IAA Risk Book

Chapter 2 - Actuarial Function

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1. Executive Summary

The insurance community increasingly recognizes the importance of the actuarial function (AF) in mitigating risk within insurers and insurance groups through its provision of risk oversight. This has led to active dialogue among insurers, the actuarial profession, and supervisors concerning the scope and responsibilities of the AF and its relationship to various statutory roles (e.g., Appointed Actuary, Chief Actuary, Signing Actuary, and With Profits Actuary). The key messages from this dialogue are of interest to boards, senior management, financial analysts, actuaries, and supervisors. This dialogue has already led to enhanced risk management practices.

These key messages include:

1. Insurance supervisors are focusing on the oversight role of the AF as part of the second of the traditional "three lines of defence" in effective risk management.
2. Actuaries are not restricted to providing the oversight of risk (i.e., second line of defence), but are active in some or all of the three lines of defence within an insurer.
3. Independent risk oversight by the AF is important to boards, senior management, and supervisors because of the unique actuarial perspective of the insurer's risks. Effective AF oversight can facilitate less intrusive supervision.
4. The AF is frequently expected to make material contributions to the risk management of the insurer.
5. The AF must be organized and operate within an insurer and insurance group in a clear, effective, and transparent manner. This benefits both internal management and interested external stakeholders, such as the insurance supervisor.
6. Insurance supervisors develop and maintain confidence in the work of the AF through a combination of:
   a. Validation of the important aspects of the work of the AF;
   b. Presence of strong professionalism as evidenced by codes of conduct, standards of practice, and a disciplinary process; and
   c. Presence of effective feedback loops between the supervisor, profession, standard-setters, and the disciplinary process.

Other related chapters in this *IAA Risk Book* include Governance of Models, Professional Standards, and Own Risk and Solvency Assessment (ORSA).

Within this chapter the word "insurer" is intended to include both reinsurers and insurers.

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2. The Unique Role of the Actuary in Risk Oversight

Insurers require that they take on risk in a way that ensures both the payment of policyholder benefits and the provision of a reasonable return to shareholders. In so doing, insurance satisfies an important societal function in mitigating the financial consequences of adverse events. It also contributes to overall financial stability, timely payments to bondholders, and employment in the community. Due to their skills and education, actuaries have long played a unique role in managing risks and helping to ensure the long-term sustainability of insurers. As a result, jurisdictions have assigned various required roles to actuaries.

While actuaries work in many functional capacities within an insurer (e.g., marketing, product design, enterprise risk management (ERM), pricing, underwriting, investments, reserving/valuation, and financial reporting), their work typically entails both operational and oversight functions. The actuary's work in providing oversight has been formally recognized through the standards of the International Association of Insurance Supervisors (IAIS) that identify the AF as one of four major insurer control functions.[1]

The IAIS standards leave the definition of the AF to its members. As a result, as described later in this chapter, several jurisdictions have taken steps to define and assess the AF in their jurisdictions.

The recognition of the importance of the role of the AF in providing risk oversight within insurers has led to active dialogue among insurers, the actuarial profession, and supervisors concerning the scope and nature of the AF and its relationship to various statutory roles (e.g., Appointed Actuary, Chief Actuary, Signing Actuary, and With Profits Actuary). The key messages from this dialogue are of interest to boards, senior management, financial analysts, actuaries, and supervisors, and have led to enhanced risk management practices (e.g., consistent development and use of key assumptions in various processes such as pricing, valuation, and financial projections).

Regulatory recognition of the AF as a control function fits well with current risk management literature, which describes three lines of defence of risk management in the following categories:

1. Functions that own, manage, and report on risks (e.g., operational management);
2. Functions (and processes) that oversee risks (e.g., AF, risk management, compliance, risk committees, and sign-off requirements); and
3. Functions that provide independent assurance (e.g., internal and/or external audit).

Actuaries can actively contribute to each of these lines of defence.

With respect to the third line of defence, additional types of independent assurance external to the insurer can be provided by the external auditors and various specialized experts/consultants retained by the insurer (and sometimes by the supervisor) with regard to specific matters. Additional external actuarial oversight can be provided by actuaries employed for that purpose by the external auditor as well as by consulting actuaries retained to study specific matters.

[1] IAIS ICP 8.2.1: "As part of an effective system of risk management and internal controls, insurers have control functions, including for risk management, compliance, actuarial matters and internal audit." Also, ICP 8.5 states: "The supervisor requires that there is an effective actuarial function capable of evaluating and providing advice to the insurer regarding, at a minimum, technical provisions, premium and pricing activities, and compliance with related statutory and regulatory requirements."

3. Scope of the AF

Actuaries have been involved in the operations of insurers in many different roles since the beginning of the insurance industry. A partial list of these roles includes:

- Valuation of insurance obligations (technical provisions);
- Product design and marketing;
- Product pricing;
- Asset/liability management;
- Participating (with profits) product management;
- Risk mitigation (including reinsurance and hedging);
- Investment management; and
- Risk and capital management (including future financial condition reporting such as ORSA).

The involvement of actuaries in each of these roles has evolved over time and varies by practice area, jurisdiction, and company. For example, actuaries have been very involved in product design for life and annuity products, although in recent years some of these products have become similar to commodities subject to intense regulation, with marketing and sales units driving product design in many cases. While actuaries have had a negligible role with regard to some general insurance product management due to a perceived absence of the need for actuarial expertise in the management of such products, this may be changing as general insurance business has become much more technical in the last 20 years; as a result actuarial involvement has also increased substantially. As a further example, actuarial expertise is frequently involved in investment and asset/liability management within the life insurance and annuity businesses due to the presence of significant and long-term interest rate guarantees and investment-related benefits within these products. Since these types of guarantees and benefits tend not to be a feature of general insurance products, there is less need for actuarial involvement.

In fulfilling these roles, actuaries, due to their skills and experience, are frequently involved at all management levels within an insurer—including, for example, as a CEO, chief risk officer (CRO), CFO or chief actuary.

In carrying out their mandate of risk-based supervision, insurance supervisors have recognized the importance of the work of actuaries. This recognition includes, but may be broader than, the work of actuaries who carry out statutory defined roles (e.g., Chief Actuary, Appointed Actuary, Signing Actuary, and With Profits Actuary) as defined by various jurisdictions.

As a result, insurance supervisors are focusing on the oversight role of the AF as part of the second of the traditional three lines of defence. As footnoted previously concerning ICP 8.2.1, supervisors explicitly recognize the importance of the AF as an insurer control function.

Supervisors in their jurisdictions may provide additional direction regarding the AF and its assessment as part of the regime's supervisory framework. Two examples are:

1. EU Article 48 of the Solvency II Framework Directive states:

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 ...;

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 ..., in particular with respect to the risk modelling underlying the calculation of the capital requirements ... and to the [ORSA] assessment ...

2. In Canada, the AF is one of the control functions assessed within the Office of the Superintendent of Financial Institutions' (OSFI's) risk-based supervisory framework. This assessment considers both the characteristics and the performance of the AF. While the scope of the AF is not defined by OSFI, insurers demonstrating a narrower scope of actuarial oversight would be determined to be less effective than other insurers with similar size, scope, and complexity of risks that demonstrate a broader scope of their AF.

These examples illustrate similar, yet different, supervisory approaches to the AF. Other jurisdictions have used various approaches to assessing the AF. Regardless of the specific supervisory expectations in a jurisdiction, the AF is always recognized for its important control and oversight role in insurers.

4. Setting Expectations for the Competencies of the AF

Given the variety of types of AF work (e.g., oversight and review of data quality, experience studies, risk management, actuarial calculations, models, and methods), it is not surprising that IAIS ICP 8 is not specific about the skills or experience that individuals within the AF should have, although ICP guidance 8.5.5 states "a *robust actuarial function that is well positioned, resourced and properly authorised and staffed is essential for the proper operation of the insurer".*

In the EU, Article 48 of the Solvency II Framework Directive also states:

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.

Although members of European actuarial associations are well qualified to carry out the AF for EU supervised insurers, Article 48 does not rule out the possibility that others may also perform these functions. At the present time, the Actuarial Association of Europe is drafting a model European actuarial standard of practice to provide guidance to actuaries when issuing an Actuarial Function Report (AFR) in connection with Article 48.

Similar to the EU, Canada does not indicate specific credentials for individuals conducting the AF. Nonetheless, OSFI's expectation is that members of the Canadian Institute of Actuaries would carry out the AF for insurers under its supervision. In the United States, actuaries who perform certain functions— e.g., asset adequacy testing or reserve adequacy attestations—must meet certain educational and experience requirements.

In summary, while the standards of the IAIS are not specific about the skills or experience that individuals within the AF should have, jurisdictions have either specified them explicitly or have specified that credentialed actuaries are expected to carry out the AF (however defined by local authorities) in their jurisdiction. In addition, at least one actuarial association is drafting a model standard of practice for actuaries issuing an AFR in compliance with local legislation.

5. Structural Considerations of the AF

Insurers generally organize their AF based on the nature, size, and complexity of their operations. They may be centralized or decentralized and may or may not separate the actuarial and risk functions. Regardless of the manner in which insurers organize themselves, it should always be possible to identify the manner in which actuarial oversight is exercised locally (i.e., in a decentralized model) and then brought together across the insurer or insurance group.

There is no single title used across insurers or within jurisdictions that uniquely identifies the Actuarial Function Head (AFH). Identifying the head of actuarial oversight should be able to be made from an understanding of the AF role rather than through the use of titles such as "Chief Actuary", "Corporate Actuary", "Senior Actuary" and "Appointed Actuary", which may be assigned with different roles/mandates in mind from one insurer to the next. Insurers organize themselves as they see fit. As previously noted, even the supervisory expectations of the AF can differ across jurisdictions. To avoid "titling confusion" within this chapter, the terms AF and AFH are used generally in the context of actuarial oversight, without connection to any specific titling conventions used in the insurance industry.

For larger insurers (in terms of size and complexity), and especially for insurance groups, the manner in which actuarial oversight is provided depends on the needs of underlying businesses as well as organizational preferences toward centralized/decentralized structures. In highly decentralized structures, significant actuarial oversight responsibilities will be assigned to staff local to those business units or insurers. Regardless, the home supervisor for the insurer or the group-wide supervisor, as applicable, seeks to assess the effectiveness of the oversight provided by the AF across the insurer or insurance group. In the EU, for example, an individual must be designated as the main contact for the AF. In Canada, the effectiveness of actuarial oversight for an insurer or insurance group without a clear AFH would be rated as being less effective than a comparable entity with an effective AFH.

It is important that the AF make a strong contribution to the risk management of an insurer. As a result, some insurers may choose to align closely the work of the AF and the work of the CRO. In some cases it may make sense for the AF to report to the CRO or even to combine these roles into one position. Due to the seniority of the CRO role defined in this manner, reporting to the CEO, it would be in a position to present a very capable challenge to the first line of defence.

On the other hand, boards and supervisors of larger insurers and insurance groups may prefer to have both an AFH with sufficient gravitas to provide an actuarial view of the insurer's risks as well as an organizationally separate CRO. According to this view, the CRO would be responsible for risk management for the insurer while the AFH is responsible for actuarial oversight; together they represent an effective team that can challenge each other's ideas and perspectives. This approach can work well if both the CRO and AFH hold senior roles within the insurer (e.g., each reporting to the CEO). The synergy between the AFH and CRO may be less effective if the AFH and CRO do not have similar seniority in the organization.

In many insurers the actuary responsible for the technical provisions (i.e., perhaps a statutory role in some jurisdictions with a title such as Appointed Actuary or Valuation Actuary) is the most suitable candidate to be the AFH. In the event that this statutory role (e.g., Appointed Actuary) is positioned lower down in the organization structure, such an individual may not have sufficient breadth of perspective to enhance the work of the CRO or sufficient seniority to provide an effective challenge to the CRO. In these cases, another person, higher in the organization and to whom the statutory role reports, may be better positioned to provide effective actuarial oversight as the AFH (e.g., as noted previously this may be the CRO).

In contrast, it may not be economically viable for smaller insurers to maintain staff dedicated solely to the AF or to fully segregate the CRO and AFH duties. Indeed, staff performing the AF role may also have operational responsibilities (although preferably not when this would constitute a conflict of interest). A smaller insurer may be more likely to retain an external consulting actuary to carry out specific duties such as to value or provide an independent assessment of the insurer's policy liabilities (i.e., technical provisions). The precise nature of external actuaries' work and their relationship with the insurer will determine if they, or a staff member of the insurer, are the key providers of actuarial oversight to the insurer. Regardless of who provides it, the oversight and control provided by the AF are essential for the prudent operation of each insurer.

In conclusion, although the AF within an insurer frequently includes actuaries who carry out specified statutory roles (e.g., Appointed Actuary or Signing Actuary), identifying both the scope and responsibilities of the AF and its head or lead person may not be straightforward or obvious solely through examination of the insurer's structure or titling conventions. While it is important for insurers to structure their operations—including their AF's control function—according to their needs and staff, it is also important that the manner in which the AF is organized and operates within an insurer be clear, transparent, and effective for both internal, as well as interested external, stakeholders such as the insurance supervisor.

6. Reliance on the Competency of the AF

The supervisor benefits from the work of the AF (and indeed other insurer control functions) when the AF operates effectively as part of an insurer's second line of defence. The insurance supervisor must validate important aspects of the AF's work to enable the supervisor overseeing the company or group to have sufficient confidence in the work product of the AF. AF effectiveness, including the AF's material contributions to risk management, contributes to streamlining and minimizing the overall supervisory burden on the insurer.

It is important to note that under normal circumstances the validation of the AF's work by the supervisor does not need to duplicate the work of the AF (e.g., model/methodology selection, data validation, recalculation, and assumption setting), nor is it to be performed solely through the application of a checklist. Rather the supervisor seeks sufficient understanding of the AF's work (e.g., key risks, assumptions, and methods) and processes to have confidence that they have been completed in an appropriate and transparent manner in consideration of the risks involved. This in fact is one of the key purposes of this *Risk Book*—that is, to enable a supervisor to better understand the key issues faced by actuaries, both technical and professional, and to identify newly emerging issues.

Validation of the AF effectiveness by the supervisor seeks to confirm the reasonableness of the estimates and judgements applied by the AF. To effectively carry out this assessment, the supervisor must have both a formal and informal relationship with the AF and have access to suitable actuarial resources of its own, either internal to or externally contracted by the supervisor.

7. Provision of Effective Actuarial Oversight

As noted earlier, the AF as a control function fits well with current risk management literature that describes the second line of defence as a function that oversees risks (i.e., distinct from functions that own and manage risks—operational management). In addition, ICP 8.1.19 states:

Subject to the nature, scale and complexity of the insurer, an effective internal controls system typically includes [among other things] ...

Appropriate segregation of duties where necessary and controls to ensure such segregation is observed. Appropriate segregation of duties means, among other things, having sufficient distance between those accountable for a process or policy and those who check if for such process or policy an appropriate control exists and is being applied. It also includes appropriate distance between those who design a control or operate a control and those who check if such control is effective in design and operation.

The elements of an effective internal controls system, such as the AF (i.e., part of second line of defence; segregation of duties), are described collectively in this chapter by the term "independence". The wider dictionary implications of the term "independence" (i.e., part of a stand-alone entity) are not intended to apply.

For larger, more complex financial institutions, fully independent oversight functions (e.g., risk management, internal audit, actuarial, and compliance) may be appropriate. These functions can be centralized or decentralized with a centralized oversight component. For all institutions it may be more appropriate for a focus that optimizes functional independence over a focus on the structure used. Whatever the size of the organization, the following questions need to be addressed:

1. Do the control function employees have clear performance objectives/incentives that link to the management of risk rather than only to targets related to profit, revenues, and volume?
2. Is their incentive compensation calculated independently of the results of the business unit they oversee?

The judicious and thoughtful review of risk management information (e.g., ORSA) by the supervisor will assist by means of structured feedback in the assessment, benchmarking, and reporting of the quality of the insurer's AF. Boards and managements should also do more than rely on "gut and instinct" when assessing the effectiveness of the insurer's risk management function. Nonetheless, gut and instinct are useful, as they are reflective of the degree of experience and judgement of those performing such assessment. It is preferable, however, to, in addition, quantify these beliefs and hold periodic third-party reviews of the insurer's oversight functions. This can help boards and management (not to mention the supervisor) to benchmark the insurer's risk management practices and processes, as well as to address any gaps that exist. One source for such reviews may be through the insurer's external auditors, especially their actuarial team. Another source may be consulting firms active in this area.

The AF should be clearly identifiable, with disclosure of any firms or individuals who provide independent actuarial oversight. Given the importance of the work of actuaries to insurers, the risk oversight by the AF should be as independent of management as practical. As mentioned above, the organization of the AF may vary substantially from insurer to insurer, based on their circumstances. The AFH need not be an individual in a statutory or designated actuarial role, although this is frequently the case. It is important that individuals providing independent oversight should not be conflicted by wearing a similar operational role. For example, it is difficult to independently design the set of oversight and control procedures for a hedging program if the individual responsible for this oversight is also responsible for the hedging program's design and operation.

Because actuaries already have experience and skills in and often play a key role in risk management, many are also well suited to provide independent oversight of this area, in a manner similar to what actuaries have developed and applied in other areas. The AF is frequently expected to make material contributions to the risk management of the insurer. For example, this might include contributions to the risk and capital modelling of the insurer as well as in relation to stress and scenario testing undertaken for future financial condition analysis, such as for an ORSA or other board-related needs.

Independent oversight by the AF is important to boards, senior management, and the supervisor, as it provides additional comfort that the insurer's controls are effective. This in turn can lead to enhanced assessment by the supervisor of an insurer's net risk (i.e., the combined risks of the insurer net of the expected effects of applicable risk mitigation) and an appropriate adjustment of the nature and intensity of the supervisory work concerning the insurer or group. If the supervisor is comfortable that the insurer or group's own oversight and risk limit functions are robust and transparent, supervisory oversight can be less intrusive. The opposite would be the case if internal oversight functions are inadequate.

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