THE INSTITUTE OF ACTUARIES OF AUSTRALIA
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PROFESSIONAL STANDARD 300
ACTUARIAL REPORTS AND ADVICE ON GENERAL INSURANCE TECHNICAL LIABILITIES

A. INTRODUCTION

Application

1. This standard applies to actuaries preparing estimates of the technical liabilities, comprising outstanding claim liabilities and premium liabilities, for any entities involved in general insurance activities, such as general insurance companies, reinsurers, self insurers, insurance pools and statutory authorities involved in general insurance activities.

2. This standard does not apply to estimates of liabilities for life or health insurance entities.

Legislation

3. This standard covers advice which is required by legislation such as the Insurance Act 1973 as amended and any standards issued under that Act, the Corporations Act and accounting standards, the Income Tax Assessment Act and taxation rulings, and the various State and Commonwealth Acts under which Accident Compensation Schemes, State Government Insurance Offices and Workers Compensation operate.

Previous Versions

4. This standard was first issued in May 1994, replacing Guidance Note 350. This revision has been made in response to the General Insurance Reform Act (2001), and was issued in April 2002.

B. DEFINITIONS

5. An **insurer** in this standard refers to any entity in respect of which liabilities covered by this standard may need to be calculated. This includes direct insurers, reinsurers, self insurers, insurance pools, discretionary funds, and Accident Compensation Schemes.

6. An insurer's **outstanding claim liabilities** at a given date (the valuation date) are equal to the value of claim payments to be made after the valuation date, in respect of claims which, under the terms of its contracts, arose on or before the valuation date for which the insurer is expected to be liable. These liabilities will often be expressed as the present value of the claim payments and may include the insurer's internal costs of administering and settling those claims.

7. An insurer's **premium liabilities** at a given date (the valuation date) are equal to the value of claim payments to be made after the valuation date, in respect of claims which, under the terms of its contracts, will arise after the valuation date in respect of premium written on or before the valuation date and for which the insurer is expected to be liable. These liabilities will often be expressed as the present value of the claim payments and may include the insurer's internal costs of administering and settling those claims and other administration costs. Where premiums under existing contracts are payable by instalments or are adjustable on the basis of exposure, claim experience or other factors, it will usually be necessary either to adjust the premium liabilities on this account or to determine the value of an offsetting asset.

8. An insurer’s **contractual prospective liabilities** at a given date (the valuation date) are equal to the value of any options or other features, valuable or potentially valuable to the insured, included in or implied by contracts in force on the valuation date. These liabilities will often be expressed as the expected positive (in favour of the insured) net present value of future cash flows, and may include the insurer’s associated internal costs.

9. **Liabilities** and **technical liabilities,** where used in this standard, each refer collectively to outstanding claim liabilities, premium liabilities and, if applicable, any contractual prospective liabilities.

10. **Claim payments** refer to payments to or on behalf of the claimant, and any third party costs such as investigation, medical and legal fees associated with each claim.

11. **Recoveries** refer to amounts or expected amounts to be recovered by an insurer in respect of particular claims. A distinction is made between reinsurance recoveries and non-reinsurance recoveries (salvage, subrogation, sharing agreements, etc).

12. A **central** estimate of the liabilities is the expected value of the liabilities. In other words, if all the possible values of the liabilities are expressed as a statistical distribution, the central estimate is the mean of that distribution.

13. A **provision** is an amount set aside in an insurer's accounts, to provide for liabilities.

14. A **risk margin** (often referred to as a prudential margin) refers to the amount by which a provision for liabilities is greater than the central estimate of the liabilities to increase the probability of adequacy.

C. OUTLINE OF PROCEDURE

15. The steps which an actuary should take when advising on technical liabilities are:

    (i) Clarify the terms of reference and purpose of the report.
    (ii) Collect the necessary data.
    (iii) Analyse the experience.
    (iv) Select a valuation model.
    (v) Select valuation assumptions.
    (vi) Do the valuation calculations.
    (vii) Reconcile the results with the previous investigation.
    (viii) Analyse variability and sensitivity.
    (ix) Reach conclusions.
    (x) Present a written report.

16. It may be necessary to carry out several versions of part of the process to determine an appropriate central estimate and/or risk margin, for example collecting and analysing additional data. Steps may be combined or taken out of sequence. It may be appropriate to repeat parts of the process with different models or assumptions.

17. The actuary may be called upon to justify the work undertaken. The actuary should therefore compile and retain documentation which demonstrates that the work conforms with this standard, and any other external standards as appropriate.

18. An approximation to an assumption or method is acceptable provided it does not materially affect the result. A difference is material if it is significant in the context of the purpose for which the advice is given. The actuary should choose a standard of materiality which should reasonably satisfy each anticipated user of the advice.

D. DATA

19. The actuary should be familiar with the relevant aspects of the procedures for the administration and accounting of the insurer's claims and policies.

20. For each class of business, the actuary should be conversant with the general characteristics which may have a material bearing on the estimation of the liabilities. This may include familiarity with the contractual terms and legislated benefits payable under policies written, differences between the unexpired risk exposure (that exposure underlying the premium liabilities) and the exposure underlying the outstanding claim liabilities, changes in underwriting standards, changes in premium rates, case estimation procedures, as well as other attributes, such as deductibles, policy limits and reinsurance arrangements.

21. The actuary should be familiar with the general economic, legal, political and social trends in the community which may have a bearing on the liabilities.

22. It is the actuary's responsibility to ensure that the data utilised are appropriate and sufficient for the valuation. The actuary should,

where possible, take reasonable steps to verify the overall consistency of the valuation data with the insurer's financial records.

E. METHODOLOGY AND PARAMETERS

E.1 Scope

23. In some cases the actuary will be asked to give advice on both outstanding claim liabilities, premium liabilities and contractual liabilities. In others he/she may be asked to advise on some combination of these. In either case, the methodology outlined below should be used.

24. Liabilities may be estimated in one of two ways:

- Deterministically, in which case the methodology outlined below is used to estimate the central estimate, or mean value of the liabilities, or
- Stochastically, in which case the methodology outlined below is used to estimate the overall distribution of the liabilities.

E.2 Claim Experience Model

25. The estimation of liabilities may require the subdivision of the data into groups of claims exhibiting similar characteristics. In the determination of appropriate subdivisions, a balance must be found between homogeneity and statistical reliability.

26. The claim experience should be analysed with respect to the development over time of claims or cohorts of claims. Depending on the availability and reliability of the data, analysis should include some or all of:

- the claim frequency relative to some measure of exposure, for example number of policies, employees, wages, or total sum insured;
- the rate of reporting claims;
- the rate of settlement;
- the development of payments;
- the adequacy of case estimates;

- the incidence of large claims;
- the overall pattern of claim occurrence over the duration of the policy period;
- other analyses relevant to the circumstances.

27. The experience should normally be analysed on a gross of recoveries basis. Analysis of the reinsurance and other recovery experience should be appropriate to the circumstances. In some situations it may be more appropriate to analyse the experience net of reinsurance and/or other recoveries. Separate estimates of recoverable amounts may still have to be made. In making such judgments, the actuary should be aware that the net valuation result will often be the most important.

28. Analysis of experience should take into account any special features of, or developments or trends in, the experience such as changes in deductibles, aggregate limits, claim handling procedures, the mix of business within the portfolio, changes in legislation and the impact of large claims paid and outstanding. The analysis should investigate any trends in the development of the experience, particularly those from causes other than inflation.

29. Selection of the most appropriate valuation model to estimate the liabilities is the responsibility of the actuary. The actuary may investigate more than one model before arriving at an estimate. The model or models should take into account the available data, the nature of the portfolio, and the results of the analysis of experience.

30. Selection of the claim experience assumptions should have regard to the valuation model and the analysis of the experience. These assumptions should allow for trends in the claim experience, changes in underwriting, alteration of policy terms and assumptions about reinsurance or other recoveries.

31. The claim experience assumptions should reflect the latest available data to the extent that these are credible in the forecast of future claim experience.

32. Any change in assumptions should be allowed to emerge fully in the valuation to which they relate, rather than partially in anticipation of further emergence in future valuations. The effect of any change should be disclosed.

E.3 Other Parameters

Inflation

33. Future claim payments may well be greater, as a result of wage or price inflation, court decisions or other economic or environmental causes, than current payments for similar claims. Such factors should be allowed for when estimating liabilities.

Discount Rates

34. A schedule of future single period rates embedded in current market values of riskless debt might normally be the starting point for determining the appropriate discount rate(s). Circumstances may also arise where it is appropriate to take account of the insurer's assets and investment policy. Variations from market rates may be allowed for in the choice of discount rate. A series of rates or the equivalent single rate may be used for the purposes of discounting.

Expenses

35. If an allowance for future expenses is required, this allowance may vary between the outstanding claim and premium liabilities. The complexity of the approach used to determine the allowance should be commensurate with the materiality of the amount of the allowance.

E.4 Consistency of Outstanding Claim and Premium Liabilities

36. The assumptions used to estimate premium liabilities would generally be expected to be consistent with those used to estimate the outstanding claim liabilities. Where the assumptions are not consistent, or where the calculation of premium liabilities uses an approach requiring different assumptions to the outstanding claim liability estimation, the actuary should explain the reasons for the differences.

37. Where consistent assumptions are used to estimate both outstanding claim liabilities and premium liabilities, the actuary should consider and comment on their suitability for the estimation of both liabilities.

E.5 Valuation Results

38. It is the actuary's responsibility to ensure that the valuation calculations are carried out accurately.

39. The actuary has a responsibility to consider the reasonableness of the estimates produced and to quantify the effects of any changes in the valuation basis since the previous actuarial valuation. The actuary should seek explanation where possible for any major departures from past results.

F. UNCERTAINTY AND RISK MARGINS

Uncertainty

40. The extent of the liabilities depends on future economic, social and environmental factors outside the control of the insurer as well as on unknown past and future events and the insurer's own actions. It is part of the actuary's task to comment upon uncertainty, both as a technical matter and in the presentation of results.

41. There are a number of components of this uncertainty, including:

- **model selection error**, deriving from the difference between the actual process generating the claim experience and the closest member of the family of claim experience models selected;
- **parameter error**, deriving from the sampling error in model parameter estimates;
- **parameter evolution error**, deriving from the inclusion in a model as constants any parameters which are in fact subject to change over time;
- **process error**, deriving from the random departure of future claim experience from model expectations.

42. Assessment of uncertainty will generally require use of one or more of:

- statistical analysis;

- sensitivity analysis - making changes to the model assumptions and/or the models themselves;
- analysis of the outcomes of previous valuations; and
- analysis of different scenarios.

43. In some cases, the range of reasonable uncertainty may be large. Care should be taken as conclusions which may be drawn at different ends of this range may be totally different (eg large profits vs insolvency).

Risk Margins

44. In most cases, some judgement will be required in establishing appropriate risk margins. It is the actuary's responsibility to support this judgement with such formal analysis as is practical.

45. For a variety of reasons it may be appropriate that provisions required for the purposes of accounts be calculated to include risk margins. Legislative, accounting or other standards may require this.

46. The directors of the entity have the ultimate responsibility for the provision, and not the actuary. The directors should determine the level of prudence which they consider to be appropriate. The actuary's advice on risk margins should assist them in adopting a provision commensurate with this level of prudence.

47. Where risk margins are calculated, this could be done by reference to either:

- the coefficient of variation of the liabilities; or
- the full distribution of the liabilities.

48. Where a coefficient of variation is used, the actuary should state whether it is obtained by:

- internal estimation, ie estimation from the same data set as the central estimate of liability with which it is associated; or
- externally estimated, ie obtained from some source external to that data set.

49. Where external estimation is used to estimate the coefficient of variation, the source should be stated, and its appropriateness

explained. The explanation might make particular reference to one or both of the following:

- the extent to which uncertainty associated with the central estimate is induced by the methodology by which that estimate is produced;
- any differences, such as volume, between the data sets that serve as sources of the central estimate and coefficient of variation respectively.

50. Where internal estimation is used to estimate the coefficient of variation, the actuary should discuss the following:

- the model of claim experience used to generate the coefficient of variation;
- the allowance for variability of economic parameters such as inflation and discount rates;
- any adjustment applied to allow for lack of reliability of the data on which the central estimate is based; and
- any other components used in the internal estimation process.

51. If risk margins have been calculated on the basis of individual classes of business viewed in isolation, it will usually be appropriate to allow for a reduction in risk margins in respect of individual classes of business resulting from the diversification across different classes of business written by the insurer. The amount of such allowance should be determined consistently with the overall principles used in the determination of risk margins.

52. When advising on risk margins, the actuary should have regard to their reasonableness and consistency over time, between classes of business and between reports for different purposes.

G. REPORTING

53. The actuary should prepare, date and sign a written report. The report should state:

- who has commissioned the report and, if different, the addressee(s) of the report;

- the name of the actuary and the capacity in which the actuary is acting;
- the purpose of the report or the terms of reference given;
- the extent, if any, to which the report falls short of, or goes beyond, its stated purpose;
- the extent of compliance with this standard and the reasons for not complying fully with this standard; and
- any restrictions on the actuary.

54. The report should deal with:

- the nature, accuracy and interpretation of the data;
- the analysis of experience;
- the valuation model and key assumptions;
- any changes in the method and key assumptions since the last similar report;
- comparisons of actual experience with that expected under the assumptions in the last similar report;
- the results of the valuation;
- uncertainty of the valuation result.

55. The report should describe the steps taken by the actuary to verify the accuracy of the data, any limitations on the extent or quality of the data and the extent to which the actuary has relied upon the insurer or the insurer's auditor for checking.

56. The assumptions and methods should be stated clearly and their derivation explained. Any qualifications should also be clearly stated. Normally, the report should contain sufficient detail regarding data and methodology that an informed reader be capable of checking the reasonableness of any results included in it.

57. Where the legislation, accounting standards or other rulings require the actuary to use specific assumptions, particularly if they are materially different from those the actuary would otherwise use under this standard, the actuary must clearly state the circumstances, discuss whether or not the assumptions are reasonable and consistent with this standard, and discuss the implications of divergence from this standard.

58. Where the principal requires the actuary to use specific assumptions or the actuary is relying upon an interpretation of legislation, accounting standards or other rulings supplied by the principal or its

advisers, the actuary must clearly state the circumstances, discuss whether or not the assumptions are reasonable and consistent with this standard, and discuss the implications of divergence from this standard.

59. If to be used for balance sheet purposes, then sufficient detail of the valuation results should be available in the report or separately to enable the insurer to comply with the disclosure requirements under the accounting standards, and complete Insurance Act and Income Tax returns unless requested otherwise.

60. In some circumstances it may be necessary to prepare a short statement or certificate regarding the valuation. Considerable care is required to ensure that the statement contains the necessary relevant information and will not be misleading nor quoted out of context. The certificate should include a reference to the actuary's full report and the qualifications stated therein.

H. STATUTORY REQUIREMENTS

61. In certain cases actuaries may be required by legislation or other standards to provide advice regarding liabilities.

62. The provisions of this standard must be considered in the context of the legislation and other standards. Where an apparent conflict exists between this standard and other legislation or standards, the actuary should restrict the application of his/her advice to the context of the legislation or other standards, and refer to the conflict in the advice.

END OF PROFESSIONAL STANDARD 300