

**APN401: VALUATION AND CALCULATION OF TECHNICAL PROVISIONS USING NON-LIFE INSURANCE VALUATION PRINCIPLES****Classification**

This Advisory Practice Note (APN) provides guidance for members of the Actuarial Society of South Africa in the valuation of technical provisions for non-life insurers as well as non-insurance entities that use non-life insurance valuation principles to value technical provisions.

**Abstract**

APN401 considers the valuation of non-life insurers' technical provisions. It also considers the valuation of non-insurance entities' technical provisions for which non-life insurance valuation principles are used.

**Purpose**

The purpose of this APN is to assist members of the Actuarial Society of South Africa in discharging their professional responsibility in relation to the valuation of technical provisions for non-life insurers as well as non-insurance entities which value technical provisions based on non-life insurance valuation principles. Calculating capital requirements, expressing an opinion on a solvency assessment or valuing the assets are beyond the scope of this APN.

**Legislation or Authority**

Legislation or standards which require the valuation of technical provisions include but is not limited to the following:

- The Insurance Act, 2017 and associated Prudential Standards;
- Relevant accounting standards such as IFRS (International Financial Reporting Standards) and IAS (International Accounting Standards).

**Application**

This APN applies to members of the Actuarial Society of South Africa who are valuing the technical provisions for non-life insurers and/or non-insurance entities in the following circumstances, but not limited to:

- Published financial reporting;
- Statutory reporting;
- Independent valuations;
- Commutation agreements; and
- Valuations for foreign companies.

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## **1 Introduction and Governance**

### **1.1 Overview**

- 1.1.1 A non-life insurer is typically defined as an insurer which is not insuring against life perils but insures non-life related perils as defined in governing insurance legislation. For the purpose of this APN, non-life insurers exclude Medical Schemes.
- 1.1.2 A non-insurance entity is defined as any company or entity which must calculate technical provisions for uncertain future obligations, other than an insurer. Examples would include a company selling motor vehicle maintenance plans and the Road Accident Fund.
- 1.1.3 Technical provisions is defined as the amount set aside to meet all liabilities arising out of contracts and includes both provisions relating to expired and unexpired risks.
- 1.1.4 In cases where valuations are performed for foreign companies, members are encouraged to familiarize themselves with the relevant professional guidance that has been issued by the foreign jurisdiction. If no such guidance exists the member should use this APN in so far as it does not contradict any jurisdiction-specific legislation.
- 1.1.5 This APN covers best practice reserving guidelines. Members may use the guidelines in this APN in addition to the prescribed legislation and requirements. For any valuation purpose for which no legislation or requirements exists, the member should follow this APN.
- 1.1.6 If there is any inconsistency between any provision of this APN and a provision of any prescribed legislative requirements, the provision of the latter prevails.

### **1.2 Technical Provisions of Non-Life Insurers**

- 1.2.1 For published financial reporting, non-life insurers should follow the appropriate insurance accounting standards.
- 1.2.2 For statutory reporting purposes, non-life insurers are required to comply with all prevailing legislation at the time of reporting.
- 1.2.3 The member should comply with the reserving policy of the non-life insurer (where such policy exists), and the member should take cognisance of any other governance around the reserving process.

### **1.3 Technical Provisions of Non-insurance entities**

- 1.3.1 When performing valuations for non-insurance entities, the member should consider relevant legislative and accounting standards.

## **2 Business and External Environment**

- 2.1 The member should consider the characteristics of the business processes that may materially affect the valuation of the technical provisions, for example:
  - Nature of coverage, including any unusual terms and conditions of contracts;
  - Nature and mix of risks underwritten;
  - Benefits payable under policy terms or by virtue of legislation, including deductibles and limits;

- Reinsurance arrangements, including any special or unusual features of reinsurance agreements that might affect reinsurance recoveries; and
  - Changes in data quality or interpretation when staff turnover affects key positions, where personnel have a central role in the preparation of accounts or other relevant data.
- 2.2 The member should consider economic, technological, medical, environmental, regulatory and social changes and trends to the extent that these may affect the technical provisions.

### **3 Data**

- 3.1 The member should ensure that data used in the valuation and calculation of technical provisions is appropriate, complete and accurate for the specified valuation purpose. Higher levels of appropriate, complete and accurate data are expected to provide higher levels of consistent and accurate estimates.
- 3.2 For data to be considered appropriate, the member should consider the following factors:
- The suitability of the data for the purpose of calculating technical provisions;
  - The degree of undue estimation errors arising from the amount or nature of the data;
  - The consistency of the data with the methods and assumptions used to calculate the technical provisions; and
  - The appropriateness of the data in reflecting the underlying risks.
- 3.3 For data to be considered complete, the member should consider the following factors:
- The granularity of the data and whether it includes sufficient information to identify trends and to assess the characteristics of the underlying risks;
  - The availability of data for each homogenous risk group in the calculation; and
  - Any exclusion of relevant data and whether there is justification for it.
- 3.4 For data to be considered accurate, the member should consider the following factors:
- The degree of material errors in the data;
  - The consistency of the data from different time periods; and
  - The consistency of recording data over different time periods and whether it is performed in a timely matter.
- 3.5 Where the data does not meet the above requirements, any communication of technical provision results, including the technical provisions report, should identify and explain these deviations as well as how they have been allowed for.
- 3.6 The estimation of technical provisions may require the subdivision of the data into groups of data exhibiting similar characteristics. In the determination of appropriate subdivisions, a balance should be found between homogeneity and statistical reliability.
- 3.7 The member should consider incorporating margins (either explicitly or implicitly) into the technical provisions to compensate for inappropriate, incomplete or inaccurate data. The member should however provide justification for the margin and consider whether adding such margins are permissible as per prescribed legislation or company policy.

## **4 Components of Technical Provisions**

- 4.1 The components to be included in the technical provisions should relate to past and future events relating to business in force at the reporting date.
- 4.2 Provisions relating to past events may include but are not limited to:
- Claims that have been reported;
  - Future development on reported claims (incurred but not enough reported);
  - Claims that have not yet been reported;
  - Reopened claims;
  - Profit commission and/or sliding scale contingent commission; and
  - Claims handling expenses.
- 4.3 Provisions relating to future events stemming from business in force at the reporting date may include, but are not limited to:
- Future claim payments that could arise from unexpired cover on existing policies;
  - Internal expenses incurred in administering policies and settling claims; and
  - Cash-back and other loyalty provisions.
- 4.4 Unallocated Loss Adjustment Expenses (ULAE) relates to those expenses incurred in settling claims that are not directly attributable to individual claims. This usually includes claims department costs and some portion of overheads.
- 4.5 Allocated Loss Adjustment Expenses (ALAE) relates to allocated expenses which are attributable to individual claims. ALAE are typically reported and tracked as part of individual claim costs.
- 4.6 Depending on the purpose of valuing the technical provisions, the member may need to calculate a margin in addition to the best estimate technical provision. The member should consider the prescribed legislation and/or the reserving policy of the non-life insurer or non-insurance entity when calculating such a margin.

## **5 Methodology and Assumptions**

- 5.1 The member should consider the purpose of the valuation as this will guide the choice in valuation methodology and associated assumptions.
- 5.2 The assumptions and methods for valuing different components of the technical provisions should be consistent. Where they are not, the member should provide reasons. Furthermore, where relevant, assumptions for valuing the technical provisions should be consistent with the assumptions used to determine capital, as well as actuarial assumptions for other purposes.
- 5.3 The member should make appropriate allowance for contract boundaries when valuing technical provisions.
- 5.4 The member should perform an experience analysis to help evaluate the appropriateness of the methodology and assumptions. This analysis include some or all of the following aspects:
- The claim frequency relative to some measure of exposure;
  - 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 for the duration of the policy period; and
  - Any other analyses relevant to the circumstances.
- 5.5 Some of the generally accepted actuarial methods which the member may use to value the technical provision relating to past events (claims) include:
- Basic Chain Ladder method
  - Inflation Adjusted Chain Ladder method
  - BF (Bornheutter-Ferguson) method
  - Expected Loss Ratio method
  - Average Cost Per Claim method
  - Cape Cod method
  - Berquist-Sherman method
  - Bootstrap method
- 5.6 When claims data is triangulated, the choice of origin period (accident, reporting or underwriting period), needs to be appropriate to the nature of the business.
- 5.7 The member should be aware of the assumptions underlying any method used as well as any limitations of the method(s).
- 5.8 Selection of the most appropriate valuation model to value the technical provisions is the responsibility of the member. The member may consider 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 analyses of experience. When selecting models and assumptions the member should consider any legislative restrictions.
- 5.9 When valuing the technical provisions relating to cash-outflows from unexpired risks the member should appropriately allow for the incidence of risk.
- 5.10 Issues that the member should consider when valuing any cash-back or other loyalty provisions include:
- Benefits payable as per policy-wording;
  - Status of the policy at valuation date i.e. accumulated bonus or zero accumulated bonus due to recent claims experience;
  - Anticipated claims that will be made between valuation date and bonus-payment date;
  - Anticipated lapse rates; and
  - Anticipated premium increases.
- 5.1 The treatment of negative provisions will depend on the purpose of calculating the provisions and should be consistent with the reserving policy (where such a policy exists).
- 5.12 Unless there is a specific reason, Value Added Tax should generally be excluded from insurance technical provisions, consistent with the accounting treatment of premiums and claims.

## **6 Margins**

- 6.1 Actuarial judgement is involved when setting margins, therefore the purpose of the valuation should be considered when determining margins.

- 6.2 The member should be aware of implicit margins being added to the technical provisions in the process of valuing the technical provisions.
- 6.3 Margins should be explicit and quantifiable rather than implicit. Furthermore, the member should not remove implicit margins by offsetting them against an explicit margin, unless the member has quantified and disclosed both margins.
- 6.4 The member should take cognisance of the different available approaches when determining margins.
- 6.5 Margins should allow for sufficiency and uncertainty.
- 6.6 If the selected reserving methodology (e.g. bootstrapping) produces a distribution of outcomes which allows the technical provisions to be estimated at a particular sufficiency level, the member should disclose the sufficiency level (e.g. 75<sup>th</sup> percentile) of the technical provisions.
- 6.7 When determining an explicit margin, the member needs to consider diversification benefits and correlations between classes of business.
- 6.8 Margins may need to be allocated between valuation units.
- 6.9 There are various methods to determine margins in the technical provisions including, but not limited to:
- Bootstrap techniques
  - Approach using methods consistent with the prescribed regulatory risk margin calculation

The member should select the most appropriate method, given the purpose of the valuation.



## **7 Sensitivity Analyses**

- 7.1 The member should assess the change in results when varying the inputs to the model or calculation.
- 7.2 Where appropriate, the member should communicate the results of any sensitivity analyses to users of the technical provisions.

## **8 Roll-forward of Technical Provisions**

- 8.1 The member may need to value technical provisions as at a date prior to the reporting date due to various reasons, for example to meet reporting deadlines. In such cases, the member needs to consider whether the method used to "roll" the provisions forward to the actual reporting date is appropriate.

## **9 Changes in valuation model/Basis changes**

- 9.1 The valuation model and assumptions should be consistent with the member's interpretation of the data available at the current valuation date, and the purpose of the valuation.
- 9.2 Where the member has the result of a prior valuation as a starting point, the member needs to comment on the new data that has emerged between the valuations in the context of previous valuation models and assumptions. This could be by reference, for example, to an analysis of expected versus actual outcomes.
- 9.3 Where the data available at the current valuation date is credible and suggests a change in approach and/or assumptions from the previous valuation, the member needs to explain the impact on the valuation model/assumptions adopted.
- 9.4 The member should also consider and comment on key external issues impacting on assumptions constituting the valuation basis, for example:
  - Changes to the mix of business of the non-life insurer;
  - Changes in the processing of claims or premiums (for example, administrative delays, changes to case estimation procedures);
  - Identified systems issues (new systems or changes to existing systems);
  - Changes in underwriting;
  - Changes in reinsurance arrangements; and
  - Changes in the economic and legal environment.
- 9.5 The member should quantify and explain effects of material changes in the valuation model and basis since the previous valuation.

## **10 Case Estimates and Large Claims**

- 10.1 Where case estimates are used as a component of the technical provisions, the member needs to determine how case estimates compare to expected future claim payments using generally accepted actuarial techniques or other methods as appropriate. The member should form a view on the relationship by consulting with those responsible for estimates. Care, however, is needed when using such information to adjust valuation assumptions. The member should document any such adjustments.
- 10.2 The member should consider the treatment of large claims when valuing technical provisions.

## **11 Inflation**

- 11.1 Technical provisions should include an allowance for the impact on future outgo of wage inflation, price inflation, court decisions or other economic or environmental causes.
- 11.2 Explicit allowance for inflation is required where past inflation rates have been unstable or if future inflation rates are expected to differ from past inflation rates.
- 11.3 If inflation is allowed for explicitly, then past historical payments should be adjusted to current values as at the date of calculation and appropriate allowance should be made for future inflation.
- 11.4 Analysis of past escalation should form a basis for the assumptions regarding future escalation in the inflation rate.
- 11.5 The inflation index used in the escalation analyses should be appropriate to the particular entity and class of business concerned.

## **12 Discounting**

- 12.1 Discounting should be applied where it will materially impact the technical provisions or if required by legislation, accounting standards or the reserving policy (where applicable).
- 12.2 The following factors should be considered in arriving at an appropriate discount rate:
  - Any rates prescribed by legislation;
  - Expected future investment returns on a portfolio of assets appropriate to the liabilities, bearing in mind the term, nature and currency of the liabilities;
  - The rate of return on specific matching assets. It is normally presumed that as far as possible, technical provisions are matched by fixed-interest investments and cash, rather than other asset classes;
  - Yields on fixed-interest securities;
  - An allowance for tax;
  - Allowance for default risk; and
  - Consistency with inflation assumptions.
- 12.3 When sufficient data is not available to take all the factors in paragraph 12.2 into account, a risk-free discount rate could be used if appropriate.
- 12.4 When discounting is applied, results should be disclosed both before and after discounting.

## **13 Expenses**

- 13.1 The technical provision relating to past events should incorporate an allowance for any related future expenses. This allowance may be separated into allocated and unallocated expenses.
- 13.2 The technical provision relating to future events should incorporate an allowance for future administration expenses.
- 13.3 In allowing for expenses, the following should be considered:
  - Whether expenses are included in the data being analysed, and the corresponding impact on development ratios;

- Historic expense analyses, including expenses as a percentage of gross payments;
- Distortions in past expense analyses due to large events or unsuitable methodology;
- Stability of past and future events and expenses within each valuation unit, by type and age of claim;
- Materiality of the expense assumptions within the context of the overall technical provisions; and
- Allowance for increasing (or decreasing) expenses per policy for a closed valuation unit.

## **14 Gross / net of reinsurance and other recoveries**

- 14.1 Technical provisions should be valued both gross and net of reinsurance and other recoveries, and separately for each valuation unit. Amounts recoverable should be split between reinsurance and other recoveries, for example salvages. Appropriate adjustment to the allowance for the risk of non-recovery of these assets is required.
- 14.2 The bases used to estimate gross and net technical provisions should be consistent.
- 14.3 In many instances, it may be appropriate to use the model for estimating the gross technical provisions as the starting point for development of the model for estimating reinsurance recoveries.
- 14.4 Where reinsurance arrangements embrace risks from more than one class of business (for example, "whole account" or multi-line covers), the member may need to allocate an adjustment between classes. A consistent approach should be taken from year to year.
- 14.5 For the technical provision relating to future events, when adjusting from a net to gross value or vice-versa, the following should be considered:
- For proportional reinsurance and sharing agreements, consider the average proportion retained by the non-life insurer;
  - For non-proportional reinsurance, the simplest approach is to adjust by a fraction of the unearned non-proportional reinsurance premium. This requires an assessment of the expense and profit margins contained in those premiums
  - Where reinsurance is written on an events-occurring basis, allow for future reinsurance premiums for the unexpired period after the expiry of the current reinsurances expire; the expected cost of reinsurance claims under both current and future reinsurances; and other recoveries, including sharing, salvage, subrogation, third party recoveries
- 14.6 The estimated uncertainty for each valuation unit should normally appropriately allow for reinsurance, especially the increased uncertainty brought about by reinsurance terms and possible reinsurer failure.
- 14.7 Where a reinsurer is in default or known to be at serious risk of default, such reinsurances should be reported on separately rather than as a component of the net technical provisions.

## **15 Run-off / wind-up basis**

- 15.1 In the case where the non-life insurer or non-insurance entity is in run-off/wind-up, the member should consider the run-off expenses and should allow for this additional liability when valuing the technical provisions. This provision should be shown separately for allocated and unallocated loss adjustment expenses and other expenses incurred in the event of wind-up.
- 15.2 The member has to consider whether or not an allowance is required for reinsurance recovery write-off in the event of wind-up. Any decisions made in this regard should be justified.
- 15.3 Appropriate allowance needs to be made for non-reinsurance recoveries as it may not be as successful compared to normal going concern conditions to recoup all the recoveries.
- 15.4 The member should consider the impact of costs arising from normal operations increasing as a percentage of income, or even technical provisions.

## **16 Materiality**

- 16.1 Materiality guidelines refer to acceptable margins for errors.
- 16.2 The materiality criteria applied by the member should be consistent with those applied by management and approved by the non-life insurer or non-insurance entity's auditors.
- 16.3 When considering materiality, the following factors should be taken into account:
- Statistical significance of the estimates;
  - Purpose for which the estimates are required, and other potential uses;
  - The cumulative impact of items disregarded on the grounds of immateriality; and
  - The manner in which the uncertainty of results is to be communicated.

## **17 Movement Analysis**

- 17.1 The member should explain the movement from the opening result of the technical provision to the closing result of the technical provision.
- 17.2 Components of a movement analysis may include, but are not limited to:
- Payments made;
  - Additional provisions for new business;
  - Actual experience being different than expected experience;
  - Model and assumption changes; and
  - Unwinding of the discount rate (where discounting is applied).

## **18 Reasonability of Results**

- 18.1 Before finalising the actuarial report, the member should ensure that the results obtained from the actuarial valuation are reasonable, both in aggregate and for each valuation unit within the non-life insurer or non-insurance entity's total portfolio.
- 18.2 Reasonableness should be assessed in relation to:
- Comparable results for that valuation unit in the previous valuation;

- Development in the valuation unit during the inter-valuation period;
- The experience of the valuation unit since the previous valuation;
- Changes in economic assumptions, particularly investment and inflation assumptions;
- Changes to the actuarial model; and
- Available industry results or benchmarks.

18.3 A useful reasonability check is an analysis of the movement in the technical provisions since the previous valuation. The member should be satisfied that differences between the previous result and the present result can be explained in terms of the experience during the inter-valuation period and changes in the valuation model and/or assumptions.

18.4 The member should compare the results to those determined for other purposes (e.g. comparing the technical provisions prepared for public reporting with those for statutory reporting) for reasonability.

## **19 Actuarial Report**

19.1 The member should document the outcome of the valuation of technical provisions in an actuarial report. Where regular valuations are repeated, a formal report should be produced at least annually.

19.2 The member should take cognisance of general actuarial guidelines on reporting such as SAP 901.

19.3 The reliability and any limitations of the data used for a valuation should be documented in the Actuarial Report.

19.4 If the technical provisions were valued at a date prior to the reporting date, the approach used to “roll” the provisions forward to the applicable reporting date should be documented in the Actuarial Report. Any uncertainty as a result of the process should also be documented.

19.5 The results of sensitivity testing performed, analysis of movement and actual vs expected exercises should be documented in the Actuarial Report.

19.6 The Actuarial Report should disclose any deviations from this APN or prescribed legislative requirements and outline the reason(s) for the deviation.

## 20 Glossary

### A

allocated loss adjustment expenses (ALAE)

The provision for claims handling expenses where the expense can be allocated to a specific claim.

Average Cost Per Claim model

A method of reserving which relies on the average cost of claims paid and incurred.

### B

Basic Chain Ladder model

A statistical method of estimating outstanding claims, whereby the weighted average of past claim development is projected into the future. If appropriate, the method can be applied to past claims data that have been explicitly adjusted for past inflation.

Berquist-Sherman model

A reserving method whereby the incurred triangle is adjusted for changes in case reserve adequacy and/or the paid triangle is adjusted for changes in claim settlement rates.

best estimate

Traditionally considered as the resulting estimate when applying the member selected methodology (or model) using the member selected valuation basis. Formally defined within Solvency Assessment and Management regulatory regime as probability weighted-average of an insurer's future cashflows stemming from its insurance business, taking into account the time value of money and all possible scenarios of future potential outcomes.

BF (Bornheutter-Ferguson) model

A reserving method which uses weights based on a priori loss ratio and claim development.

Bootstrap model

This reserving method relies on random sampling with replacement and therefore produces a range of outcomes.

### C

cash-back bonus

A benefit provided for in a policy document that entitles a policyholder to a predetermined benefit on the expiry of a specified period under specified circumstances.

Cape Cod model

A reserving method, similar to the BF model where, instead of a priori loss ratio, it uses weights proportional to a measure of exposure and inversely proportional to claims development.

claims administration expenses

The expected expenses relating to claims and policy maintenance in future.

claims handling expenses

Expenses associated with the recording and settlement of claims (similar to loss adjustment expenses).

closed portfolio

When no new business may be added to a portfolio.

credible data

When data is worthy of confidence due to its applicability, validity or volume.

## **D**

diversification benefit

When combining classes of business, diversification benefits arise since it is unlikely that worst-case outcomes for each risk will occur at precisely the same time.

## **E**

Expected Loss Ratio model

A reserving method by which the ultimate claims are derived from the expected loss ratio assumption and earned premium.

## **I**

Inflation Adjusted Chain Ladder model

A reserving method which is based on the Basic Chain Ladder model but incremental payments or case estimates in each calendar period are adjusted by past inflation to current monetary terms.

## **M**

materiality criteria

The methods, procedures or rules used to assess materiality.

member of the Actuarial Society of South Africa

Includes student, associate and fellow members of the Actuarial Society of South Africa.

## **R**

recoveries

The expected amounts to be recovered in respect of particular claims. A distinction can be made between reinsurance recoveries and non-reinsurance recoveries (salvage, subrogation, sharing agreements, etc.).

reporting date

A point in time at which the insurer reports on its financial position.

risk

The uncertainty of future outcomes in relation to that expected. In particular, an increased uncertainty is interpreted to imply more risk.

run-off

When an insurer will write no new business, but continue to operate with underwritten insurance contracts until the end of the existing policies' term.

run-off expenses

All expected expenses likely to be incurred in running off the portfolio.

## **S**

sensitivity analyses

Assessing the change in result when varying the inputs to a model or calculation.

## **T**

technical provisions

The amount set aside to meet all liabilities arising out of insurance contracts.

## **U**

### unexpired risks

Risks for which coverage extends beyond the valuation date.

### unallocated loss adjustment expenses (ULAE)

Expenses incurred in settling claims that are not directly attributable to individual claims. This usually includes claims department costs and some portion of overheads.

## **V**

### valuation date

A point in time at which an actuarial valuation is performed. The valuation date is usually the same as the reporting date.

### valuation model

All the methods, procedures and calculations used in an actuarial valuation.

### valuation unit

A valuation unit is a line of business, a part of a line of business, a group of lines of business or a group of parts of lines of business, which is treated as a single entity for the purposes of the actuarial valuation.

## **W**

### wind-up

When insurer intends ceasing all business activities and eventually returning its licence.