

Summary of papers on Actuarial Function Report (AFR) and Actuarial Function Holder (AFH)

**ACTUARIAL ASSOCIATION OF EUROPE INSURANCE COMMITTEE
(AAE IC)**

NON-LIFE WORKING GROUP (NLWG)

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Introduction

The purpose of this paper is to provide practical insight and guidance on the requirement and expectation of the Actuarial Function Holder (AFH) and the production of the Actuarial Function Report (AFR) for non-life insurance firms to address the requirements of Article 48 of the Solvency II Directive.

There are three levels of Europe-wide regulation behind Solvency II:

- The Directive;
- The Delegated Acts (Level 2 text);
- The Level 3 guidance.

The Directive establishes a system of governance for Insurers: “Member States shall require all insurance and reinsurance undertakings to have in place an effective system of governance which provides for sound and prudent management of the business. That system shall at least include an adequate transparent organisational structure with a clear allocation and appropriate segregation of responsibilities and an effective system for ensuring the transmission of information.” (Commission Directive 2009/138/EC, Article 41, paragraph 1).

Scope and Limitation

This paper summarises the information gathered across various publications on AFR and AFH across Europe. It is a good diverse set of information and as a working document, additional papers and other sources of information can be added to enrich the quality of this paper.

It is also worth noting that whilst a significant aspect of this paper is relevant across Insurance firms, the focus is on Non-Life Insurance firms.

Executive Summary

The AFR covers specific sections:

- Effective actuarial function to the calculations of technical provisions;
- Opinion on overall underwriting policy;
- Opinion on overall reinsurance arrangements;
- Contribute to the effective implementation of the risk management system.

It is important to ensure independence of the AF to avoid conflicts in interest.

It is interesting to note that whilst there is regulatory level standard as defined in the Directive, there is also an exploration on the industry best practice, especially if the source of information is not from a national regulator. It is also useful to note that there is consistency in the guidance from national regulators.

The AFH document also covers specific sections such as:

- The Actuarial Function Holders understanding of Technical Provisions;
- Their opinion on underwriting, reinsurance and risk management;
- Their depth of experience and their influence on decision making.

Approval

This paper was presented and discussed at the Spring 2017 AAE Insurance Committee meeting in Reykjavik on the 12th May 2017 and subsequently approved by the Committee. The AAE Officers approved this paper for publication in August 2017.

Summary table of Publications

No	Source	Date Published	Key messages/ summaries	Technical Provisions	Re-insurance	Underwriting	Risk Management
1	EIOPA	Jan 2015	This document provides guidance on the actuarial function in relation to the calculation of technical provisions, best estimates, future claims and expenses, underlying risks, reinsurance, stress scenarios and underwriting policy.	Information submitted on the technical provisions shall include at least a reasoned analysis on the reliability and adequacy of their calculation and on the sources and the degree of uncertainty of the estimate of the technical provisions. Should also be supported by sensitivity analysis. The AF shall clearly state and explain any concerns it may have concerning the adequacy of technical provisions.	The opinion to be expressed by the actuarial function shall include analysis on the adequacy of the following: The undertakings risk profile and underwriting policy; Reinsurance providers taking into account their credit standing; The expected cover under stress scenarios in relation to the underwriting policy; The calculation of the amounts recoverable from reinsurance contracts and special purpose vehicles.	Consider relevant information provided by financial markets and generally available data on underwriting risks and ensure that it is integrated into the assessment of technical provisions.	N/A
2	CBI AFR	May 2016	The main focus is providing guidance on the responsibilities of the HoAF role as well as what is expected of the AF.	N/A	HoAF should identify any known issues relating to reinsurance arrangements so that it can be considered by the Board. The AF is expected to take into account the important elements of all known agreements, contracts, letters and not just the	HoAF should express an opinion on material underwriting, pricing policies and processes covering all lines of businesses that the undertaking operates in. The AF is not expected to perform reviews of underwriting controls and processes. These should be	N/A

No	Source	Date Published	Key messages/ summaries	Technical Provisions	Re-insurance	Underwriting	Risk Management
					original reinsurance contracts.	carried out by Risk Management or Internal Audit.	
3	CBI AFH	Nov 2015	The central bank intends to introduce a new pre-approved control function (“PCF”) role, the head of Actuarial Function (HoAF) to be responsible for the actuarial function and for the tasks carried out by the function under Solvency II and requirements of the Domestic Actuarial Regime.	Should be experienced in: <ul style="list-style-type: none"> - Coordination of calculation; - Methodologies and assumptions; - Data sufficiency and quality; - Experience analysis; - Reporting to the Board of reliability and adequacy of the calculation of TPs. 	Providing an opinion on the adequacy of the undertaking’s reinsurance agreement.	Providing an opinion on the undertaking’s underwriting policy.	In regard to risk modelling underlying the calculation of the Solvency Capital Requirement (SCR) and Minimum Capital Requirement (MCR); <ul style="list-style-type: none"> - Assisting the risk management function in relation to the internal model (if applicable); - Contributing to the ORSA process.
4	IFoA	2015	To provide insights and suggestions around the requirements of the Solvency II Directive. The paper considers only the requirements of the Actuarial Function.	AF should; coordinate the calculation of technical provisions; assess whether the methodologies and assumptions used in the calculation of the technical provisions are appropriate; compare best estimates against experience and; inform the Board of the reliability and adequacy of the calculation of technical provisions.	Analysing the historical use and outcomes of the reinsurance programme. Forecasting gross and net profit distributions. Identifying any perceived limitations in reinsurance. The process for deciding on the creditworthiness of reinsurers.	The AF should be assessing the adequacy and sustainability of the business model of the undertaking and, through the AFR, provide the Board with informed and reasoned comments to this effect. In arriving at the opinion the actuary should have regard to the risk appetite of the Insurer and whether this is being adhered to in practice.	This section talks through the information around risk management in Article 48 and then refers to the Level 2 draft to highlight the need to produce the AFR and outlines the key activities that the AF should undertake in order to co-operate with the risk management function.
5	Lloyd’s of London	April 2016	This paper is official guidance for Lloyd’s syndicates. The paper splits into 3 sections, guidance on	For calendar year 2016, the submission of report sections covering General, Technical Provisions and	For calendar year 2016, the submission of report sections covering General, Technical Provisions and	For calendar year 2016, the submission of report sections covering General, Technical Provisions and Risk	For calendar year 2016, the submission of report sections covering General, Technical Provisions and

No	Source	Date Published	Key messages/ summaries	Technical Provisions	Re-insurance	Underwriting	Risk Management
			AF reporting, Lloyd's own review template, and lastly the requirements of a syndicate AF (SAF).	Risk Management sections should be provided by 27/05/16. Submission of opinion on underwriting policy and reinsurance adequacy must be made by 01/11/16.	Risk Management sections should be provided by 27/05/16. Submission of opinion on underwriting policy and reinsurance adequacy must be made by 01/11/16.	Management sections should be provided by 27/05/16. Submission of opinion on underwriting policy and reinsurance adequacy must be made by 01/11/16.	Risk Management sections should be provided by 27/05/16. Submission of opinion on underwriting policy and reinsurance adequacy must be made by 01/11/16.
6	NBB	July 2016	Coverage on several topics including the governance of the Actuarial Function. Other key areas highlighted in the paper include governance, AFH requirements, opinion on underwriting policy, opinion on reinsurance arrangements and implementation of risk management system.	N/A	Related to the reinsurance arrangements the actuarial function must deliver a technical opinion on: the adequacy of reinsurance treaties of the company, taking into account the risk profile of the company, the reinsurance policy and the links between these conventions and the technical provisions. Where the undertaking is part of a group, the actuarial function maintains account of any reinsurance.	Related to an opinion on the underwriting policy the AF performs the following tasks: Give an opinion on the pricing, reserving and reinsurance of a product at the launch of new products or changes to existing products; annually analyse the profitability of different products in a context of consistent market and in the context of the financial statements; analyse existing underwriting limits; provide advice recommendations on risk acceptance.	The contribution of the actuarial function to the risk management system is specifically limited to two specific domains: The modelling of the risks and The assessment made in the context of the ORSA.
7	Danish Society of Actuaries	Sept 2012	A paper produced by the Danish Society of Actuaries on their view of the current role of the actuary with comparisons to the actuarial function and the risk management function	The guidelines specify that both the person calculating the technical provisions and the person expressing an opinion on these calculations must possess knowledge of	The actuarial function takes the responsibility for reviewing the technical provisions, for assessing data quality and providing an opinion of underwriting policy. Furthermore, the	N/A	The risk management function should assist the management in managing and controlling risk and therefore it also makes sense for the risk management function to be

No	Source	Date Published	Key messages/ summaries	Technical Provisions	Re-insurance	Underwriting	Risk Management
			under Solvency II. Note that this paper was written in 2012 and therefore might give an outdated view.	actuarial and financial mathematics.	actuarial function must communicate their view on the risk exposure.		in charge of the Own Risk Solvency Assessment (ORSA) A successful implementation of the ORSA process requires that the risk management function possess skills not only to evaluate traditional quantifiable risk factors, but also other types of risk, e.g. strategic risk factors and other factors in a more holistic perspective.
8	Institut des Actuaire	Jan 2017	A comprehensive paper on not just the key sections but the operational aspects of producing an AFR. The paper includes useful examples and case studies to help readers put the theory into context.	In-depth coverage on technical provisions including data, computational and operational issues and governance.	The paper covers the factors that the AFH should review pertaining to the opinion on reinsurance. This includes adequacy of reinsurance cover, risk appetite, credit risk exposure and link between reinsurance and capital.	The paper focuses on underwriting policy and adequacy of premiums. It outlines adverse selection and risk appetite pertaining to opining on the adequacy of underwriting.	N/A
9	Dutch Actuarial Association	Feb 2017	Additional guidance on the AFR on top of the ESAP2 to support the quality and consistency of the AFR by Dutch actuaries.	Extended additional guidance resulting in increased reporting requirements in the AFR.	In line with remarks at TP	In line with remarks at TP	The guidance includes suggested areas for further assistance of the AF with the Risk management function.

Publications

1. EIOPA

Source: Commission Delegated Regulations (EU) 2015/35¹

Summary:

This document provides guidance on the actuarial function in relation to the calculation of technical provisions, best estimates, future claims and expenses, underlying risks, reinsurance, stress scenarios and underwriting policy.

Key Points:

In coordinating the calculation of the technical provisions, the actuarial function shall include all of the following tasks:

- a) apply methodologies and procedures to assess the sufficiency of technical provisions and to ensure that their calculation is consistent with the requirements set out in Articles 75 to 86 of Directive 2009/138/EC;
- b) assess the uncertainty associated with the estimates made in the calculation of technical provisions;
- c) ensure that any limitations of data used to calculate technical provisions are properly dealt with;
- d) ensure that the most appropriate approximations for the purposes of calculating the best estimate are used in cases referred to in Article 82 of Directive 2009/138/EC;
- e) ensure that homogeneous risk groups of insurance and reinsurance obligations are identified for an appropriate assessment of the underlying risks;
- f) consider relevant information provided by financial markets and generally available data on underwriting risks and ensure that it is integrated into the assessment of technical provisions;
- g) compare and justify any material differences in the calculation of technical provisions from year to year;
- h) ensure that an appropriate assessment is provided of options and guarantees included in insurance and reinsurance contracts.

The actuarial function shall assess whether the methodologies and assumptions used in the calculation of the technical provisions are appropriate for the specific lines of business of the undertaking and for the way the business is managed, having regard to the available data.

The actuarial function shall assess whether the information technology systems used in the calculation of technical provisions sufficiently support the actuarial and statistical procedures.

The actuarial function shall, when comparing best estimates against experience, review the quality of past best estimates and use the insights gained from this assessment to improve the quality of current calculations. The comparison of best estimates against experience shall include comparisons

¹ Link to paper: <http://eur-lex.europa.eu/mwg-internal/de5fs23hu73ds/progress?id=2U7EsrRcDx2UTt&kJNdWwCHm27fl8iFR6JQHwRfIIw,&dl>

between observed values and the estimates underlying the calculation of the best estimate, in order to draw conclusions on the appropriateness, accuracy and completeness of the data and assumptions used as well as on the methodologies applied in their calculation.

Information submitted to the administrative, management or supervisory body on the calculation of the technical provisions shall include at least a reasoned analysis on the reliability and adequacy of their calculation and on the sources and the degree of uncertainty of the estimate of the technical provisions. That reasoned analysis shall be supported by a sensitivity analysis that includes an investigation of the sensitivity of the technical provisions to each of the major risks underlying the obligations which are covered in the technical provisions. The actuarial function shall clearly state and explain any concerns it may have concerning the adequacy of technical provisions.

Regarding the underwriting policy, the opinion to be expressed by the actuarial function in accordance with Article 48(1)(g) of Directive 2009/138/EC shall at least include conclusions regarding the following considerations:

- a) sufficiency of the premiums to be earned to cover future claims and expenses, notably taking into consideration the underlying risks (including underwriting risks), and the impact of options and guarantees included in insurance and reinsurance contracts on the sufficiency of premiums;
- b) the effect of inflation, legal risk, change in the composition of the undertaking's portfolio, and of systems which adjust the premiums policy-holders pay upwards or downwards depending on their claims history (bonus-malus systems) or similar systems, implemented in specific homogeneous risk groups;
- c) the progressive tendency of a portfolio of insurance contracts to attract or retain insured persons with a higher risk profile (anti-selection).

Regarding the overall reinsurance arrangements, the opinion to be expressed by the actuarial function in accordance with Article 48(1)(h) of Directive 2009/138/EC shall include analysis on the adequacy of the following:

- a) the undertaking's risk profile and underwriting policy;
- b) reinsurance providers taking into account their credit standing;
- c) the expected cover under stress scenarios in relation to the underwriting policy;
- d) the calculation of the amounts recoverable from reinsurance contracts and special purpose vehicles.

The actuarial function shall produce a written report to be submitted to the administrative, management or supervisory body, at least annually. The report shall document all tasks that have been undertaken by the actuarial function and their results, and shall clearly identify any deficiencies and give recommendations as to how such deficiencies should be remedied.

2. Central Bank of Ireland (CBI) AFR

Source: Consultation on Guidance for (Re)Insurance undertakings on the Head of Actuarial Function (HoAF) Role – Consultation paper 103²

Summary

The CBI has issued a consultation paper to gather comments from interested stakeholders on the Guidance for (Re)Insurance Undertakings on the Head of Actuarial Function Role paper. The main focus of the paper is providing guidance on the responsibilities of the HoAF role as well as what is expected of the AF.

Some key areas highlighted in the paper are given below:

Opinion on underwriting policy

- HoAF should express an opinion on material underwriting, pricing policies and processes covering all lines of businesses that the undertaking operates in. The paper provides a more detailed list of areas the HoAF is expected to express his/her opinion.
- The AF is not expected to perform reviews of underwriting controls and processes. These should be carried out by Risk Management or Internal Audit.

Opinion on reinsurance arrangements

- Reinsurance guidance applies to all forms of reinsurance contracts and alternative risk transfer arrangements (e.g. cat bonds, special purpose vehicles).
- Similar to underwriting policy, the responsibility of reviewing the control and processes of reinsurance arrangements lies with the risk management or internal audit teams. HoAF should however identify any known issues relating to reinsurance arrangements so that it can be considered by the Board.
- The AF is expected to take into account the important elements of all known agreements, contracts, letters and not just the original reinsurance contracts.
- The HoAF is expected to consider a number of points stated in the guidance in order to form an opinion on the adequacy of the reinsurance arrangements and make enquires and put forward any challenges as appropriate.

Other areas of responsibility for the HoAF

- Provide opinion on each ORSA process.
- Provide the risk management function with his/her perspective on the elements of the SCR calculation that are in his/her expertise. i.e. TPs, pricing, data issues.
- Review the Risk Management/Internal Audit function of the assessment of the appropriateness of the internal model/standard formula for undertaking, as well as identify any limitations in the assessment.

3. Central Bank of Ireland (CBI) AFH

Source: Head of Actuarial Function Role³

² Link to paper: [https://www.centralbank.ie/regulation/poldocs/consultation-papers/Documents/CP103%20Guidance%20for%20Re\(Insurance\)%20Undertakings%20on%20the%20Head%20of%20the%20Actuarial%20Function%20Role/CP103%20Guidance%20for%20\(Re\)Insurance%20undertakings%20on%20the%20Head%20of%20Actuarial%20Function%20Role.pdf](https://www.centralbank.ie/regulation/poldocs/consultation-papers/Documents/CP103%20Guidance%20for%20Re(Insurance)%20Undertakings%20on%20the%20Head%20of%20the%20Actuarial%20Function%20Role/CP103%20Guidance%20for%20(Re)Insurance%20undertakings%20on%20the%20Head%20of%20Actuarial%20Function%20Role.pdf)

Summary: The central bank intends to introduce a new pre-approved control function (“PCF”) role, the head of Actuarial Function (HoAF) to be responsible for the actuarial function and for the tasks carried out by the function under Solvency II and requirements of the Domestic Actuarial Regime.

Key Points:

Desired Experience:

- Technical Provisions
Demonstrate a strong understanding of reserving. In particular, should be experienced in:
 - Coordination of calculation;
 - Methodologies and assumptions;
 - Data sufficiency and quality;
 - Experience analysis;
 - Reporting to the Board of reliability and adequacy of the calculation of technical provisions;
 - All areas discussed in the Appendix of the Feedback Statement on the Domestic Actuarial Regime and Related Governance Requirements Under Solvency II (CP92).
- Underwriting Opinion
 - Providing an opinion on the undertaking’s underwriting policy.
- Reinsurance Opinion
 - Providing an opinion on the adequacy of the undertaking’s reinsurance arrangements.
- Risk Management
Contributing to the effective implementation of the risk management system, in particular:
 - With regard to risk modelling underlying the calculation of the Solvency Capital Requirement (SCR) and Minimum Capital Requirement (MCR);
 - Assisting the risk management function in relation to the internal model (if applicable);
 - Contributing to the ORSA process.

Depth of Experience

- It is not necessary for the HoAF to have the same depth of experience in each area mentioned above.
- However, sufficient experience and seniority is required in order to meaningfully challenge the work of others.
- Where a company has issues with the above, HoAF should have sufficient understanding of these areas in order to provide meaningful input.

Influence on Decision Making

³ Link to paper: <http://www.centralbank.ie/regulation/industry-sectors/insurance-companies/solvency2/Documents/Head%20of%20Actuarial%20Function%20Letter%20-%20November%202015.pdf>

- HoAF should provide guidance to the Board on the selection of key actuarial assumptions and should be capable of influencing Board decisions in key areas of actuarial expertise. Should also be capable of driving risk awareness and an appropriate risk culture within the undertaking.

Minimum Competencies for the HoAF Pre-approved control function (PCF) role

- A member of a recognised actuarial association;
- In general, PCF should be carried out by a qualified actuary. In exceptional circumstances a non-qualified actuary that meets all the requirements above may be considered;
- A minimum of five years (within the last 10 years) relevant actuarial experience in total, with some experience in each of the areas listed above;
- A minimum of one year's recent experience of reserving relevant to the market in which the majority of business is written;
- A minimum of one year's experience of any exotic or specialised type of business written;
- Evidence of capability of influencing Board decisions in key areas of actuarial expertise;
- Evidence of capability of driving risk awareness and an appropriate risk culture within the undertaking;
- An employee of the undertaking if it is designated High Impact under PRISM;
- Meets general Fitness and Probity requirements.

Information to be provided by the Regulated Entity

- The regulated Entity is required to submit Evidence that the HoAF complies with steps shown within desired experience above.
- Confirmation that the person holding the HoAF role has provided the Regulated Entity with written agreement to abide by the Fitness and Probity Standards.
- A CV for the person holding the HoAF role.
- If deemed relevant by the undertaking, the undertaking may also submit details of any changes made to support the HoAF in their role e.g. proposed reporting lines, systems of peer review etc.

4. Institute and Faculty of Actuaries

Source: The Institute of Actuaries set up an Actuarial Function Working Group to explore the work that is expected to be carried out by an actuarial function in order to fulfil the requirements of Article 48 of the Solvency II Directive. Five outputs were produced, two of which are accessible papers.

Objectives

Main objectives of the working group:

- Suggest the content and structure of the AF report.
- Organisational structure of the AF, vary depending on scale and nature of organisation.
- Role of AF Holder and recommended qualifications.
- Consider purpose, requirements and expectations of AF from a non-regulatory perspective.
- Consider conflicts of interests and appropriate segregation of responsibilities.

- Consider the extent of liaison with non-actuaries to fulfil some requirements of the Solvency II Directive.

Summary

Paper 1 - Application of the Solvency II actuarial function to general insurance firms, AF Working Party (2015 Report)⁴

The purpose of the paper is to provide insights and suggestions around the requirements of the Solvency II Directive and it is made clear that the paper's intentions is not to advise but simply to make suggestions and observations that may be useful and interesting to the reader. The paper considers only the requirements of the Actuarial Function. Some interesting points found in the paper are as follows:

Key points

- Regulatory level and Best Practice level is mentioned throughout the paper to highlight what is required by regulators and what goes beyond the minimum requirements.
- A survey was conducted to IFoA members to gather views on whether the AF and the AFR should concentrate on delivering the statutory minimum or go further to reflect industry best practice. Some interest points to take away from the results are:
 - Results showed that roughly the same number of respondents agreed and disagreed on the argument that AF and AF report should be keep to the statutory minimum and a similar number of respondents did not have an opinion.
 - 44% of 43 respondents felt that their company had made no significant progress in producing what they believed would be a fully compliant report.
 - 66% felt familiar with requirements regarding providing an opinion on their insurer's reinsurance arrangements however were unsure how to meet them.
- The paper states that the tasks of AF should be defined by a Terms of Reference (ToR). Content for ToR is also suggested.
- The purpose of an AFR is explained and a structure for the report is also suggested. The report then dedicates the following few chapters to provide further insight into each section of the AFR example structure.
- The paper talks about the background needed for the role of HoAF (in other words PRA's Chief Actuary) and often references the Solvency II Directive.
- A section of the paper covers the structure of Governance expected at a firm and highlights needs of independence to avoid conflicts in interest.
- Stakeholder section of the paper covers the primary and secondary stakeholders of an AF and talks through each of the stakeholder's role, their requirements from the AF and the expected interaction with the AF.
- A whole section is dedicated to providing examples of an organisation's AF structure. The diagrams present are really useful and enables the reader to think about what structure is required for their firm.

⁴ Link to paper: <https://www.actuaries.org.uk/practice-areas/general-insurance/disbanded-research-working-parties/actuarial-function>

- The Working Party recognises that Article 48 of the Directive is primarily to ensure good practice, getting the most out of the actuarial skills available, and for insurers to meet requirements without being unduly burdensome.

Technical Provisions

The requirements are reasonably well understood and may not go much further than existing reserving actuary interaction and reporting with the Board. There are, however, additional considerations and assessments required under Solvency II which may not have been addressed previously, such as reporting on the appropriateness of Information Technology systems.

It may be useful or necessary to include additional informative detail which goes beyond the Regulatory Level of sophistication. For example, this might include:

- Background on the business to set the context of the report, for example, classes of business written, maturity of business, etc.
- Whether the business is stable, growing or contracting and any changes in the underlying portfolio.
- Shock events during the year, such as large catastrophes, political events, etc.
- Looking beyond the one year time horizon.
- Operational issues.
- Details of staff changes.

Given their explicit inclusion in the Directive and Delegated Acts, the AFR should explain how the AF has:

- Coordinated the calculation of technical provisions.
- Assessed whether the methodologies and assumptions used in the calculation of the technical provisions are appropriate for the specific lines of business of the undertaking and for the way the business is managed, having regard to the available data.
- When comparing best estimates against experience, reviewed the quality of past best estimates and used the insights gained from this assessment to improve the quality of current calculations.
- The comparison of best estimates against experience shall include comparisons between observed values and the estimates underlying the calculation of the best estimate, in order to draw conclusions on the appropriateness, accuracy and completeness of the data and assumptions used as well as on the methodologies applied in their calculation.
- Informed the Board of the reliability and adequacy of the calculation of technical provisions.

Definition of an opinion

An opinion in this sense is therefore not a formal signing-off of the underwriting policy or reinsurance arrangements in the style of, say, a Statement of Actuarial Opinion. It is more a view on the practices and outcomes in these areas from applying the actuarial skillset.

Opinion on Underwriting Policy

The opinion provided should be supported by reasoned analysis. This may include:

- Comparison of actual profitability and premium rate movements on each business segment compared to business planning expectations.
- Ability to make profit targets, for example, return on equity both at a best estimate and under stressed scenarios (e.g. inflationary claims environment, etc.) or via a loss distribution.
- Explanation on consideration of external and internal influences on premium rates.

The AF should be assessing the adequacy and sustainability of the business model of the undertaking and, through the AFR, provide the Board with informed and reasoned comments to this effect. In arriving at the opinion the actuary should have regard to the risk appetite of the Insurer and whether this is being adhered to in practice.

Opinion on Adequacy of Reinsurance

In order to support the opinion on the adequacy of reinsurance arrangements the AF may wish to consider:

- Analysing the historical use and outcomes of the reinsurance programme.
- Forecasting gross and net profit distributions.
- Identifying any perceived limitations in reinsurance.
- The process for deciding on the creditworthiness of reinsurers.

This analysis should allow the function to assess the adequacy and suitability of the reinsurance cover for the business model of the undertaking. In arriving at the opinion the actuary should have regard to the goodness of fit for the stated risk appetite of the insurer, both in regard to the level of reinsurance cover in place and the resulting credit risk of the reinsurers used.

Paper 2 –Role of the Actuarial Function under Solvency II, AF Working Party (October 2011)⁵

This paper specifically focuses on the AF’s responsibilities in relation to technical provisions but does not consider the technicalities of the valuation of the technical provisions. The paper breaks down Article 48 and talks about each section separately. At time of writing, Level 2 and Level 3 of the regulations were still in draft form.

The authors of the paper recognise Solvency II sets out a list of responsibilities that the AF should fulfil. It is felt that the requirements do not restrict firms from defining their own organisational structure, subject to meeting the minimum regulatory requirements.

Below highlights the **key interpretations** from the paper broken down into the different parts of Article 48, Solvency II Directive: *‘Insurance and reinsurance undertakings shall provide for an effective actuarial function to:’*

‘(a) coordinate the calculations of technical provisions’

Key points

⁵ Link to paper: <https://www.actuaries.org.uk/practice-areas/general-insurance/disbanded-research-working-parties/actuarial-function>

- It is in the view of the authors that there is ‘high degree of freedom’ for an undertaking to organise and structure their Actuarial Function.
- It is also interpreted that the AF can be involved in all parts of calculating TPs **or** chooses to play a limited role and look only at elements of TPs.
- No definition referring to the physical structure of the AF is mentioned, therefore the AF can comprise of one person or a team.
- The underlying tasks and preparatory tasks that the AF should perform in order to meet the responsibility are not defined and therefore unrestricted.
- The Level 2 draft (The delegated Acts) welcomes the idea that the outcome of the calculations of TP will need to be reviewed and this should be carried out by a function or person subject to there being **no conflicts of interest**.

‘(b) Ensure the appropriateness of the methodologies and underlying models used as well as the assumptions made in the calculation of technical provisions’

Key points

- AF is expected to be involved in writing and reviewing the reserving policy along with Board and other interested parties.
- AF is expected to be largely responsible for the choice and implementation of the technology platform for carrying out the estimation of reserves.
- Under Solvency II, the Board **cannot** include any margin in the technical provisions but they are allowed to disagree with the AF regarding the appropriateness of the assumptions.
- If the Board and the AF cannot reach an agreement, even after an iterative cycle of investigation and review, it is understood that Solvency II Directive **implies** that the AF is responsible for setting the final technical provisions as since without the ability to do so will mean that they cannot ensure the methodologies and models are appropriate. **Despite this implication**, the authors of this paper believes that this is not the intention of Solvency II and the responsibility of setting the TPs ultimately sit with the Board.
- Authors expect the **underlying basis** to estimate the Solvency II technical provisions to be **the same** as that used for estimating the reserves for the financial statements, as it is felt that it would be irrational and add no value to the AF to have two independent sets of underlying assumptions with one for Solvency II and the other for financial statements.
- Once TPs are established, back testing is viewed as a good tool to validate the methodology and assumptions used. This could include actual v expected analysis. Significant deviations (sometimes purely due to volatility) should be investigated and actions should be carried out to improve the methodology and assumptions. Patterns of deviation should be tested for to identify if there are any consistent under or over estimating.

‘(c) Assess the sufficiency and quality of the data used in the calculations of technical provisions.’

Key points

- The extent of the actuaries’ responsibilities for internal data is not explicitly stated in this part of the Article. It is in the view of the authors that it is not feasible or appropriate for the AF to be involved in every step of the data processing.

- As the AF is a key user of the internal data, they are in a position to assess: the general quality of data and the impact of any data deficiencies relevant to the assessment of TPs and setting underwriting policy. This assessment will need to be reported to the Board as part of the reporting process.
- If external data is to be used by the AF, depending on use, a level of validation of the data is required. For example, if external data is only used to benchmark internal analyses or assumptions then a lower level of validation is required when compared to using external data to write a whole new class of business.

‘(d) Compare best estimates against experience.’

Key points

- Under this section (and explained in the Level 2 draft) it is expected of the AF to perform actual v expected analyses to confirm the appropriateness of the data, methodology and assumptions used in calculating TPs.
- Any differences between the best estimate and past experience are expected to be explained to management and the risk function, and the likely impacts on both the capital requirements and the Solvency ratio.
- The last of this section provides a list of consequences to capital and solvency ratios given an upwards revision of the technical provision.

‘(e) Inform the administrative, management or supervisory body of the reliability and adequacy of the calculation of the technical provisions.’

Key points

- The Working Party express their view that currently most insurers produce an annual actuarial report addressed to the board covering recommended and booked claims reserves, however due to Solvency II requirements the AFR goes beyond this current reporting practice and a breakdown of the expected content of the AFR is provided.

‘(f) Oversee the calculation of technical provision in the cases set out in Article 82.’

Key points

- In this section, the level at which calculations should be carried out is considered, for example the choice between at an aggregate level or at a more micro level. It is also mentioned that an alternative method of calculating TPs should be devised.

‘(g) Express an opinion on the overall underwriting policy’

Key points

- The Working Party believe that many firms have benefited from actuaries engaging more closely with underwriting and decision makers as they are able to provide a valuable actuarial perspective. It is felt that the new requirements under Solvency II are able to present the opportunities for **better engagement** between actuaries and underwriters.

‘(h) Express an opinion on the overall reinsurance arrangements’

Key points

- It is stressed here that the AF should have an opinion on reinsurance arrangements as these arrangements directly impact the calculations of the technical provisions, the level of liabilities and capital requirements.
- This section goes on further to explain what the authors feel the role of the AF is and the areas the AF should expect to give an opinion on. I.e. Appropriateness of the reinsurance programme to mitigate the company's reserving and underwriting risks.

'(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.'

Key points

- This section talks through the information around risk management in Article 48 and then refers to the Level 2 draft to highlight the need to produce the AFR and outlines the key activities that the AF should undertake in order to co-operate with the risk management function.

'Section 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.'

Key points

- AF needs not to be performed by qualified actuaries or members of the IFOA.
- There is no set number or minimum requirement as to how large the AF should be.
- AF as a whole cannot be outsourced but parts of the work can be.
- AF should be responsible for deciding if they have the appropriate skills for assessments. Actions should be taken to acquire the necessary skills if needed.

5. Lloyd's of London

Source: Guidance on the Actuarial Function, April 2016⁶

Objectives

The purpose of this paper include:

- Instructions and guidance on the requirements of Syndicate Actuarial Function (SAFs), including AFRs.
- Deadlines and requirements for submission of SAF reporting to Lloyds in 2016 calendar year.
- Information on format and timing of Lloyd's review/feedback on the SAF reporting.

⁶ Link to paper:

<https://www.lloyds.com/~media/files/the%20market/operating%20at%20lloyds/solvency%20ii/2016%20guidance/actuarial%20function%20guidance%202016.pdf>

Summary

This paper is official guidance for Lloyd's syndicates. The paper splits into 3 sections, guidance on AF reporting, Lloyd's own review template, and lastly the requirements of a syndicate AF (SAF).

AF Reporting Guidance

- All SAFs are required to produce an AFR at least annually and document tasks undertaken by the SAF, the results of the tasks and any limitations and recommendations relating to the work.
- Lloyd's require AFRs to include an executive summary summarising each element of the work of SAF.
- Each compliance requirement must be explicitly addressed.
- Material from the SAO reports can be used in the AFRs.
- There is clear overlap between AFRs and Lloyds minimum standards requirements, therefore AFRs will be used as compliance to these relevant minimum standards.
- There is no prescribed wording for the opinions on underwriting and reinsurance requirements.
- Timings for the submission of these reports are provided.

Review of Syndicate Actuarial Function Reporting

- For calendar year 2016, the submission of report sections covering General, Technical Provisions and Risk Management sections should be provided by 27/05/16. Submission of opinion on underwriting policy and reinsurance adequacy must be made by 01/11/16.
- Submissions should be made alongside a completed review template which contains Lloyd's review criteria for requirements that are covered in the submission.
- SAFs should address any outstanding actions from the 2015 review in this submission.
- Lloyds will review all submissions it receives from its syndicates and provide feedback to the market.

Requirements of Syndicate Actuarial Function

- The requirements of the SAF from the regulations are broken down into a number of areas. The requirements are included in the Lloyd's template for assessing compliance.
- Guidance on complying with the regulation is provided however as certain aspects of the regulatory requirements remain open to interpretation and this guidance section will continue to develop for future submissions.

6. National Bank of Belgium (NBB)

Source : Paper of the NBB on the governance system of the (re)insurance sector "Circulaire over de prudentiële verwachtingen van de Nationale Bank van België inzake het governancestelsel voor de verzekerings- en herverzekeringsector" of July 2016⁷.

Summary

The NBB has issued a paper with guidance for the Belgian (re)insurers on several topics including the governance of the Actuarial Function. Some key areas highlighted in the paper are given below:

Governance

(Page 10, 30) The Actuarial Function is seen as a second line function according to NBB.

⁷ Link to paper: https://www.nbb.be/doc/cp/nl/2016/20160705_2016-31_bijlage.pdf

(Page 39) AF needs to avoid potential conflicts:

- Assure the AF does not need to review their own work, work that the function is responsible for or work that previously is performed by one of the staff.
- The member of the Board to which the AFH reports cannot also be responsible for the department that does the valuation of the technical provisions.
- (Page 10) The CRO is, as a member of the board, responsible for the Risk Management function. If the total balance sheet of the insurer is less than € 3BLN NBB allows that the CRO is also responsible for the Actuarial Function and Compliance function (in line with allowance in SII regulation). If the balance sheet total is larger, a formal NBB application with sufficient motivation is required.

AFH requirements

(Page 39)

- The AF should be led by a manager (AFH) who meets the legal requirements for professional reliability and has the expertise in the field of actuarial science.
- The AFH needs to be assessed by the NBB on his/her competence and professional integrity.

Opinion on underwriting policy

(Page 36) Related to an opinion on the underwriting policy the AF performs the following tasks:

- Give an opinion on the pricing, reserving and reinsurance of a product at the launch of new products or changes to existing products;
- annually analyse the profitability of different products in a context of consistent market and in the context of the financial statements;
- analyse existing underwriting limits;
- provide advice recommendations on risk acceptance.

Opinion on reinsurance arrangements

(Page 37) Related to the reinsurance arrangements the actuarial function must deliver a technical opinion on:

- the adequacy of reinsurance treaties of the company, taking into account the risk profile of the company, the reinsurance policy and the links between these conventions and the technical provisions.
- Where the undertaking is part of a group, the actuarial function maintains moreover account of any reinsurance within the group.

Implementation of risk management system

(Page 37) The contribution of the actuarial function to the risk management system is specifically limited to two specific domains:

- The modelling of the risks and
- The assessment made in the context of the ORSA.

7. Danish Society of Actuaries

Source: Position paper on the role of the actuary under Solvency II⁸

Summary:

A paper produced by the Danish Society of Actuaries on their view of the current role of the actuary with comparisons to the actuarial function and the risk management function under Solvency II.

Note that this paper was written in 2012 and therefore might give an outdated view.

Formal role of non-life actuary

Legislation does not explicitly mention an actuarial function, an appointed actuary or risk management function. However, it does require effective management including specific issues on the governance structure:

- Implement clear organisational structure and delegation of responsibility.
- Implement effective procedures in order to identify, manage, monitor, and report relevant risk factors.
- Ensure adequate resources available to execute the business.
- Ensure procedures and discharge certain functions in order to handle potential conflicts of interest.

Also requires that all insurers have access to sufficient technical expertise and skills to be able to calculate the technical provisions.

Informal role

Best practice in the non-life industry very much depends on scale and complexity of the individual business.

Calculating vs. being responsible for technical provisions

The guidelines specify that both the person calculating the technical provisions and the person expressing an opinion on these calculations must possess knowledge of actuarial and financial mathematics.

The Actuarial Function and Governance

The staff of the actuarial function and the persons calculating technical provision must possess adequate skills. The same requirements are essential for persons giving and reporting an opinion.

Persons giving and reporting an opinion must act independently and free from management interference. Must also report their opinion to the administrative, management, Board of directors and regulator – four eyes principle. (with review either from within the actuarial function or from an independent function)

⁸ Link to paper:

http://www.actuaries.org/CTTEES_COMMUNICATIONS/Documents/Danish%2020120917%20Position%20Paper.pdf

The actuarial function compared to the non-life/ reinsurance actuary

The actuarial function takes the responsibility for reviewing the technical provisions, for assessing data quality and providing an opinion of underwriting policy. Furthermore, the actuarial function must communicate their view on the risk exposure.

The risk management function and governance

The risk management function should assist the management in managing and controlling risk and therefore also makes sense for the risk management function to be in charge of the Own Risk Solvency Assessment (ORSA)

A successful implementation of the ORSA process requires that the risk management function possess skills not only to evaluate traditional quantifiable risk factors, but also other types of risk, e.g. strategic risk factors and other factors in a more holistic perspective.

The skills of the actuary under Solvency II

- Contribute to the implementation, quantitative and qualitative analyses and the reporting required by the Solvency II regulation.
- Also highly qualified to add value to the management of the business by providing objective opinion based on their expertise and thereby ensure that the Board of directors and executive management are in control of the risk exposure of the insurer.

8. Institut des Actuaire, France

Source: Actuarial Function Working Group – The Actuarial Function⁹

Summary:

Key Points: This paper intends to shed light on technical provision, underwriting policy and reinsurance policy.

Technical Provision

To ensure the completeness, the AF should:

- Provide an overall description of the business covered in the calculation of technical provisions (mapping) as well as assets in cases where these are used in the calculation.
- Check to see if technical provisions for segments or products where there are premiums, claims or provisions are in the statutory accounts and explain the reasons for which they might not be applicable.
- Verify that the new products or portfolios have been taken into account in the calculation of the technical provisions.

The Quantitative Reporting Templates (QRT) should quantify the variation of best estimates (BE) according to different pre specified axes.

Computational process/ Governance

The ARF must be able to perform practical tasks and discuss the assumptions and models used in the system of governance.

⁹ Link to paper: To be provided

Suggestions of work to implement

Understanding of methodologies, the underlying models and assumptions used for the calculation of technical provisions, as well as the appropriateness, completeness, accuracy and the quality of the data used.

The system of governance of the Technical Provisions (TPs) is based on two levels of validation. The first level is an operational level which validates the models and assumptions used for the calculation of the TPs. This also includes the quality of the data through test reviews. Finally, there's a collective Committee validation of the results showing the output of the TPs tests.

Review of data sources and available data granularity

According to articles R354-6 or R356-50 of the Insurance Code, the actuarial function must "take note of the adequacy and quality of the data used for the calculation of technical provisions".

Governance and documentation

The actuarial function needs to ensure that sufficient and up-to-date documentation is used to cover the following points:

- Description of the governance of data and the associated terminology;
- Written policies on the quality of the data and definition of criteria of quality of data (quantitative and qualitative);
- Description of the systems, databases, files structures, processes and data dictionaries;
- Description of the extraction of data, the use of information centres, treatments performed on data (including their aggregation), the planning and the frequency of these operations;
- Mapping of controls on the data used for the calculation of provisions;
- Reports of the committees and of the decisions taken;
- Minutes of revenue in the case of changes, software development or creations of products;
- Reports on the assessment of the quality of data sign-off;
- Inventory of the problems identified at all levels, with a measure of impact wherever possible, and monitoring of it;
- Evidence of the communication of the data quality issues identified by the services that use the data to the Department or to the management service.

Sufficiency of Information systems

The actuarial function would ensure that:

- The systems used prior to the calculation of the TPs are adapted to their use and the people in charge of the calculations have a sufficient knowledge of the nature of the data extracted from the systems.
- Procedures are in place to demonstrate that the systems are sufficiently reliable, robust and secure.

With regards to the tools and calculation software, the actuarial function should ensure that there is evidence to show that:

- The tools and software used for the calculation of the TPs are adapted to their use, they are reliable and able to produce the expected results.

- The people in charge of the calculations have a sufficient knowledge of the functioning of these tools or software and understand the outputs.
- The tools and software used are sufficiently robust, secure, flexible and responsive.

Completeness of data

The actuarial function should check:

- Coverage of the entire perimeter to liabilities and where appropriate, to the assets also.
- The existence of the reconciliations.
- The adequacy of historical data as a whole or for each of the homogeneous risk groups.

Accuracy and reliability of the data

The actuarial function should ensure that:

- The validation procedures of the intrinsic quality of the data in the information systems and info centres are sufficient and that they are applied.
- Reconciliations are performed at each stage of the process of calculation.
- The data used is reconciled with the premiums, claims, statutory provisions, investment or expenses recorded in the income statement or the balance sheet.
- The data is free from errors.
- Data from different periods of time used for the purpose of the same estimate is consistent.
- The data is timely and consistent over the long term.

Appropriateness of data

The actuarial function could check that:

- The data used for the calculation of the provisions correspond in terms of date, history, scope, risk profile, the contracts or guarantees of the assessment and the assumptions used.
- Where the calculation of TPs is made from data collected earlier than expected, the AFH could check that documentation warrants that this outcome does not bias the results.
- Ensure the relevance of history is retained, in order to rely on the characteristics of the underlying risks and isolate trends of changing risks.
- The volume and nature of the data are sufficient to ensure the quality of the calculations and significant lack in bias within the meaning of the thresholds.
- The data used for the calculation of the provisions are consistent over time.
- The data supports the assumptions underlying the methods used to calculate the TPs.

Homogenous risk groups: segmentation and aggregation

The actuarial function would ensure that the segmentation of the contracts, products or guarantees into homogeneous risk groups is adequate to capture trends and risk profiles with enough statistical relevance to avoid undue pooling.

Limitations of the data

The actuarial function should verify that these limitations are documented in an appropriate manner. The actuarial function should also verify if there is an action plan to reduce these limitations and if the audit trail is sufficiently formalised between the raw data and the adjusted data.

Approximations and judgments of experts

Where limitations on the data do not allow for 'reliable' calculations, the actuarial function should document with justification the approximations or assumptions taken.

Furthermore, as required by article 21 of the regulation delegate 2015/35, conditions used for approximations should be validated.

External Data

It should check that:

- Their integration in the calculation process is documented, justified and understood.
- The use of the data is more appropriate than the use of internal data.
- The resulting data and assumptions reflect the characteristics of the portfolio of assets.

Use of SCR

The actuarial function should ensure that the amounts of the modules of SCR entering the calculation of the Risk Margin correspond to those presented in the QRTs. Restatements are explained if otherwise (example of the risk of default).

Provisioning methods and model

To give its conclusions on the adequacy of technical provisions, the actuarial function should identify the range observed on the model and quantify the underlying uncertainties. Recommendations and a plan of action may also be issued in the actuarial function report.

In order to measure the relevance of the methods used, the actuarial function should be based on:

- The existing documentation of the model mentioning approximations made and limits of model data.
- The possible documentation tracing the history of evolution of the model and its final choice: why such has finally been adopted and what other models have been tested.
- The mapping of the contractual specifics in the portfolio and 'options and guarantees' within the regulation.
- Independent recalculations it could achieve.

Non-life insurance examples

The actuarial function should review:

- The rationale for the choice of a method or combination of methods of provisioning.
- The methodology: projections by the method of expenses or payments based on risk.
- The depth of the history of the triangles used according to the type of risk.
- The application or exclusion of a tail factor.

Examples for the Risk Margin

The actuarial function should review:

- The rationale for the choice of the methods or the drivers for the projection of the SCR.
- The selection of modules or submodules for SCR projection.

Assumptions

The AFR should:

- Determine the key assumptions used in the calculation of technical provisions and explain how they are appropriate in the light of the main risk factors.

- Present any material changes affecting the assumptions made compared to the previous AFR.
- Evaluate the adequacy of assumptions determined on the basis of expert judgment.

The actuarial function should check that:

- The directory of assumptions is complete and details aspects such as the assumptions to the loss ratio and those relating to the behaviour of the insured.
- The documentation justifies the realism of the chosen assumptions. For example, the criteria used to choose a hypothesis is detailed enough to ensure the validity of the assumption.
- Special attention should be paid to the assumptions about future management decisions. For example, assessment of the degree of contribution of the Administrative Management or Supervisory Body (AMSB) in the choice of assumptions about future management decisions and whether this is sufficient.
- The documentation justifies the consistency of assumptions. For example, checking to see if the expected rates of return for assets are in line with the level of the yield curve.

The actuarial function should assess to what extent historical data retained (and more generally the experience gained from the past) allows to reflect on the future and give a realistic prospective. The changes from one period to the other should be justified and if there is a significant change, a quantitative impact study should be conducted. Also, the planned out description of the processes in place to review the choice of assumptions should be assessed. To determine the key assumptions and quantify their impact on the level of technical provisions, the actuarial function could rely on sensitivity studies.

Review of the quality of the past best estimates (Back testing)

To improve ongoing calculations, the actuarial function should also check the consistency of the methods adopted in light of experience.

Some back testing studies should be carried out on a quarterly basis in order to justify the eventual successful simplifications. They would check for the realism of the components of the TPs.

To implement the corrective measures in the current calculations, any deviation should be analysed to identify the possible source:

- Exceptional event;
- Lack of history for the calibration of the hypothesis;
- Inadequacy of the perimeter, the method or model;
- Operational error.

Focus on loss experience

The following comparisons can be made:

- Claims ratio expected compared with realised (losses and differentiated use).
- Mortality gap between selected mortality table and observed deaths.
- Compliance behaviours of repurchases under laws adopted to determine the BE.
- Monitoring of incidence rates.
- Evolution of the ultimate load.
- The expected compared with realised cost inflation.

Focus on premiums

- Review of the method and assumptions for the determination of the sales forecast to measure the adequacy to the turnover.
- Gap between theoretical termination and termination rates observed.

Focus on costs

The following comparisons can be made:

- Review of the hypothesis of distribution of costs between acquisitions, management and administration.
- Review of the hypothesis of the evolution of costs in terms of the observed changes.
- Review of the suitability for the calibration of fees.

Sensitivity Studies

Suggestions of work to implement

- Identify the degree of uncertainty associated with an estimate;
- Detect the assumptions and key parameters;
- Measure the robustness of the model;
- Measure the sensitivity of the results according to the method and the model. This sensitivity test could also be done for the Risk Margin.

The Actuarial Function and the overall underwriting policy

The actuarial function should ensure:

- Sufficient documentation policy:
 - Written underwriting policy
 - Guide to underwriting
 - Guide to pricing standards
 - List and roles of the people in charge of underwriting
- The mapping of contracts by type of risk
- The overall strategy of underwriting: development policy, appetite for risk and underwriting risk budget.

The actuarial function should also note the fiscal impact on the underwriting risk:

- Changes in the legal and economic environment.
- Changes impacting the underwriting insurance agency.

To assess the quality of data and underwriting assumptions, the actuarial function should:

- Describe the granularity of analysis;
- Describe and justify the selected analysis mesh;
- Justify the scope of analysis chosen;
- Indicate the sources of information, data and IT systems used to conduct a more detailed product analyses.

Opinion on the overall underwriting policy

The following should be analysed:

- Production volumes.
- The changing profile of the portfolio and the explanatory factors.

- Claims with identified issues.

The Actuarial Function has a duty to alert decision-making bodies if it deems the underwriting policy as inadequate to the risk of underwriting of insurance agency.

The actuarial function should ensure that decision-making bodies have a sufficient level of quality information to make their decisions. In case of lack of information, it could make recommendations to address them.

It should also follow recommendations made in the previous year and describe the new recommendations issued.

Adequacy of the underwriting risk and underwriting policy

The actuarial function could review the relevance of the mechanisms put in place to mitigate underwriting risk and moral hazard

A specific analysis of the new offers launched during the present year or the next could be made.

This analysis would include:

- Description of the major launches of offers
- Analysis of pricing, the level of profitability on the horizon of the business plan (BP)
- Where appropriate, analysis of mitigation of risk factors. For example, absorption capacity of risk by discretionary mechanisms (for example BP mechanisms, discretionary revaluations) and a reminder of contributions.

Adequacy of premiums

The actuarial function should comment on:

- The adequacy of premiums to cover claims and expenses to come, especially in view of the underlying risks (including the risk of underwriting).
- The impact of options and guarantees provided for in the sufficiency of premiums and insurance contracts.

It should also reiterate the changes made recently on the subscription or pricing:

- Reminder of the main issues identified in the previous year (profitability, composition of the portfolio).
- Recall the main actions taken (increase in membership, modification of guarantees, and launch of new products) and impacts expected.
- Comparison of what was actually observed with expected impact.

In order to judge the adequacy of premiums to acquire, the actuarial function should analyse the following:

- Rate schedules;
- Critical processes;
- Prior profitability studies;
- Technical and management margins;
- Renewal Rate.

Environmental and regulatory changes

The actuarial function should analyse the following:

- Economic environment;
- Legal Risk;
- Changes in the composition of the portfolio;
- Bonus-malus systems;
- Analyse the adequacy between the target customer and pricing policy (sales targeted at populations with malus);
- Overview of developments by the analysis of the BP.

Risk of adverse selection

In order to judge the existence of this risk on the portfolio of insurance contracts, the actuarial function should analyse:

- The volume of annual terminations by policyholders;
- Technical margins for people considered at risk;
- The deformation of the portfolio that could increase the risk of adverse selection.

Consistency of underwriting with the other policies (provisioning, reinsurance, risk appetite)

The actuarial function should analyse:

- The consistency of pricing and provisioning assumptions;
- The consistency of the limitations and exclusions of warranties between underwriting and reinsurance;
- Coherence between time and direct consequences of the termination of the contracts that are covered by reinsurance;
- The consistency of the ability of non-proportional reinsurance treaties with the portfolio exposure;
- Regard for the operational limits set under the variation of risk appetite.

The actuarial function and reinsurance

Certain concepts need to be clarified:

- The goal of the program of reinsurance;
- The links between the framework of risk appetite and the program of reinsurance;
- The measure of the benefits of reinsurance according to businesses and the repository of performance watched by them.

The following should be addressed:

- Decisions on reinsurance policy (compliance with the business plan, risk appetite);
- Communication on the observed failures;
- Recommendations on the potential actions to improve the quality of the reinsurance development policy.

The risks covered, the choice of the structure as well as the various players in reinsurance (brokers, modelling agency, and reinsurers) must be discussed and validated at an internal committee meeting and formalised by company policy.

A distinguished link between reinsurance policy and risk appetite should be noted within the report (risk thresholds, boundaries, and budget). It should also ensure that the contributions of reinsurance are in line with the business plan defined.

In addition, the actuarial function should ensure that the amounts to BE transferred have been calculated in the light of all available information.

Review of the quantitative aspects of the program of reinsurance set up

The actuarial function may ensure that:

- The amount of reinsurance premiums are in line with the amount of coverage purchased;
- The purchased structure is consistent with the structure defined in the treaties;
- The adequacy of the calculation of amounts receivable from Special Purpose Vehicles (SPV) and reinsurance contracts: this review will be conducted in parallel with the review of policy provisioning;
- The definition of the various parameters of the treaties of reinsurance with statistical studies (assumptions of laws, historical data) in order to ensure that the plan has been implemented in light of all the information defined and is consistent with the business risk;
- The implementation of good reinsurance structures.

Adequacy to the risk profile

The actuarial function should analyse:

- The true nature of reinsurance mapping;
- The link between the risk appetite and the structure implemented (determination of risk areas not covered)
- The consistency of the reinsurance treaties with the underwriting policy:
 - If a risk is excluded from the insurance contract, to ensure that it is excluded from the reinsurance treaty
 - If a risk included in the contract of insurance is excluded from the reinsurance contract, ensure that it is consistent with the Agency risk appetite.
- The consistency of the reinsurance treaties with the underwriting policy by comparing the terms of termination of the contracts of insurance and reinsurance treaties.

In the event of inadequate reinsurance policy, it should analyse possible alternative structures. Structures to be tested could include increase or decrease rates of transfer in the case of proportional reinsurance.

Analysis of the contribution of the reinsurance result and capital

The actuarial function should analyse the following:

- The account of reinsurance in the last 3 years to assess the main movements and rationalise them.
- Comparisons between the historical losses with priorities ordered to identify the treaties that have never worked or instead the lack of cover for extreme claims.
- The benefits of reinsurance:
 - Impact of reinsurance on the Sensitivity to loss coefficients (S/P);
 - Assessment of the SCR by gain in reinsurance;
 - Gain on the BE.
- Coherence between the technical results gross and net of reinsurance, risk appetite and business plans established by the Agency:
 - Review on the result overall;
 - Reviewed by LoB;

- Reviewed by entity.

Effectiveness of the structure of the cover under stress scenarios

The actuarial function should review the stress tests carried out to test the adequacy of the reinsurance plan in place. In case of inadequacy at the end of the stress scenarios, the actuarial function could provide analysis of possible alternative structures.

Exposure to the credit risk of reinsurers

The actuarial function should ensure:

- The conformity of the choice of reinsurers with the policy of the company:
 - In line with the minimum level required;
 - Adequacy of the diversification in the market;
 - The constraints predefined;
 - Minimum rating (S & P, Moody's, Fitch).
- The regular updating of information on reinsurers (for example, the rating of these) and assessment of impacts.
- Taking into account the risk of reputation.
- The adequacy and quality of collateral offered by reinsurers in guarantee of their debts.
- Measures implemented by the Agency in the event of deterioration of its reinsurers.

Subcontracting

The actuarial function should ensure that outsourcing does not call in question the quality of the system of governance of the company; does not lead to a drift of operational risk; does not compromise the action of control authorities; and does not interfere with the provision of services by the company.

The actuarial function would ensure:

- The good ownership of studies or results reported by external entities by the Management.
- That tests are carried out in order to consolidate the results provided by the external entities. For example review measurement of exposure and its validation process.
- Of the Solvency II standards in terms of "sub-contracting":
 - Existence of a policy written on subcontracting taking into account the impact of outsourcing on the activity of the company
 - Information from the authorities of control over outsourced activities
 - Existence of a particular control on the outsourced activities by the administration, management or control body, particularly on the choice of the claimant in accordance with article 274 paragraph 3

Case of "Finite" reinsurance

Article L310-1-1 of the Insurance Code stipulates that insurance companies and reinsurance with "finite" activities must be able to identify, measure and control the risks arising from those contracts or activities appropriately.

The actuarial function would ensure that:

- The body is able to identify 'finite' contracts and that there is a formalised procedure for the identification of such contracts through:
 - The method 10/10 (probability of at least 10% of a loss of at least 10%),
 - The Expected Reinsurer Deficit (ERD) (average of all the values for which a deficit for the reinsurer is estimated, reported to the bonus),
 - The CPR (ratio between the average expected profit and the average loss expected),

- The body is able to assess the impact of “finite” contracts.
- There is a review of pre and post "finite" reinsurance results.

9. Dutch Actuarial Association

Source: The Dutch Actuarial Association (Koninklijk Actuarieel Genootschap) has set up a working group to develop guidance for Dutch actuaries in drafting the Actuarial Function Report (AFR). On the 14th of February 2017 the developed guidance was published for consultation. The consultation period ends in April 2017¹⁰.

Objectives

Main objectives of the working group:

- Provide additional guidance on the AFR on top of the ESAP2.
- Support the quality and consistency of the AFR

Summary

The Dutch Actuarial Association has accepted ESAP2 with the qualification ‘aanwijzing’ (instruction) requiring a ‘comply or explain’ approach. The guidance which is currently developed and in consultation will ultimately have the qualification ‘leidraad’ (guidance) and as such provides actuaries support in drafting the AFR. There is no obligation to follow these guidelines.

The proposed guideline is an extended document. All articles are translated into Dutch. Further, for each article in ESAP2 a further explanatory text is provided with additional guidance and examples.

Some relevant issues/remarks from the consultation which can be expected to be further discussed:

1. The guidance is at several points much more specific and extended compared to ESAP2. Although the qualification as ‘Leidraad’ (guidance) does not require actuaries to comply with it, it might put an additional burden to the work of the AF in the Netherlands.
2. The guidance, in line with ESAP2, could read as if in the AFR not only an opinion on several aspects of the technical provisions, underwriting and reinsurance policies needs to be provided but that also material information (e.g. figures, analyses) actually needs to be included in the AFR. It is not always clear to what extent it is sufficient to include references to other reports. The provided guidance might put additional burden to the AF.
3. ESAP2 mentions that the AF should disclose any material reliance on other work. In the guidance the workgroup argues that with respect of data quality the AF cannot be supported by the work of the external auditor but should form its own view. Under Solvency I the external auditor was expected to provide a statement on the quality of the data used by the certifying actuary. Although this not anymore the case in Solvency II, one could argue that the AF might still want to rely on such a statement of the external auditor.

¹⁰ The consultation document can be found with the following link: <http://www.ag-ai.nl/view/33560-AG+-+Leidraad+Actuari%EBlE+Functie+Rapport+-+Concept+ter+consultatie+-+14+feb+2017.pdf>