to formalise risk management responsibilities under the ambit of the Risk Management Function.

3.13 The Solvency II framework envisages a close working relationship between the two functions and potentially the integration or partial integration of both functions, provided that independence is not compromised. In the next section, we consider the responsibilities of the Actuarial and Risk Management Functions under Solvency II.

4. Responsibilties of Solvency II Actuarial and Risk Management Functions

4.1 As noted in the previous section, Solvency II will introduce formal requirements for insurers and reinsurer to establish Actuarial and Risk Management Functions. The Level 1 text of the Solvency II Directive sets out the formal responsibilities of each of these functions while Level 2 measures and Level 3 guidelines will expand further on what will be required of companies.

4.2 The Level 2 text is at quite an advanced stage although it has not yet been finalised, nor has it been made public. EIOPA issued draft Level 3 text to selected stakeholders towards the end of 2011 covering (i) governance of the Actuarial Function and (ii) actuarial guidelines on technical provisions. In this paper, we draw on insights from the draft texts insofar as they are relevant but we are mindful at the same time that the texts are still in draft form, notably the Level 3 text. In addition, EIOPA will shortly issue draft interim guidelines for public consultation on systems of governance (plus other guidelines), which it is expected will include requirements in respect of the Actuarial Function and the Risk Management Function. We also note that the Group Consultatif has issued, for consultation, a draft actuarial standard covering the preparation of the Actuarial Function report under Solvency II.

4.3 In this section, we set out the responsibilities of the Actuarial Function and the Risk Management Function as outlined in the current Level 1 text and we also take account of current expectations vis à vis Level 2 and Level 3 texts.

4.4 We note also for completeness that Solvency II will also require (re)insurers to establish Internal Audit and Internal Control Functions, with the respective responsibilities of these functions also specified in the Level 1 text.

Responsibilities of the Actuarial Function

4.5 Article 48 of the Solvency II Directive sets out the responsibilities of the Actuarial Function. The text of this article is reproduced in Appendix A. The Actuarial Function will have a central role in the determination of the liabilities side of the balance sheet and in contributing to effective risk management. For the purposes of this paper, the responsibilities of the Actuarial Function can be summarised into 3 main areas:

Area of work	Scope
1. Technical Provisions	Coordination of calculation Methodologies & assumptions Data sufficiency & quality Experience analysis Report to the Board on reliability & adequacy

2. Opinions	Underwriting policy Reinsurance arrangements.
3. Risk Management	Contribute to the effective implementation of the risk management system, in particular: (i) with regard to risk modelling underlying the calculation of the Solvency Capital Requirement (SCR) and Minimum Capital Requirement (MCR) (ii) assisting the risk management function in relation to the internal model[6] (iii) contributing to the ORSA process.

4.6 At present, the formal actuarial statutory reponsibilities are different between life insurers and non-life insurers and reinsurers. In particular, Appointed Actuaries of life companies play a continuous role in monitoring and reporting on the solvency position of life assurance companies and assessing the financial consequences of management proposals and decisions and the potential exposure of the company to the uncertainties of the external environment. On the other hand, the regulatory role of Signing Actuaries is to provide an opinion on the amount of the reserves and, in the case of companies writing reinsurance business, to verify the calculation of the solvency margin annually.

4.7 In the case of life insurers, the formal statutory responsibilities of Appointed Actuaries effectively include the first two of the Solvency II Actuarial Function areas outlined above and so actuaries already working in roles supporting Appointed Actuary responsibilities will be well-placed to meet the Solvency II requirements under these headings, although greater formality with regard to validation and documentation of methodologies, assumptions and models will be required under Solvency II.

4.8 Regarding the third area, it is common for actuaries working in life assurance companies to contribute to the financial and insurance risk management of these companies to various degrees, albeit not necessarily labelled as risk managers. It is less common for actuaries to play central roles in operational risk management. Solvency II will bring greater focus on risk management and a need for more formal development of risk management systems.

[6] The level 1 text does not explicitly address this point which is implied but the draft Level 3 text makes this intention clear.

4.9 In the case of non-life insurers and reinsurance companies, the formal statutory responsibilities of Signing Actuaries include providing an opinion on technical provisions and so there is overlap with the first area outlined above. The formal Signing Actuary responsibilities do not extend to providing an opinion on underwriting nor on reinsurance arrangements[7]. However, the involvement of actuaries in this area has increased significantly over the last decade. Similarly, actuaries currently contribute to financial and insurance risk management activities to varying degrees in different non-life and reinsurance companies.

4.10 The following table provides an overview of how the formal Actuarial Function responsibilities under Solvency II compare with current statutory responsibilities for Appointed Actuaries and Signing Actuaries (non-life and reinsurance shown separately):

Solvency II Actuarial Function Responsibilities	**Life Insurers**	**Non-Life Insurers**	**Reinsurers**
1. Work relating to technical provisions			
2a. Underwriting (including pricing) opinion			
2b. Reinsurance opinion			
3. Effective implementation of risk management system			

Overlap with current Appointed Actuary/Signing Actuary statutory responsibilities

Not currently a statutory responsibility but actuaries typically involved

Overlap with some aspects of current Appointed Actuary statutory responsibilities, mainly in relation to financial and insurance risks.

Not currently a statutory responsibility but actuaries involved to varying degress across reinsurance industry – from heavily involved to limited involvement.

[7] Although the Signing Actuary must take into account reinsurance arrangements for the purposes of considering technical provisions net of reinsurance.

4.11 We note for completeness that the current Appointed Actuary responsibilities for Irish life insurers extend beyond those of the Actuarial Function in a number of respects, notably:

4.11.1 Bonus and surrender value recommendations for with-profits business – as set out in the 'Actuarial Standard of Practice Appointed Actuaries and life assurance business' (ASP LA-1) issued by the Society of Actuaries in Ireland;

4.11.2 Annual certification in relation to policyholder illustrations for business written in the Irish market - as set out in the relevant disclosure regulations, 'Life Assurance (Provision of Information) Regulations 2011';

4.11.3 A 'gate-keeper' role in relation to dividend declarations for life assurance companies – as set out in Article 15 of the Insurance Act 1989;

4.11.4 Whistle-blowing responsibilities (there are also whistle blowing responsibilities for Signing Actuaries of non-life insurers).

4.12 It is not yet clear how these responsibilities will be dealt with under Solvency II but these areas will need to be addressed as the implementation of Solvency II will require changes to existing legislation.

4.12.1 One approach would be to extend the role of the Actuarial Function under Solvency II to encompass one or more of these responsibilities.

4.12.2 An alternative approach would be to allocate one or more of these responsibilities to a new designation of actuary. For example, with regard to bonus and surrender value recommendations for with-profits business, a With Profits Actuary role exists in the UK (in addition to the UK Actuarial Function role). This is a policyholder advocate role in the governance of with profits funds.

4.12.3 A combination of allocating some responsibilities to the Actuarial Function and others to a new designation of actuary would be another possibility. Other possibilities may also exist.

Responsibilities of the Risk Management Function

4.13 Article 44(4) of the Solvency II Directive requires that:

"Insurance and reinsurance undertakings shall provide for a risk-management function which shall be structured in such a way as to facilitate the implementation of the risk-management system."

4.14 This suggests that a close working relationship is envisaged between the Risk Management Function, which will have a responsibility to "facilitate the implementation of the risk-management system", and the Actuarial Function, which will have a responsiblity to "contribute to the effective implementation of the risk-management system". This point is further reinforced in the draft Level 2 and 3 texts.

4.15 Article 44 sets out what is required of insurers in relation to risk management and this is reproduced in Appendix B. In particular:

4.15.1 An effective risk management system should comprise "*strategies, processes and reporting procedures necessary to identify, measure, monitor, manage and report, on a continuous basis the risks, at an individual and at an aggregated level, to which they are or could be exposed, and their interdependencies.*"

4.15.2 The risk management system should cover the risks to be included in the calculation of the Solvency Capital Requirement (SCR) as well as risks which are not (or not fully) included in the SCR calculation.

4.15.3 Written policies are required in respect of various risk management areas including at least (i) underwriting & reserving, (ii) asset liability management, (ii) investment including derivatives, (iv) liquidity & concentration risk, (v) operational risk management and (vi) reinsurance & other risk-mitigating techniques.

4.15.4 Where an internal or partial internal model is used, the Risk Management Function will be responsible for a range of activities regarding the model.

4.16 Article 45 requires (re)insurers to conduct an Own Risk and Solvency Assessment (ORSA) on a regular basis as part of the risk management system. The text of article 45 is reproduced in Appendix C.

4.17 The risk management system should comprise a continuous cycle of:

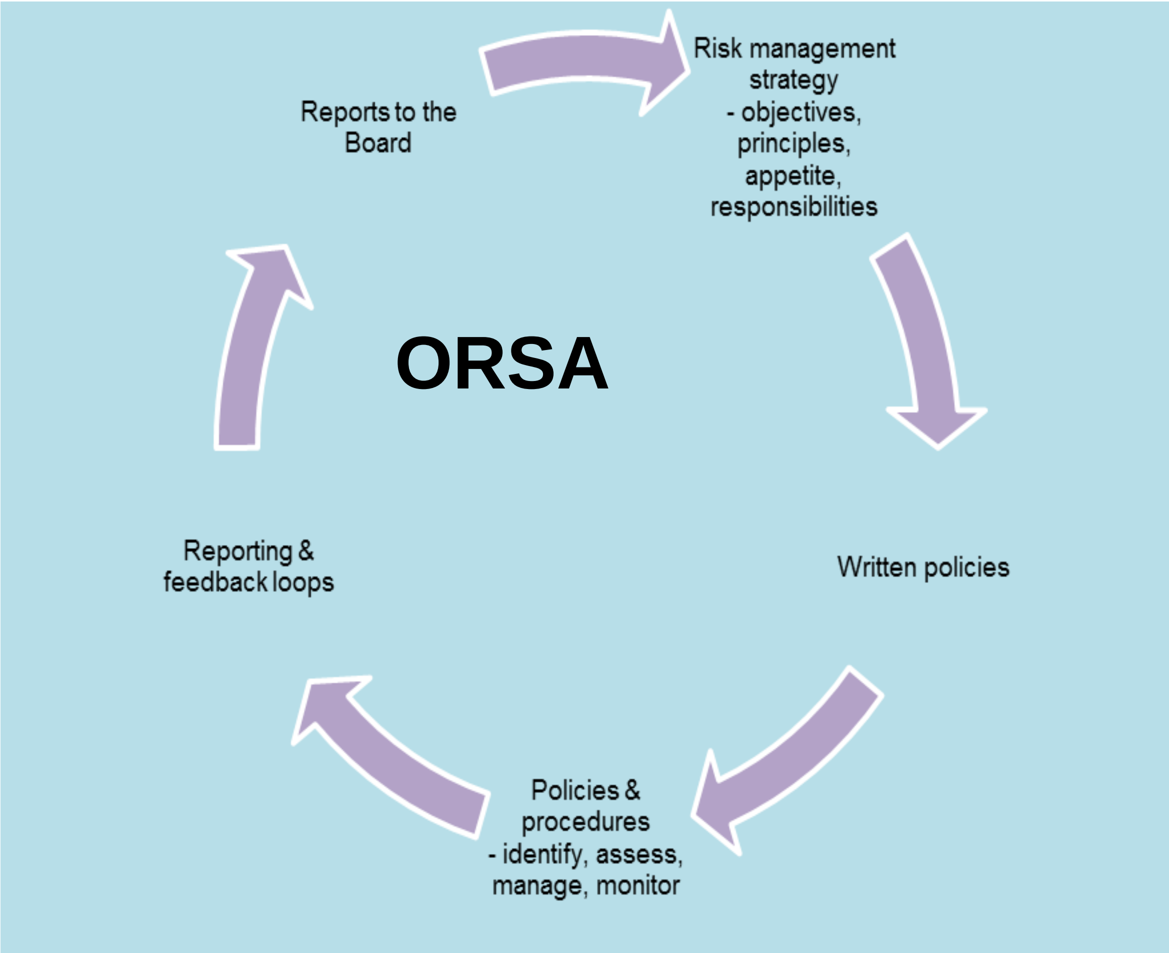
4.17.1 developing a risk management strategy supported by policies and procedures,

4.17.2 measuring, monitoring and managing those risks,

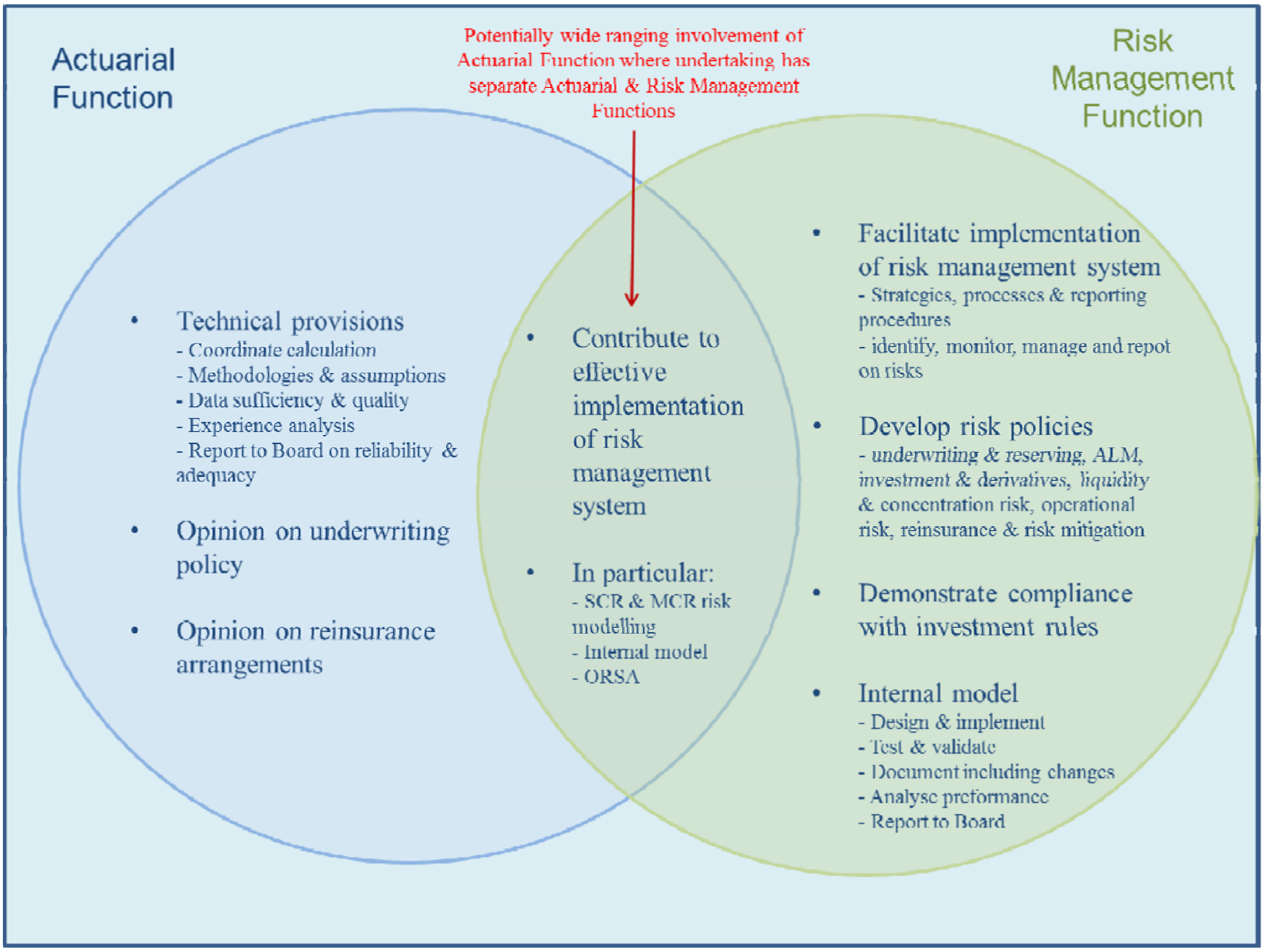
4.17.3 regularly reporting to management and the Board, and

4.17.4 reviewing and refining the risk management system.

4.18 Diagramatically, the risk management system could be presented as follows, with the ORSA process at the heart of the system:



4.19 It is clear that the Actuarial Function and the Risk Management Functions will need to work closely together under Solvency II and indeed the Solvency II framework provides for full or partial integration of the two functions. The following diagram summarises the responsibilities of each of the two functions as defined by the Level 1 text:



4.20 In the next section, we explore the governance challenges for organisations in structuring their Actuarial and Risk Management Functions.

5. Governance challenges under Solvency II

5.1 In this paper we have focused on the Actuarial & Risk Management Functions. As noted above, the Solvency II Directive also requires that (re)insurers establish an Internal Audit Function and an Internal Control Function. In addition, (re)insurers will continue to be free to establish other functions, such as a sales function or a finance function.

5.2 In section 3, we summarised the formal responsibilities of the Actuarial Function and the Risk Management Function under Solvency II. (Re)insurers will have some flexibility in how they structure themselves from an organisational point of view, provided that they comply with the governance and fitness and probity requirements of both Solvency II and of the Central Bank of Ireland[8]. The key point to note is that we are drawing a distinction between the boundaries of *departments* from an organisational perspective and the boundaries of *functions*, noting that functions can transcend departments from a responsibilities and management of conflicts of interest perspective. This section explores:

5.2.1 the governance challenges facing organisations, with particular emphasis on the conflicts of interest that may arise within and between functions under Solvency II, and

5.2.2 the three lines of defence model of risk management, and how conflicts of interests may occur within and between the lines of defence. We take the scenario of the same person carrying responsibility for setting the pricing basis of a product and the reserving basis for solvency reporting as an example.

5.3 We also include (i) a checklist to determine the significance of an apparent conflict of interest and (ii) additional considerations where the activities of either the Actuarial Function or the Risk Management Function are outsourced.

Conflicts of Interest: Solvency II Functions

5.4 Under Solvency II, the Actuarial Function's responsibilities relate to Technical Provisions, Opinions and Risk Management, as outlined in section 3. This is not to say that the actuarial team that performs the Actuarial Function could not encompass other activities too but the company will need to consider conflicts of interest that could arise when reviewing its organisational structure for Solvency II.

[8] Corporate Governance Code and Fitness & Probity requirements

5.5 For example, the personnel responsible for providing the Opinion on Underwriting Policy would ideally be separately identifiable from the personnel carrying out pricing work and the personnel responsible for providing the Opinion on Reinsurance Arrangements would ideally be separately identifiable from the personnel developing reinsurance policies and arrangements. This would mean that potential conflicts of interest between making pricing (or reinsurance) decisions and opining on the adequacy of pricing (or reinsurance) could be more clearly demonstrated than if the same personnel caried out both activities.

5.6 Whether these personnel need to work in completely separate departments and ultimately report to different people will depend on what other checks and balances are in place to manage conflicts of interest. Ideally, the pricing/reinsurance decisions would be performed by different people to those providing the opinions but we recognise that this might not always be possible, particularly for smaller companies. If, for particular reasons, it is not possible to identify separate personnel to undertake the required opinions, we recommend that the conflicts of interest arising be formally acknowledged and that undertakings be able to evidence that these are being managed and mitigated appropriately. Any such conflicts could potentially be managed through Executive or Board committee oversight, external review or a combination of approaches. Ultimately, undertakings need to strike an appropriate balance, when structuring departments, between practical considerations and the need to ensure that the Actuarial Function can discharge its responsibilities appropriately, as set out under Article 48 of the Solvency II Directive.

5.7 While the Actuarial Function must provide an opinion on the underwriting policy (and reinsurance arrangements), we do not believe that the Actuarial Function's independence would be compromised by providing input to the pricing process ex-ante rather than waiting to provide an opinion ex-post, particularly where responsiblity for product pricing does not rest with the person responsible for the Actuarial Function. In fact, an ex-ante review of pricing would be more effective from a risk management perspective than an ex-post review, where underpricing could go undetected until the ex-post review had taken place. In other words, we believe it would be more effective for the Actuarial Function to provide input to the pricing process throughout the course of the year rather than waiting until the end of each year to retrospectively form an opinion on pricing.

5.8 In many cases, we envisage that a single person will be responsible for the Actuarial Function. However, the possibility of dividing the responsibilities of the Actuarial Function across more than one person does not appear to be precluded. It is possible that different people in an organisation could be responsible for work relating to the technical provisions, for providing an opinion on the underwriting policy and for providing an opinion on the reinsurance policy, subject to clarity of responsibilities and appropriate management of conflicts of interest.

5.9 The following sections explore the conflicts of interest that may arise in the following scenarios and how they might be managed:

- Option 1: A person with responsibility for the Actuarial Function only;
- Option 2: The same person is responsible for the Actuarial Function and other business activities (but not the risk management control activities);
- Option 3: The same person is responsible for both the Actuarial Function and the Risk Management Function but with no other responsibilities; and
- Option 4: The same person is responsible for both the Actuarial Function and the Risk Management Function and also has other responsibilities.

5.10 Option 1: If the person responsible for the Actuarial Function is solely responsible for the tasks set out in Article 48 of the Solvency II Directive, do potential conflicts of interest arise?

5.10.1 We do not believe that conflicts of interest should arise in principle between the different areas of responsibility outlined in Article 48 of the Directive. For example, we do not see any conflicts of interest arising in coordinating the calculation of technical provisions (article 48(a)), ensuring the appropriateness of the methodologies and assumptions for calculating the technical provisions (article 48(b)) and assessing the data sufficiency and quality (article 48(c)). Indeed, we note that the draft Level 3 guidelines on the Actuarial Function indicate that ensuring the appropriateness of the methodologies (including assumptions and models) used and assessing the sufficiency and quality of the data are part of the coordination of the calculations.

5.10.2 The draft Level 3 guidelines on the Actuarial Function also note that “coordination” of the calculation of technical provisions does not explicitly include the actual calculation of the provisions. Nor is the Actuarial Function precluded from carrying out the calculations, and in fact the guidelines acknowledge that in some circumstances this may be appropriate on grounds of reasonableness and proportionality.

a) We do not believe a conflict of interest would arise if the Actuarial Function were to calculate the technical provisions. In the case of life assurance undertakings, the calculation of technical provisions could be viewed as a mechanical process once the methodologies, assumptions and data have been set. For non-life assurance undertakings, the calculation of reserves is more intrinsically linked to the methodology, assumptions and data and it is difficult to envisage how the calculation activity could be separated from the establishment of methodologies and assumptions.

b) Ensuring the integrity of the calculations would be important (this would be the case no matter how the work was organised). We note that managing conflicts of interest and ensuring quality assurance are sometimes viewed as the same issue but they are quite different, in our view. Conflicts of interest can arise where a party is involved in different activities that have competing objectives (e.g. pricing and reserving) and in this case these conflicts need to be managed. However, conflicts do not necessarily arise where more than one activity is undertaken by the same party (e.g. establishing calculation methodologies and performing calculations), although quality assurance is important. Applying the 'two pairs of eyes principle'[9] in respect of calculation processes would help ensure appropriate challenge and quality assurance. We would also encourage undertakings to implement processes that create healthy challenge to the methodology- and assumptions-setting processes, whether by internal or external review or otherwise.

5.10.3 We do not see a conflict of interest arising between the activities listed at 5.10.1 above (related to technical provisions) and providing opinions on the underwriting policy (article 48(g)) and the reinsurance arrangements (article 48(h)).

5.11 Option 2: What if the person responsible for the Actuarial Function has other business responsibilities outside of this function (but not risk management control activities) that would present conflicts, such as product pricing?

5.11.1 To the extent that the responsibilities of the person responsible for the Actuarial Function also include responsibilities for business operations, an organisation will need to consider the conflicts of interest that could arise and manage these accordingly. In particular, consideration should be given to whether this person's personal performance is based on measures that could conflict with, for example, the technical provisions-related role of the Actuarial Function. Depending on the circumstances, any such conflicts could potentially be managed through Executive or Board committee oversight, external review or a combination of approaches. An organisation should be satisfied that it can evidence that such conflicts were identified and that the controls agreed and introduced were deemed proportionate to the risks perceived.

5.12 Option 3: What if the same person is responsible for both the Actuarial Function and the Risk Management Function (but does not have other responsibilities outside of the responsibilities of these functions that would present conflicts, such as product pricing)?

5.12.1 Where the two functions are integrated, the 'two pairs of eyes principle'[9] will be important even if the person responsible for the integrated function has no other responsibilities or is not conflicted because of personal performance measurement.

[9] We use this term to mean that one person carries out a particular task and a second person checks the work for quality assurance, where both people are suitably competent for the task in question.

5.12.2 Where required, independence within the structure will be important. For example, if an internal model is used, different people should be responsible within the integrated function for (a) designing and implementing the model compared with (b) testing and validating the model. Level 2 measures will require independence between the development of the internal model and validation of the model in any event, whether or not the Actuarial Function and Risk Management Function are integrated. It is also worth noting that the Risk Management Function is responsible under the Solvency II Directive for the design and implementation of the internal model (article 44(5)(a)) and the testing and validation of the model (article 44(5)(b)). However, undertakings will still need to ensure independence between these two activities as per Level 2 measures.

5.13 Option 4: What if the same person is responsible for both the Actuarial Function and the Risk Management Function and has other responsibilities outside of the responsibilities of these functions that could present conflicts?

5.13.1 To the extent that the person responsible for the integrated function also has responsibility for business operations as well as risk and control operations, an organisation will need to consider the conflicts of interest that may arise and manage these accordingly. In particular, consideration should be given to whether his/her personal performance is based on measures that could conflict with the risk and control operations role of the Actuarial and Risk Management Functions. Depending on the circumstances, any such conflicts could potentially be managed through Executive or Board committee oversight, external review or a combination of approaches. Again, an organisation should ultimately be satisfied that the conflicts have been identified and that controls introduced are proportionate to the risks associated with these conflicts (perceived and/or real).

5.13.2 Where the person responsible for the Actuarial Function or integrated Actuarial & Risk Management Function has other responsibilities, material conflicts of interest could potentially arise. Examples of additional responsibilities that could/are likely to result in conflicts of interest include:

- *Product Pricing* – responsible for setting the pricing basis for products while also setting the reserving basis for solvency reporting purposes;
- *Business Planning/Strategy* – contributing to the business planning process and strategy while contributing to objective risk assessment of business plans and ORSA;
- *Investment Strategy* – providing an opinion on the investment policy while advising on investment decisions;
- *Asset/Liability Management* – there may be a conflict between carrying out ALM operations while providing objective input into assessing and monitoring the ALM process and identifying emerging risks;

- *Reinsurance* – providing input into reinsurance purchasing decisions while opining on the reinsurance arrangements; and/or

- *Embedded Values* – similar considerations to Product Pricing, as set out above, apply.

Conflicts of Interest: Three Lines of Defence Risk Management Model

5.14 Given that many organisations use a three lines of defence risk management model, we believe it is also useful to consider the three lines of defence concept in assessing where conflicts of interest could arise. The first line of defence encompasses the business units/operations, the second line of defence encompasses control and oversight roles and the third line of defence comprises audit and review. Other models might be used by some undertakings but whatever model is used, a common theme is that risk taking is kept separate from risk control.

5.15 Diagramatically, the three lines of defence risk management model can be depicted as follows:

5.16 We acknowledge that there are different views on where the reserving actvities of the Actuarial Function sit within the three lines of defence model, in contrast to pricing activities which are clearly first line of defence activities. Some practioners consider the Actuarial Function's role in reserving to be a first line activity on the basis that the Actuarial Function carries out the reserving activities rather than oversees them. Others consider the reserving activities to be second line of defence as they serve as a check on the amount of risk underwritten by the undertaking and as a secondary check on the adequacy of pricing. We believe that both viewpoints can be validly argued. However, what is more important in our view is that conflicts of interest are managed appropriately regardless of the line of defence in which an actvity is considered to sit.

5.17 As a general rule, conflicts of interest can arise where a department or function is involved in both the first line and the second line of defence. In an ideal world, there would be complete separation of activities between the first and second lines of defence which would limit the scope for conflicts of interest to arise, i.e. where there is no input to business activities from personnel with second line of defence responsibilities.

5.17.1 In practice, there may be instances where it is better from a risk management perspective for the second line of defence to have some input into first line of defence activities, operating in a pre-emptive control role, rather than operating solely in a 'post the event role'. The latter approach could in fact increase the risks within an organisation particularly if it leads to a culture of 'them and us' between the lines of defence and a siloed approach to risk management. In our opinion, organisations will effectively need to defend any deviation from the principle that first and second line duties and personnel should be clearly segregated. Frequent communication between the relevant lines of defence and early stage sign-off is likely to reduce conflict between the different lines.

5.17.2 Actuaries typically contribute to first and second line of defence activities. For example, product pricing activity would fall within the first line of defence while the establishment of technical reserves could be considered to fall within the second line of defence. Again, we acknowledge that different views exist on whether the establishment of technical reserves is a first or second line of defence. However, it is important to recognise the conflict of interest that may exist irrespective of whether a certain activity is deemed to fall within one or other line of defence. A simple example of how a conflict of interest could arise would be where the person setting the pricing basis of a product is also responsible for setting the reserving basis for the purposes of solvency reporting. Complete segregation of product pricing and reserving activities with separate reporting lines would ensure that conflicts of interest of this nature should not arise. We acknowledge that while this could be more difficult to achieve for smaller companies, the risk is potentially higher in these cases. In addition, the complexity of the business written by the organisation should also be considered. Controls that could be considered might include oversight committees, external review/audit and outsourcing to parent companies who may have the requisite resources and familiarity with the business.

5.17.3 This potential for conflicts of interest would be heightened if the responsible person's personal performance were measured by, for example, sales volumes or reported profits. In these cases, aggressive pricing could lead to higher sales volumes which could result in losses for the company (or a delay in reported losses) if the under-pricing remained unchecked through the reserving process.

5.17.4 If on the other hand, personal performance was not in any way linked to sales performance or reported profits, could this conflict of interest be managed appropriately through, for example, committee oversight or external peer review?

5.17.5 In our view, while the potential conflict of interest (actual or perceived) in the examples above would be less with personal performance not linked to sales performance or reported profits, it could be challenging for an organisation to defend its position where pricing and reserving responsibilities are not segregated (particularly as the Actuarial Function must provide an opinion on underwriting policy under Solvency II). In the event of any adverse occurrence, an organisation would need to be satisfied that it could demonstrate and evidence that it had addressed these conflicts and that a reasonable person would conclude that the controls in place were proprtionate to the risks assumed in relation to the potential conflict.

Conflicts of Interest – Checklist

5.18 Where apparent conflicts of interest arise, the following questions might be useful to the Board in making judgement on the significance of the conflict and what checks and balances are in place to manage it:

- What could go wrong?
- How much could such an event cost to rectify? Can the event be rectified, e.g. in the event of reputational damage?
- Do the personnel involved have clear vested interests in the outcome of the decisions made to the extent that their independence would be significantly compromised?
- Similarly, is there a misalignment of performance measurement or remuneration with responsiblities?
- Are the personnel responsible subject to any professionalism requirements, such as a code of conduct?
- Are there Executive/Board committees in place to ensure appropriate decision making and oversight? For example, if the product pricing activity sits within the actuarial team that performs the Actuarial Function but decisions are subject to approval by an executive pricing committee, the potential for conflicts of interest to manifest are less than if the Actuarial Function has sole responsibility for product pricing decisions. In the latter case, the conflicts would be exacerbated if the Actuarial Function's performance/remuneration were linked in some way to sales performance.

- Is periodic external review in place? For example, if pricing activity and the calculation of technical provisions sit within the actuarial team that performs the Actuarial Function but are subject to external review, then this lessens the potential for conflicts of interest to manifest themselves than if external review were not in place.
- Could the organisation defend the perceived conflicts in the event of an issue arising?
- Would the structure withstand regulator or media scrutiny ?
- What would be the cost of clearly delineating responsibilities to demonstrate a clear segregation of duties and responsibilities? If this delineation is not done, is the organisation satisfied that the apparent savings justify the additional risk?

Outsourcing

5.19 The Solvency II framework states that all functions and activities of an undertaking can be outsourced, provided its management body retains ultimate responsibility for discharging its obligations. ‘Outsourcing’ means an arrangement of any form between a (re)insurance undertaking and a service provider where the service provider performs a process, service or an activity which would otherwise be performed by the (re)insurance undertaking itself. Article 49 of the Solvency II Directive, which sets out requirements in respect of outsourcing, is included in Appendix E.

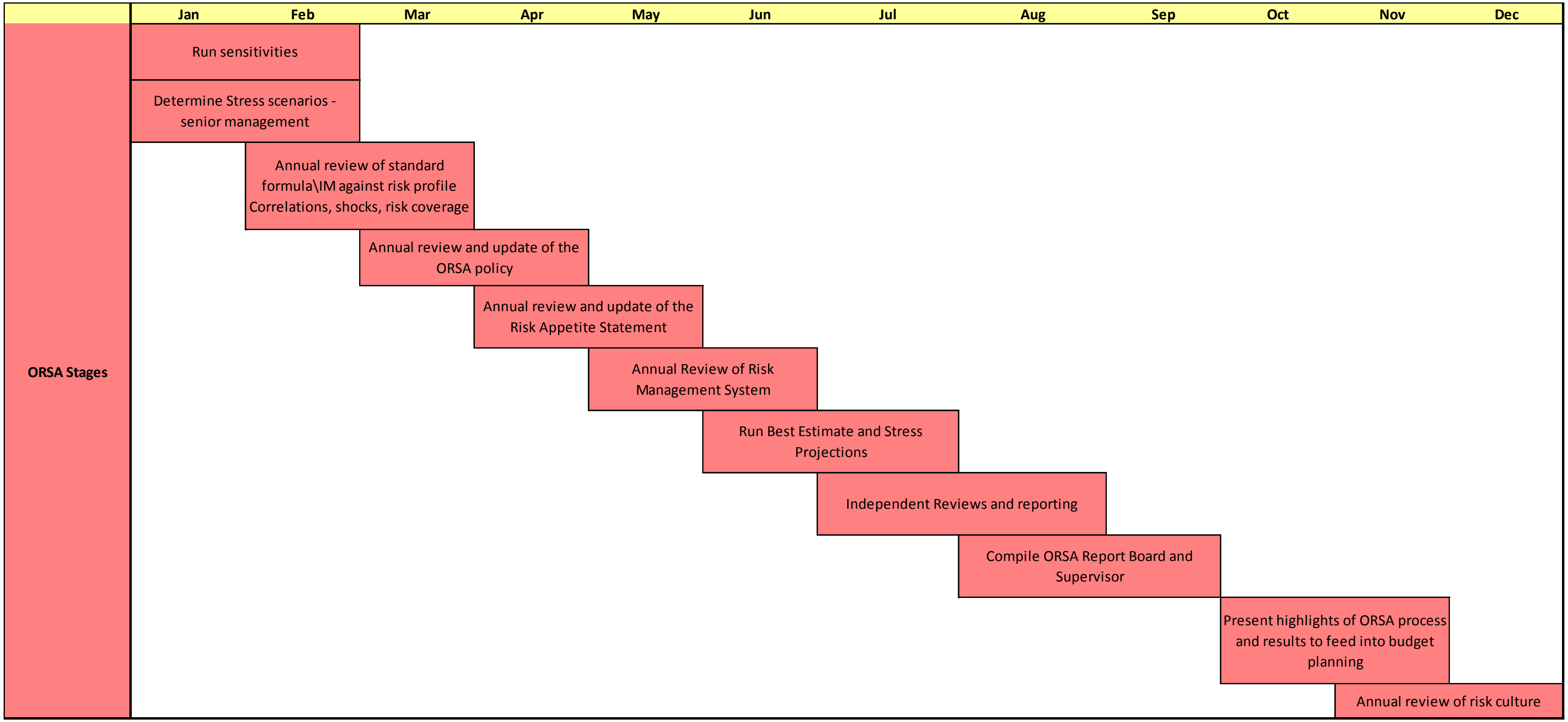
5.20 It is envisaged that Level 3 guidelines will be issued specifying further requirements where critical or important functions (including the Actuarial Function and Risk Management Function), are outsourced. The guidelines are expected to cover areas such as selection of outsourcing providers, inclusion of certain contractual provisions in the outsourcing agreement, how the outsourcing arrangement should be managed and monitored, business continuity planning and so on.

5.21 Where an undertaking outsources its Actuarial Function or Risk Management Function, the undertaking will still need to ensure that conflicts of interest, as described above, are appropriately managed. This could present additional challenges for the (re)insurer in managing conflicts of interest as the (re)insurer will not have direct involvement in the day-to-day running of the outsourced activities. However, outsourcing could also make it easier to demonstrate the management of conflicts of interest if only the activities of the Actuarial Function/Risk Management Function as specified in the Directive are outsourced and the services provider has no other responsibilities to the (re)insurer. That said, this does not necessarily eliminate the potential for conflicts of interest to arise as the outsourcer will ultimately be paid by the undertaking.

6. A ‘year in the life’ of the actuarial & risk management cycles

6.1 In this section, we consider the combined responsibilities of the Actuarial and Risk Management Functions in terms of activities to be undertaken over the course of the financial year. While a (re)insurer may have separate Actuarial and Risk Management Functions, we have chosen to illustrate the combined activities given the significant interaction that is envisaged between the two functions. The following chart shows activities categorised under the different headings that are shown down the left hand side. We have shown when the different activities might take place over the financial year although clearly individual (re)insurers might choose to undertake different activities at different times to those illustrated and might not operate to the calendar year financial year.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Risk Appetite Reporting		Risk Appetite Report Q4			Risk Appetite Report Q1			Risk Appetite Report Q2			Risk Appetite Report Q3	
Risk Policy Reviews & Sign off	Operational Risk Policy	Internal Audit Policy	Investment Policy	Liquidity Risk Policy	Compliance Policy	Reinsurance Policy	Underwriting Policy	ALM Policy	Reserving Policy	Outsourcing Policy	Credit Risk Policy	Risk Management Policy
Risk Reports / Policy Compliance			Review of Compliance with Investment Policy	Review of Compliance with Liquidity Policy		Reinsurance Risk Report	Review of Compliance with Underwriting Policy	Annual review ALM options			Credit Risk Report	
Actuarial Opinions						Reinsurance arrangements	Underwriting Policy					
Technical Provisions	Data quality & sufficiency assessment	1. Set methodologies & assumptions 2. Calculate Technical Provisions 3. Review Technical Provisions	Board update on reliability & adequacy of TP	1. Set methodologies & assumptions 2. Calculate Technical Provisions 3. Review Technical Provisions	Comparison of Best Estimates against experience		1. Set methodologies & assumptions 2. Calculate Technical Provisions 3. Review Technical Provisions			1. Set methodologies & assumptions 2. Calculate Technical Provisions 3. Review Technical Provisions		
Solvency Capital Requirements		Calculate SCR and MCR		Calculate SCR and MCR			Calculate SCR and MCR			Calculate SCR and MCR		
Internal Model			Review design of IM	Test & validate changes	Document any IM changes		Analyse performance + produce summary reports	Board update on IM performance & suggested improvements				


Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
ORSA Stages
Run sensitivities
Determine Stress scenarios - senior management
Annual review of standard formula\IM against risk profile Correlations, shocks, risk coverage
Annual review and update of the ORSA policy
Annual review and update of the Risk Appetite Statement
Annual Review of Risk Management System
Run Best Estimate and Stress Projections
Independent Reviews and reporting
Compile ORSA Report Board and Supervisor
Present highlights of ORSA process and results to feed into budget planning
Annual review of risk culture

6.2 Comments on the different activities are as follows:

Risk Appetite

6.2.1 The Central Bank of Ireland's (CBI) Corporate Governance Code for Credit Institutions and Insurance Undertakings requires the Boards of undertakings to carry out an annual review of the undertaking's risk appetite. The risk appetite should be updated to reflect any material change in the risk profile of the organisation over the previous year. It is expected that key stakeholders would be consulted in the revision of the Risk Appetite Statement.

6.2.2 There should be regular reporting to the Board on how the undertaking is performing relative to the Risk Appetite, i.e. details on any breaches or under-utilisation of risk appetites under various categories should be given. This information should be reflected in the revision of the Risk Appetite Statement as part of a feedback loop. In the sample chart above, we have shown quarterly reviews of performance against risk appetite but companies might, of course, conduct reviews at different frequencies.

6.2.3 We anticipate that the Actuarial and Risk Management Functions (where they are separate) would work closely together in reviewing performance against the Risk Appetite and indeed in the annual review of the Risk Appetite Statement. In practice, the Risk Management Function is likely to coordinate the review of risks to which the company is exposed and the monitoring of exposure to those risks with the Actuarial Function providing input to the identification and quantification of risks, not least because the Actuarial Function will need to take into account the main drivers of risks when developing the methodologies, assumptions and model used to calculate the technical provisions.

Risk Policy reviews and Risk Updates

6.2.4 Insurance and reinsurance companies are required to have written policies in relation to risk management, internal control, compliance, internal audit and, where relevant, outsourcing, each of which have to be reviewed at least annually. In addition, an undertaking might have other written policies in place, including policies on: operational risk, investment and derivatives, liquidity, reinsurance, underwriting, asset liability management, reserving and credit risk.

6.2.5 The review requirement applies to all written policies that undertakings have to implement in order to comply with the Directive. As there may be a significant number of policies, companies might choose to stagger the review of policies throughout the year as indicated in the chart above.

6.2.6 Any review of written policies has to be appropriately documented. The documentation should record who conducted the review and include any suggested recommendations and the decisions subsequently taken by management. Written policies are subject to approval by the Board - this also applies to subsequent changes, unless these are minor.

6.2.7 In addition to drafting and regularly reviewing these policies, the Risk Management Function should regularly provide risk updates on how the undertaking is complying with the written policies from a risk management (as distinct from a compliance) perspective.

6.2.8 Written policies should be in line with the undertaking's overall business strategy and should clearly set out:

a) The goals pursued with the policy,
b) The tasks to be performed and who is responsible for them,
c) The processes and reporting procedures to be applied, and
d) The obligation of the relevant organisational units to inform the Risk Management, Internal Audit, Internal Control and Actuarial Functions of facts relevant for the discharge of their duties.

Actuarial Opinions

6.2.9 The Actuarial Function is required to opine on the underwriting policy and reinsurance arrangements of the undertaking. We understand that it is intended that Level 3 guidelines will not preclude the Actuarial Function from being involved in decisions on underwriting policy and reinsurance arrangements, but in these scenarios more detailed explanations must be provided along with examination of other options. In addition, the Actuarial Function should not have primary responsibility for developing the underwriting policy and reinsurance arrangements.

6.2.10 In our view, we believe it would be appropriate for the Actuarial Function to contribute to the development of the underwriting policy and reinsurance arrangements from an ex-ante review perspective but the Actuarial Function should not ultimately determine these policies/arrangements.

6.2.11 The opinion on underwriting includes an analysis of the sufficiency of premiums to cover future losses. Both opinions should include, when necessary, recommendations regarding the most appropriate strategies to be followed by the undertaking. While the Actuarial Function has responsibility for opining on underwriting policy and reinsurance arrangements, we anticipate that this is another area where the Actuarial and Risk Management Functions will liaise.

6.2.12 In practice, the opinions need to be formally reported to the Board through an annual report from the Actuarial Function, which could also cover items such as methodologies and assumptions for calculating technical provisions, the results of the year-end technical provisions calculation and so on.

6.2.13 During the year, the Actuarial Function should ideally play an ex-ante role in reviewing proposed changes to pricing and/or reinsurance arrangements in addition to contributing to the setting of pricing and reinsurance policy. This would help to avoid problems on either front emerging 'after the event'.

6.2.14 In the sample chart above, we have shown the review of underwriting policy and reinsurance arrangements taking place mid-year as we have aimed to spread the workload of the Actuarial Function throughout the year in the chart. This activity might take place at different times of the year for different companies. In addition, we would expect that the Actuarial Function will review specific pricing and reinsurance proposals throughout the year as they occur, as noted in the previous paragraph.

Technical provisions

6.2.15 As outlined in section 3, the Actuarial Function will have various responsibilities under Solvency II in relation to technical provisions. We anticipate that technical provisions will be determined at least quarterly and so we have shown a quarterly cycle in the sample chart above. This assumes that the year-end technical provisions will be reported to the Board by the end of March.

6.2.16 Level 3 guidelines will provide further guidance on how the Actuarial Function should discharge its responsibilities in practice. One point worth noting is that the Actuarial Function is responsible for coordinating the calculation of technical provisions, rather than the actual calculation of technical provisions. We understand that coordination of the calculation of technical provisions encompasses ensuring the appropriateness of the methodologies and underlying models used as well as the assumptions made in the calculation of technical provisions and assessing the sufficiency and quality of the data used in the calculation of technical provisions.

6.2.17 It will be a matter for each (re)insurance undertaking to decide who should calculate the technical provisions, as long as conflicts of interest are appropriately managed. In our view, conflicts of interest should not necessarily arise if the Actuarial Function calculates the technical provisions in addition to coordinating the calculation (see paragraph 5.10.2). Once the data is of sufficient quality and the methodologies, assumptions and models are in place, the calculation of the technical provisions should be a mechanical process rather than a process involving further judgement. On this basis, we consider that quality assurance is a more pertinent issue than conflicts of interest when it comes to calculation of technical provisions. Therefore it should be reasonable for the Actuarial Function to calculate technical provisions in addition to coordinating the calculation, subject to there being appropriate checks in place to ensure the accuracy of the calculations (based on the methodologies, assumptions, data and models).

Capital Requirements

6.2.18 The Risk Management Function has a responsibility to facilitate the effective implementation of the risk management system. The risk management system should in turn cover the risks to be included in the calculation of the Solvency Capital Requirement (SCR) as well as the risks which are not or not fully included in the calculation thereof.

6.2.19 The Actuarial Function is required to contribute to the effective implementation of the risk management system and it is envisaged that the Actuarial Function will play a role in calculating the SCR and the Minimum Capital Requirement (MCR). The Actuarial Function could alternatively review the calculations of the SCR and the MCR, where it has not been involved in the calculations of these amounts.

6.2.20 As for the Technical Provisions, we have shown quarterly calculations in our sample chart above.

Internal model

6.2.21 The key streams of the internal model process are as follows. These are not sequential steps but rather are undertaken in a parallel or iterative way:

a) Design and implement the internal model;
b) Test and validate the internal model – this includes validating the results, testing results against experience, testing robustness of the model and stress/scenario testing;
c) Document the internal model and changes made – this should be done in parallel to the design and testing streams and the documentation should explain the internal model in terms of the overall risk management system of the undertaking; and
d) Update the Board on the internal model, including any limitations or weaknesses.

6.2.22 The design and implementation of the internal model should be separated from the testing and validation of the model.

6.2.23 The design of appropriate stress and scenario tests is part of the internal model process. While the Risk Management Function will be responsible for taking the lead on this, it would also require significant input and oversight from the Actuarial Function.

ORSA process

6.2.24 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 an undertaking faces, and to determine the Own Funds necessary to ensure that the undertaking's overall solvency needs are met at all times. The ORSA should be an integral part of the business strategy and should be performed regularly, including following any significant change in a (re)insurer's risk profile.

6.2.25 The responsibility for the ORSA lies with the Risk Management Function, although once again it is envisaged that the Actuarial Function will provide significant input. The ORSA is not a single report, prepared once each year. Instead, it is a documented process, carried out throughout the year as shown the in diagram above, i.e. the process is an iterative process on a continuous basis. There is a requirement to report on this process each year to the Board and the Supervisor.

7. Views from practitioners on the challenges in transitioning to Solvency II

7.1 In developing this paper, the working party conducted interviews with senior actuaries in a number of life and non-life direct writers, reinsurers and actuarial consultancies. We sought their views on the challenges they saw in transitioning to Solvency II with a particular focus, although not exclusively, on the issues for the Actuarial Function and the Risk Management Function. We note that some of the views expressed below are not necessarily consistent with aspects of the paper (which reflect the working party's views).

7.2 The main challenges raised by respondents included:

Holistic nature of risk management

7.2.1 For some companies, the focus of the Risk Management Function will need to change. In some cases, the Risk Management Function (or department) is focused on identifying and cataloguing risks in a risk register and reporting these risks to risk committees or Boards. However, there is less emphasis on managing the risks. In other cases, the compliance area has responsibility for risk management and its approach is more of a 'box ticking approach' than a holistic risk management approach.

7.2.2 Under Solvency II the person who will be responsible for the Risk Management Function, typically referred to as the Chief Risk Officer (CRO), will be responsible for decisions on how risks should be managed. Thus, risk management will need to be seen as a key factor in the success of the business.

7.2.3 In addition, the Risk Management Function should balance managing downside risks with taking profitable risks.

7.2.4 The process of developing the Board-approved Risk Appetite Statement and building the processes around this to regularly monitor, measure and manage risks has been a progressive development for many companies in transitioning towards Solvency II.

CRO Competencies

7.2.5 Finding a CRO with the required competencies is seen as an important objective. Key competencies include:

- Strong understanding of the business, including good practical knowledge of operations, underwriting etc;
- Strong quantitative skills, including a good understanding of risk-based capital models;
- Strong communication skills; being able to communicate effectively will be key to ensuring that the role has credibility; and
- Strong leadership – should be prepared to challenge decisions.

7.2.6 It was felt that the CRO's team should include a mix of disciplines including, for example, actuaries, chartered accountants, other risk professionals and legal professionals.

7.2.7 At present, the Appointed Actuary role for life insurers is probably closest to the CRO role - it is a broad role encompassing many aspects of finanical risk management in particular. The gap is probably bigger in respect of the Signing Actuary role for non-life insurers, which is a more restricted role in terms of the statutory responsibilities. However, the Chief Actuary[10], by title or otherwise, for non-life insurers may have a broader role that already encompasses many aspects of risk management.

7.2.8 In addition, the responses included a comment to the effect that the CRO needs to be able to challenge business decisions, especially if the solvency of the undertaking were to be threatened.

Interaction of Actuarial and Risk Management Functions

7.2.9 Contributors have commented that how the Risk Management and Actuarial Functions interact will be key. It will be very important that they work closely together. However, independence of the two functions is also crucial. Understanding what the requirements are to achieve independence and structuring the organisation accordingly are key challenges. The former comments are consistent with the expectations of the EU Commission and EIOPA. It is not a surprise to see from the latter comments that this is seen as a key area of challenge.

Internal Models & Use Test

7.2.10 Solvency II requires the Board members to understand the workings of the internal model. This represents a big increase in responsibilities and what is expected of the Board in terms of knowledge, skills and time. We note that many companies are providing training for their Boards.

Documentation

7.2.11 Preparing for Solvency II requires a lot of documentation. In general, companies do see value in documentation as it reduces errors in processes. However the large increase in documentation requires time and resources. With so much documentation, a company can lose focus on real risk management.

7.2.12 It is important that the principle of proportionality is applied. "The right balance needs to be struck between high value risk management practices and low value 'form filling and report writing' practices".

[10] The Chief Actuary may also be the Signing Actuary.

Outsourcing

7.2.13 For smaller companies in Ireland, outsourcing may be a key part of the business model. If they are to continue to outsource functions, they may need sufficient staff in place to provide appropriate monitoring and control of outsourced activities.

Operational Risk

7.2.14 Operational risk can be challenging to develop and manage. Traditionally, operational risk has been somewhat marginalised compared to more tangible financial risks, even though it has been at the root of many recent high-profile losses.

7.2.15 Operational risk will need to be integrated into the overall risk management system, moving it away from the 'silo' approach where it is looked at in isolation. The idea is that every decision cannot be neatly segmented into one type of risk but will contain elements of many types of risk. This may require a cultural shift at senior management level.

7.2.16 There will be significant challenges in developing methods to quantify the level of exposure to operational risk – in particular to meet the demands of Pillar II. Areas for development include:

- Developing a capital modelling approach appropriate to the individual firms,
- Obtaining sufficient\suitable historical operational loss data internally or externally,
- Developing stress testing techniques for operational risk, and
- Developing in-house expertise in operational risk scenario analysis.

8. Competencies & skills required

Fitness & Probity

8.1 The Solvency II Directive requires that persons who effectively run an undertaking or who have other key functions should be fit and proper. The relevant articles from the Directive are reproduced in Appendix D. For persons to be ‘fit’ to discharge their roles, their *“professional qualifications, knowledge and experience”* must be *“adequate to enable sound and prudent management”*.

8.2 In addition to the Solvency II fitness and probity requirements, insurance and reinsurance companies in Ireland must comply with the Central Bank of Ireland’s fitness & probity requirements.

Actuarial Function

8.3 It is currently a requirement that an Appointed Actuary or Signing Actuary must be a Fellow of the Society of Actuaries in Ireland who holds the relevant practising certificate issued by the Society. However, Article 48(2) of the Level 1 text stipulates in respect of the Actuarial Function that:

“The actuarial function shall be carried out by persons who have knowledge of actuarial and financial mathematics, commensurate with the nature, scale and complexity of the risks inherent in the business of the insurance or reinsurance undertaking, and who are able to demonstrate their relevant experience with applicable professional and other standards.”

Therefore, there will not be a requirement as a matter of course for persons discharging the Actuarial Function to be a member of a professional actuarial body. There will, however, be a requirement for *“relevant experience with applicable professional and other standards”* as well as a requirement to satisfy the general fitness and probity requirements of Solvency II.

8.4 Under Solvency II, it will be a matter for insurance undertakings to satisfy themselves that persons discharging key roles meet the fitness and probity requirements including the article 48(2) requirements in respect of the Actuarial Function and the Risk Management Function. It is envisaged that the Level 3 text will set an expectation that undertakings reference standards or guidance issued by actuarial or other professional bodies as an additional benchmark in assessing fitness and probity of persons working in the Actuarial Function. In many cases therefore, it is likely that there will continue to be an expectation of membership of a professional body for persons working in the Actuarial and Risk Management Functions.

Competencies Required

Actuarial Function

8.5 As outlined in Section 3, the transition for actuaries who currently discharge or support Appointed Actuary or Signing Actuary roles to discharging or supporting an Actuarial Function role should not be an enormous leap.

8.6 As the Signing Actuary role is not as broad as the Appointed Actuary role, there could be a greater transition for some non-life or reinsurance Signing Actuaries where they do not currently opine on pricing policies or reinsurance arrangements. That said, many non-life actuaries already play roles in these areas even though there is not currently a statutory requirement for non-life actuarial opinions on pricing policies or reinsurance arrangements.

8.7 Solvency II will require greater formalisation of processes and documentation and this is likely to be an area where actuaries will need to focus their efforts in transitioning from current actuarial roles to the Solvency II Actuarial Function role.

Risk Management Function

8.8 In contrast, the new formal Risk Management Function and the associated Chief Risk Officer (CRO) role are significantly enhanced in Solvency II relative to the current formal responsibilities in these areas. As previously outlined, the level of direct involvement of the CRO in the day-to-day elements of all areas of Risk Management will depend on the operating model of individual companies. Whereas the Risk Management Function is responsible for the Risk Management System, not all of this may be the direct responsibility of the CRO.

8.9 However, irrespective of the level of direct involvement of the CRO, it is clear that discharging or supporting a robust Risk Management System should include a wide range of competencies. In the table overleaf, we indicate the required skills and competencies by outlining the principle responsibilities of the Risk Management Function under Solvency II:

Solvency II Risk Management Function Responsibilities	Required Skills and Competencies
Internal Model	For (re)insurers using a partial or full internal model, skills and capabilities to: • Design and implement the internal model • Test and validate the internal model • Document the internal model and any subsequent changes made to it • Analyse the performance of the internal model and to produce summary reports • Report on the performance of the internal model, suggesting areas needing improvement and providing a status update on improvements made in respect of previously identified weaknesses
Solvency Capital Requirements	Skills and capabilities to: • Calculate current statutory solvency position (SCR, MCR and Capital Position) • Project overall solvency needs through a series of stress and sensitivity tests allowing for material risks and a (re)insurer's planning horizon, risk appetite, risk tolerance, business strategy and management actions • Included in this, consider dividend and capital injection considerations resulting from the above, in particular business strategy & management actions.
ORSA	Skills and capabilities to: • Develop and embed an ORSA process in the business's strategy setting, business planning and decision making processes • Review the system of Governance taking into account the company's risk profile

	• Define and document the ORSA process and supporting ORSA report to identify, assess, monitor, manage and report the short and long term risks an undertaking faces and to determine the Own Funds to ensure that the undertaking's overall solvency needs are met at all times
	• Included in this, evaluate the use of the Internal Model or Partial Model (where applicable) in the following areas:
	  o Description of Risk Profile
	  o Description of Model and Model Governance
	  o Review of Risks Covered / Not Covered by Model
	  o Assumptions and limitiations of the Internal Model
	  o Assessment of Emerging Risks
	  o Review of Statistical Quality and Calibration of Model
	  o Review P&L Attribution
	  o Analyse performance of model
	  o Review perfomance vs Use Test
	• Analyse standard formula SCR vs Model SCR

Risk Strategy	Skills and capabilities to define a risk strategy including definition of : • Risk Management Culture • Risk Management Goverance, Roles and Responsibilities • Processes for embedding risk management in business planning, new activities & performance management • Process for establishing minimum requirements for the management of the portfolio of risks • Process for conducting the ORSA

Risk Appetite	Skills and capabilities to define a risk appetite: • Process to review existing and emerging risks (e.g. underwriting, catastrophe, market, counterparty default, operational, liquidity, stategic, political) • Where the company has an internal model, using the internal model output to shape the Risk Appetite (risk ranking outputs, return periods for risk, sensitivity analyses, etc) • Establishment & statement of the (re)insuer's risk appetite & risk tolerances • Leading to Qualitative and Quantitative assessment of risks • Review of risk limits at a risk category • Process to ensure (re)insuer behaves within stated risk tolerances by cascading risk appetite, tolerances and limits across the business and ensuring active monitoring of risk exposures versus tolerance limits
Risk Policies	Skills and capabilities to define, review and refine risk policies including, but not limited to: • Underwriting and reserving • Asset-liability management • Investment • Liquidity and concentration risk • Operational risk • Reinsurance
Risk Reporting	Skills and capabilities to: • Provide key information to management through risk committee structures regarding the business's risk exposures and how these are being addressed and with escalation of key risk indicators where appropriate • Explain complex risk concepts to management and staff across the organisation • Engage with regulators

	• Engage with other professionals with key roles across the business, such as actuaries, lawyers and accountants

8.10 There is an increasing number of courses available aimed at developing the skillsets and competencies outlined above. These include the Chartered Enterprise Risk Actuary qualification (CERA), a global risk management qualification which the UK Actuarial Profession is accredited to award to members[11] who meet certain criteria. It is designed to equip actuaries to fulfil roles such as Chief Risk Officer in the insurance and reinsurance fields amongst others.

[11] Most members of the Society of Actuaries in Ireland are also members of the UK Actuarial Profession.

9. Conclusions

9.1 The new Solvency II responsibilities assigned to the Actuarial Function do not mark a large departure from the activities typically performed by actuaries for life insurers, non-life insurers and reinsurers.

9.2 The transition for those involved in supporting or discharging existing risk management roles towards the Risk Management Function requirements under Solvency II could be more significant relative to their counterparts involved in Actuarial Function transitions.

9.3 It is evident from the Solvency II responsibilities assigned to both the Actuarial and Risk Management Functions that an effective risk management system will require input from the Actuarial Function.

9.4 A full or partial integration of these functions could be possible, subject to meeting the requirements of Levels 1-3 of the Solvency II framework and addressing any potential conflicts of interest.

9.4.1 However, if these functions are partially or fully integrated, it will be important to then formally acknowledge conflicts of interest arising and to evidence that these are being managed and mitigated appropriately, i.e. any such conflicts could potentially be managed through Executive or Board committee oversight, external review or a combination of approaches.

9.5 Solvency II will require greater formalisation of processes and documentation and this is likely to be an area where actuaries will need to enhance their skillsets in transitioning from current actuarial roles to the Solvency II Actuarial Function role.

9.6 From a risk management perspective, a broader range of skillsets will be required within this function than would typically exist currently.

9.7 The formal Risk Management Function and the associated Chief Risk Officer role are significantly enhanced in Solvency II relative to the current formal responsibilities in these areas.

Appendix A – Article 48 of the Solvency II Directive (Directive 2009/138/EC)

Article 48

Actuarial function

1. Insurance and reinsurance undertakings shall provide for an effective actuarial function to:

(a) coordinate the calculation of technical provisions;

(b) ensure the appropriateness of the methodologies and underlying models used as well as the assumptions made in the calculation of technical provisions;

(c) assess the sufficiency and quality of the data used in the calculation of technical provisions;

(d) compare best estimates against experience;

(e) inform the administrative, management or supervisory body of the reliability and adequacy of the calculation of technical provisions;

(f) oversee the calculation of technical provisions in the cases set out in Article 82;

(g) express an opinion on the overall underwriting policy;

(h) express an opinion on the adequacy of reinsurance arrangements; and

(i) contribute to the effective implementation of the risk-management system referred to in Article 44, in particular with respect to the risk modelling underlying the calculation of the capital requirements set out in Chapter VI, Sections 4 and 5, and to the assessment referred to in Article 45.

2. The actuarial function shall be carried out by persons who have knowledge of actuarial and financial mathematics, commensurate with the nature, scale and complexity of the risks inherent in the business of the insurance or reinsurance undertaking, and who are able to demonstrate their relevant experience with applicable professional and other standards.

Appendix B – Article 44 of the Solvency II Directive (Directive 2009/138/EC)

Article 44

Risk management

1. Insurance and reinsurance undertakings shall have in place an effective risk-management system comprising strategies, processes and reporting procedures necessary to identify, measure, monitor, manage and report, on a continuous basis the risks, at an individual and at an aggregated level, to which they are or could be exposed, and their interdependencies.

That risk-management system shall be effective and well integrated into the organisational structure and in the decision-making processes of the insurance or reinsurance undertaking with proper consideration of the persons who effectively run the undertaking or have other key functions.

2. The risk-management system shall cover the risks to be included in the calculation of the Solvency Capital Requirement as set out in Article 101(4) as well as the risks which are not or not fully included in the calculation thereof.

The risk-management system shall cover at least the following areas:

(a) underwriting and reserving;

(b) asset–liability management;

(c) investment, in particular derivatives and similar commitments;

(d) liquidity and concentration risk management;

(e) operational risk management;

(f) reinsurance and other risk-mitigation techniques.

The written policy on risk management referred to in Article 41(3) shall comprise policies relating to points (a) to (f) of the second subparagraph of this paragraph.

3. As regards investment risk, insurance and reinsurance undertakings shall demonstrate that they comply with Chapter VI, Section 6.

4. Insurance and reinsurance undertakings shall provide for a risk-management function which shall be structured in such a way as to facilitate the implementation of the risk-management system.

5. For insurance and reinsurance undertakings using a partial or full internal model approved in accordance with Articles 112 and 113 the risk-management function shall cover the following additional tasks:

(a) to design and implement the internal model;

(b) to test and validate the internal model;

(c) to document the internal model and any subsequent changes made to it;

(d) to analyse the performance of the internal model and to produce summary reports thereof;

(e) to inform the administrative, management or supervisory body about the performance of the internal model, suggesting areas needing improvement, and up-dating that body on the status of efforts to improve previously identified weaknesses.

Appendix C – Article 45 of the Solvency II Directive (Directive 2009/138/EC)

Article 45

Own risk and solvency assessment

1. As part of its risk-management system every insurance undertaking and reinsurance undertaking shall conduct its own risk and solvency assessment.

That assessment shall include at least the following:

(a) the overall solvency needs taking into account the specific risk profile, approved risk tolerance limits and the business strategy of the undertaking;

(b) the compliance, on a continuous basis, with the capital requirements, as laid down in Chapter VI, Sections 4 and 5 and with the requirements regarding technical provisions, as laid down in Chapter VI, Section 2

(c) the significance with which the risk profile of the undertaking concerned deviates from the assumptions underlying the Solvency Capital Requirement as laid down in Article 101(3), calculated with the standard formula in accordance with Chapter VI, Section 4, Subsection 2 or with its partial or full internal model in accordance with Chapter VI, Section 4, Subsection 3.

2. For the purposes of paragraph 1(a), the undertaking concerned shall have in place processes which are proportionate to the nature, scale and complexity of the risks inherent in its business and which enable it to properly identify and assess the risks it faces in the short and long term and to which it is or could be exposed. The undertaking shall demonstrate the methods used in that assessment.

3. In the case referred to in paragraph 1(c), when an internal model is used, the assessment shall be performed together with the recalibration that transforms the internal risk numbers into the Solvency Capital Requirement risk measure and calibration.

4. The own-risk and solvency assessment shall be an integral part of the business strategy and shall be taken into account on an ongoing basis in the strategic decisions of the undertaking.

5. Insurance and reinsurance undertakings shall perform the assessment referred to in paragraph 1 regularly and without any delay following any significant change in their risk profile.

6. The insurance and reinsurance undertakings shall inform the supervisory authorities of the results of each own-risk and solvency assessment as part of the information reported under Article 35.

7. The own-risk and solvency assessment shall not serve to calculate a capital requirement. The Solvency Capital Requirement shall be adjusted only in accordance with Articles 37, 231 to 233 and 238.

Appendix D – Articles 42-43 of the Solvency II Directive (Directive 2009/138/EC)

Article 42

Fit and proper requirements for persons who effectively run the undertaking or have other key functions

1. Insurance and reinsurance undertakings shall ensure that all persons who effectively run the undertaking or have other key functions at all times fulfil the following requirements:

(a) their professional qualifications, knowledge and experience are adequate to enable sound and prudent management (fit); and

(b) they are of good repute and integrity (proper).

2. Insurance and reinsurance undertakings shall notify the supervisory authority of any changes to the identity of the persons who effectively run the undertaking or are responsible for other key functions, along with all information needed to assess whether any new persons appointed to manage the undertaking are fit and proper.3.

Insurance and reinsurance undertakings shall notify their supervisory authority if any of the persons referred to in paragraphs 1 and 2 have been replaced because they no longer fulfil the requirements referred to in paragraph 1.

Article 43

Proof of good repute

1. Where a Member State requires of its own nationals proof of good repute, proof of no previous bankruptcy, or both, that Member State shall accept as sufficient evidence in respect of nationals of other Member States the production of an extract from the judicial record or, failing this, of an equivalent document issued by a competent judicial or administrative authority in the home Member State or the Member State from which the foreign national comes showing that those requirements have been met.

2. Where the home Member State or the Member State from which the foreign national concerned comes does not issue the document referred to in paragraph 1, it may be replaced by a declaration on oath – or in Member States where there is no provision for declaration on oath by a solemn declaration – made by the foreign national concerned before a competent judicial or administrative authority or, where appropriate, a notary in the home Member State or the Member State from which that foreign national comes.

Such authority or notary shall issue a certificate attesting the authenticity of the declaration on oath or solemn declaration.

The declaration referred to in the first subparagraph in respect of no previous bankruptcy may also be made before a competent professional or trade body in the Member State concerned.

3. The documents and certificates referred to in paragraphs 1 and 2 shall not be presented more than three months after their date of issue.

4. Member States shall designate the authorities and bodies competent to issue the documents referred to in paragraphs 1 and 2 and shall forthwith inform the other Member States and the Commission thereof.

Each Member State shall also inform the other Member States and the Commission of the authorities or bodies to which the documents referred to in paragraphs 1 and 2 are to be submitted in support of an application to pursue in the territory of that Member State the activities referred to in Article 2.

Appendix E – Article 49 of the Solvency II Directive (Directive 2009/138/EC)

Article 49

Outsourcing

1. Member States shall ensure that insurance and reinsurance undertakings remain fully responsible for discharging all of their obligations under this Directive when they outsource functions or any insurance or reinsurance activities.

2. Outsourcing of critical or important operational functions or activities shall not be undertaken in such a way as to lead to any of the following:

   (a) materially impairing the quality of the system of governance of the undertaking concerned;

   (b) unduly increasing the operational risk;

   (c) impairing the ability of the supervisory authorities to monitor the compliance of the undertaking with its obligations;

   (d) undermining continuous and satisfactory service to policy holders.

3. Insurance and reinsurance undertakings shall, in a timely manner, notify the supervisory authorities prior to the outsourcing of critical or important functions or activities as well as of any subsequent material developments with respect to those functions or activities.