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IAA Risk Book Actuarial Function

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by the Insurance Regulation Committee of the IAA**

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Comment and feedback

Comment and feedback on Risk Book chapters is welcomed.

To provide comments on chapters of the Risk Book or to report any problems with the website, please send an email to: riskbookcomments@actuaries.org.

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Introducing the IAA Risk Book

The actuarial profession has contributed significantly to the development of risk management tools and processes, in insurance, pensions and related industries. Actuarial skills are also increasingly being applied in new and developing areas of knowledge.

Actuarial practice continues to improve the understanding, measurement and communication of risk and risk events and their implications through the development of tools and increasingly processes to manage the future uncertainty of risks in a sustainable and transparent way. These tools and processes trace, manage and mitigate the acceptance and transmission of the uncertain outcomes of risks.

The Risk Book is intended to provide high-quality reference materials to support a better understanding of the risks and inherently uncertain future outcomes that need to be managed when delivering financial services products – whether they involve insurance, investments or retirement incomes, or more broadly. The Risk Book is written to be accessible to a wide range of readers, many of whom may not be actuaries or experts in the areas discussed but may be decision-makers in those areas. Consequently, the Risk Book should provide insight into the ideas and concepts behind actuarial topics and concepts. It is therefore focused on being descriptive rather than being formal and mathematically precise.

All the Risk Book chapters are publicly available on the IAA website and are periodically updated. See www.actuaries.org and follow the path to '*Knowledge / Publications / IAA Risk Book*'. A discussion of their structure and relationships is provided in the Chapter: *Introduction – Using the Risk Book*.

The Risk Book is intended to be a dynamic and evolving resource, updated over time, reflecting new areas where actuarial expertise can add value, experience and advances, and topics of current interest and importance. It is electronically distributed to support ongoing updates. Risk Book chapters will be reviewed periodically at least every 5 years and more frequently if significant changes or developments occur.

The development and maintenance of the Risk Book is managed by the Risk Book Editorial Board of the IAA Insurance Regulation Committee.

Many people, mostly actuaries, have contributed to the Risk Book. Contributors are listed on the website.

To submit comments or questions about this Risk Book chapter, or to report any problems with the website, please email riskbookcomments@actuaries.org. To express interest in becoming involved with the Risk Book please go to the website and provide the requested information.

1 Overview

1.1 Background

The insurance community and related communities¹ increasingly recognize the importance of the actuarial role in understanding and mitigating risk through the provision of risk oversight.^{2,3} This has led to active dialogue among insurers, related communities, the actuarial profession and supervisors concerning the scope and responsibilities of such oversight. This role has been formally identified by supervisors through the use of the term “actuarial function” (AF). The role of the AF may differ from or overlap in some respects with other statutory roles (e.g., Appointed Actuary, Chief Actuary, Signing Actuary, Chief Risk Officer and With Profits Actuary). This dialogue regarding actuarial roles, including that of the AF, has already led to enhanced risk management practices.

1.2 Aim of chapter

The aim of this chapter is to set out some of the considerations when setting up, reorganizing and overseeing an AF. The key messages will be of interest to boards, senior management, financial analysts, actuaries and supervisors.

1.3 Relevance to actuaries

The subject matter of this chapter is clearly of relevance to actuaries, particularly those who may be organizing or establishing an AF at an insurer or related community.

1.4 Executive summary

The key messages from this chapter 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 on 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.

¹ “Related communities” refers to other risk financing systems such as risk pools and individual entities retaining risk.

² Those in an “actuarial function” (AF) role may be assigned other roles not directly related to risk oversight.

³ Actuaries also work in other industries, such as utilities and banking, particularly in regard to modelling uncertainty and contingent cash flows and making long-term projections. Some aspects of the AF described in this chapter also apply in those situations.

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 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. The strong presence of professionalism, as evidenced by codes of conduct, standards of practice and a disciplinary process; and
 - c. The presence of effective feedback loops between the supervisor, profession, standard-setters and the disciplinary process.

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

Within this chapter the word “insurer” is intended to include insurers, reinsurers and other risk financing systems, including those that provide for risk retention instead of risk transfer. The word “supervisor” is intended to refer to the person with the regulatory authority overseeing the activities of the insurers, reinsurers and other risk financing systems, which may be different for different risk financing systems and called by different names in different jurisdictions.

2 Introduction: 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 providers of capital. In so doing, insurance satisfies an important societal function in mitigating the financial consequences of adverse events. It also contributes to overall financial stability and facilitates economic activity and development. Actuaries have long played a unique role in managing risks due to their skills and education, and help 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), which associates such oversight with the term “actuarial function” and identifies the AF as one of four major insurer control functions.⁴

While describing the general requirements and expectations for the actuarial function, the IAIS standards leave the specific definition of the AF, including how it is operationally set up within an

⁴ IAIS Insurance Core Principle (ICP) 8.3.1: “As part of the effective systems of risk management and internal controls, insurers have control functions, including for risk management, compliance, actuarial matters and internal audit.” Also, ICP 8.6 states: “The supervisor requires the insurer to have an effective actuarial function capable of evaluating and providing advice regarding, at least, technical provisions, premium and pricing activities, capital adequacy, reinsurance and compliance with related statutory and regulatory requirements.”

insurance entity and specific detailed accountabilities of the function, 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 an 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, some AF activities);
2. Functions (and processes) that oversee risks (e.g., some AF activities, risk management, compliance, risk committees and sign-off requirements); and
3. Functions that provide independent assurance (e.g., internal and/or external audit).

These sometimes are referred to as the first, second and third lines of defence respectively, in the remainder of this chapter.

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.

3 Scope of the AF

3.1 Commercial scope

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

- Valuation of insurance obligations (technical provisions);
- Product design and marketing;
- Product pricing;
- Experience studies and actuarial assumption development;
- Earnings analysis, including source of earnings;
- Asset/liability management;
- Product management;

- Risk mitigation (including reinsurance and hedging);
- Investment management; and
- Risk and capital management (including future financial condition reporting such as ORSA and risk capital modelling).

The involvement of actuaries in each of these types of work 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 has changed as general insurance business has become much more technical in recent decades; 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. In carrying out these types of work, 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.

As mentioned earlier, actuaries are active in these types of work from an operational management perspective as well as by providing oversight of the work. The focus of the AF is on the oversight of actuarial work.

3.2 Regulatory scope

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

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 8.3.1, supervisors explicitly recognize the importance of the AF as an insurer control function. In addition, CF 8.6.a and CF 8.6.b⁵ provide the supervisor with detailed guidance on features of an effective AF including areas of additional focus with respect to internationally active insurance groups (IAIGs).

To assist in defining their expectations regarding the AF, supervisors may provide additional direction in their jurisdictions regarding the AF and its assessment as part of the regime's supervisory framework. Examples include:

⁵ The IAIS Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame) builds on the ICPs and focuses on the group-wide supervision of internationally active insurance groups. ComFrame guidance within the ICPs is labelled using an identifier such as CF 8.6.a to indicate its placement within the ICP.

1. EU Article 48 of the Solvency II Framework Directive, which 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 a 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 actuarial work over which the AF provides oversight (data quality, experience studies, risk management, actuarial calculations, models, methods, etc.), 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 8.6.1 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 European Union (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.

Article 42 sets out fit and proper requirements for key functions. As the AF is considered a key function, the persons fulfilling the AF should also comply with these requirements in their system of governance. EIOPA (the European Insurance and Occupational Pensions Authority) has also set out expectations as to the fit and proper criteria that it considers applicable to persons carrying out the AF⁶.

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. The Actuarial Association of Europe (AAE) has published a model European actuarial standard of practice (European Standard of Actuarial Practice 2, Actuarial Function Report under Directive 2009/138/EC) to provide a model standard to its member associations so that they may consider guidance to their own members when issuing an Actuarial Function Report (AFR) in connection with Article 48. In an AFR, the AF is required under the standard to provide opinions on the insurer's technical provisions, underwriting policy and reinsurance arrangements, and to comment on the AF's contribution to managing risk.

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 specified that credentialed actuaries are expected to carry out the AF (however defined by local authorities) in their jurisdiction. As mentioned above, at least one actuarial association (e.g., the AAE) has drafted a model standard of practice for its member associations for actuaries issuing an AFR in compliance with local legislation.

5 Structural Considerations of the AF

5.1 Position in organization

Insurers generally organize their AF based on the nature, size and complexity of their operations. The insurer may be centralized or decentralized, and the AF may or may not be combined with the risk function. 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 Holder (AFH). Identifying the head of actuarial oversight should be possible 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. As previously noted, even the supervisory expectations of the AF can differ across jurisdictions. To avoid "titling confusion" within this chapter,

⁶ https://www.eiopa.europa.eu/system/files/2022-10/eiopa-bos-14-253_gl_on_system_of_governance.pdf

“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, a clearly defined AFH is helpful in assessing the effectiveness of actuarial oversight for an insurer or insurance group. In other jurisdictions, supervisors may accept a group of individuals who collectively represent the AF. Regardless of who leads the AF, this is just one among a number of considerations for assessing its effectiveness.

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 AFH and the work of the CRO. In some cases, it may make sense for the AFH to report to the CRO, or even to combine these roles into one position. If these roles are combined, the seniority of the CRO position (reporting to the CEO) will require for the CRO, as AFH, to maintain a capable challenge to the AF’s 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 and an organizationally separate CRO. Indeed, this is a common supervisory requirement for IAIGs. 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 Canada, the federal supervisor has imposed a further requirement on IAIGs that each of the CRO, CFO and AFH roles be occupied by separate individuals.

In many insurers the actuary responsible for the technical provisions (e.g., 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 provider 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.

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 and interested external stakeholders such as the insurance supervisor.

5.2 Internal structure of the AF

AFs may be structured to reflect traditional splits between, for example, pricing, valuation and capital activities. In the modern environment, it may, however, be more appropriate to separate first-line-of-defence activities of the AF (operations) from second-line activities (overseeing risks), to ensure that staff entrusted with operational functions are not reviewing their own work.

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 the work has 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.

Supervisors should also seek to understand whether the staff of the AF have the capability and capacity to competently execute their functions. The AFH itself may be subject to legislated fit and proper requirements.

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 8.2.4 states that an effective internal controls system typically includes:

Appropriate segregation of duties and controls to ensure such segregation is observed. This includes, amongst others, having sufficient distance between those accountable for a process or policy and those who check if for such a 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 a control is effective in design and operation.

The AF may also cover parts of the first and third lines of defence.

The elements of an effective internal controls system, such as the AF (i.e., part of the second line of defence; segregation of duties), are described collectively in this chapter by the terms “independence” and “independent”. The wider dictionary implications of the terms (i.e., being part of a stand-alone entity and standing alone) 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 criteria need to be present:

1. The control function employees have clear performance objectives/incentives that only link to the management of risk rather than to targets related to profit, revenues and volume.
2. Their incentive compensation is 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 instinct” when assessing the effectiveness of the insurer’s risk management function. Nonetheless, gut instinct is useful, as it is reflective of the degree of experience and judgement of those performing such assessment. In addition, it is preferable to quantify these beliefs and hold periodic third-party reviews of the insurer’s oversight functions. These quantifications and reviews can help boards and management (not to mention the supervisor) benchmark the insurer’s risk management practices and processes, and address any gaps that exist. One source for such reviews may be through the insurer’s external auditors, especially the 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 from the first line of defence as is 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 performing 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 weak and/or unclear.



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