International Practice of Calculation of Insurance Reserves and Shares of Reinsurers in Insurance Reserves for Non-life Insurance

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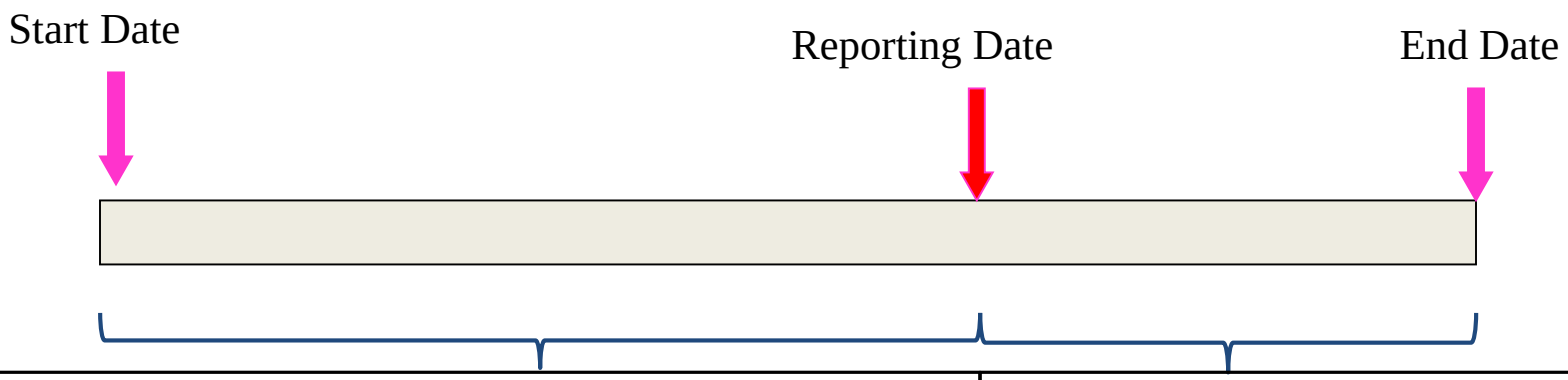
Types of Reserves



Expired Risk (Claims that Have Already Occured)

- Loss Reserves:
  - ✓ Reported Claims
  - ✓ IBNR
  - ✓ Reported but Not Processed (Claims in transit)
  - ✓ Incurred but Not Enough Reported (IBNER)
  - ✓ Reopened
  - ✓ Loss Adjustment Expenses
  - ✓ Salvage & Subrogation

Unexpired Risk (Claims that Are Likely to Occur in the Future)

- Unearned Premium Reserve (UEPR)
- Additional Reserve for Unexpired Risk

UEPR

- “Premiums from short-duration insurance contracts ordinarily shall be recognized as revenue over the period of the contract in proportion to the amount of insurance protection provided” (FAS 60 item 9)
- DAC: “Costs that vary with and are primarily related to the acquisition of insurance contracts (acquisition costs) shall be capitalized and charged to expense in proportion to premium revenue recognized” (FAS 60 item 10)
- Normally *Pro Rata Temporis* as a method of calculation
- Approximations like $1/8^{th}$ of $1/24^{th}$ methods are also possible
- More complex approach in case of non-even risk distribution is possible based on statistical foundation
- Basis for calculation is the Premiums Written:
  - The written premiums contain the due premiums and the premiums expected to arise from the insurance contracts of a period on the basis of reasonable estimableness. The latter are also referred to as “pipeline premiums” and are ascertained according to the best estimate

AURR

- An insurer shall assess at the end of each reporting period whether its recognised insurance liabilities are adequate, using current estimates of future cash flows under its insurance contracts. If that assessment shows that the carrying amount of its insurance liabilities (less related deferred acquisition costs and related intangible assets, such as those discussed in paragraphs 31 and 32) is inadequate in the light of the estimated future cash flows, the entire deficiency shall be recognised in profit or loss (IFRS 4 item 15)
- Possible approach to the assessment of AURR:

AURR = Max(0, Anticipated Ultimate Losses + DAC + Anticipated Maintenance Costs – Investment Income on Held Reserves - UEPR)

- The alternative to *Maintenance Costs* is *Underwriting Expenses*

Loss Reserves: subject to actuarial analysis

- “Actuarial Best Estimate (of Loss Reserve) is an expected value of the company’s loss and loss adjustment expense liability without any margin for prudence” (Non-Life Reserving Standard of the Guild of Actuaries)
- In other words the actuaries estimate a probability-weighted average of the corresponding cash flow
- Accounting or not accounting for the time-value of money (both approaches are allowed)
- Actuarial Best Estimates are made by actuaries gross and net of reinsurance by lines of business and by accident periods
- The uncertainty inherent to loss and loss adjustment expense liability implies that best estimate can be an interval

Loss Reserves: data requirements

- Data have to be adequate, i.e.:
  - ✓ Complete
  - ✓ Internally consistent
  - ✓ Reconciled with the financial reporting
  - ✓ Reasonably grouped and segmented
  - ✓ Available gross and net of reinsurance
  - ✓ Structured by accident periods and development periods
- Data structure:
  - ✓ Paid claims and reported claims
  - ✓ Allocated and non-allocated LAE,
  - ✓ Earned premiums (or premiums corresponding to claims data)
- In addition it is strongly recommended to have:
  - ✓ Claim counts (paid, reported, reopened)
  - ✓ Sal&Su (both accrued and collected)
  - ✓ Large Claims
  - ✓ Earned exposure
  - ✓ Tariff index

Loss Reserves: data requirements (2)

- Grouping and segmentation is a liability of an actuary
- Separate data for bodily injuries and for claims paid in a form of annuities
- Segmentation by geographic sign, by type of a client, by sales channels, currencies, rating factors etc.
- The actuary must collect and use the information of non-statistical character about the underlying business and procedures in order to be able to take into account circumstances that can affect the choice of method and assumptions, such as:
  - ✓ Changes in claims booking, processing and settlement
  - ✓ Changes in the underwriting policy
  - ✓ Changes in the product range (including coverage, rates, reinsurance)

Reserve Analysis

- The actuary must
  - ✓ Group and segment data in a reasonable way
  - ✓ Use generally accepted methods
  - ✓ Use methods that best fit the circumstances of the underlying business
  - ✓ Use several methods based not only on claims development pattern but also on exposure data (e.g. earned premium)
  - ✓ Analyze actual claims development contrasting actual versus expected
  - ✓ Test the reasonableness of the assumptions
- Final target is an estimate of ultimate losses and loss reserves gross and net of reinsurance
- Careful documenting of the analysis. The following is to be documented:
  - ✓ The choice of method and parameter selection
  - ✓ All the reasons for assumptions and decisions made
  - ✓ The documentation has to be systematic, complete, in written form and detailed enough so that another qualified actuary could understand it and reproduce the results

The use of the generally accepted methods

- There exists a set of generally accepted methods that can be used to assess ultimate losses
- No one method is universal so as to allow for correct estimates under all circumstances
- Actuary uses several methods and after the analysis of all outcomes chooses a final (best) estimate of loss reserve
- Final estimate must be obtained on the basis of method that best fits the concrete circumstances of the underlying business
- To check the results and in order to provide for the universal approach across the Guild of Actuaries the estimates obtained with the use of Bornhuetter-Ferguson method have to be obligatorily included into the analysis
- The following methods are recommended:
  - ✓ Chain Ladder on paid and incurred claims
  - ✓ Methods based on the expected loss ratio
  - ✓ Methods including separate analysis of claim frequency and severity
  - ✓ Methods that explicitly account for claims inflation such as inflation adjusted chain ladder, Bennet-Tailor and separation method
- If the alternative method applied is unique, i.e. developed by the executor of the analysis, than it's statistical foundation have to be disclosed

Reporting the results of the analysis

- The actuary has to prepare a report on the results of his/her analysis
- The Actuarial Report should include the aggregated data, documentation and comments
- Detailed enough to enable another actuary to assess on the basis of the report the soundness of the estimated reserves
- Particularly the following has to be disclosed:
  - ✓ Data sources
  - ✓ The results of the reconciliation with the financial information
  - ✓ All material assumptions and methods
  - ✓ Analysis of the adequacy of the previous estimates
  - ✓ Changes to the previous analysis
  - ✓ Special circumstances, limitations and considerations, conclusions and the estimates of the uncertainty (if done)
  - ✓ Actuarial best estimates and interval estimates (if the latter are done)
  - ✓ The amount and definition of segments not included into the analysis
  - ✓ Any additional information that can have the impact of the adequacy of reserves

Actual versus Expected (run-off analysis)

- The retrospective reserve analysis is an obligatory and inherent part of the actuarial analysis
- The actuary has to carefully identify, analyze and comment on the cases when the reserve excess or deficit is too high. In other words when actual value of liability is outside of the range of reasonable estimates previously defined by him/her
- The actuary must analyze and comment on the cases of systematic over(under)statement of loss reserves

Thank you for attention!

Questions?