

# CAA Guideline for the Determination of A Proper Unexpired Risk Reserve

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## Executive Summary

This Guideline was prepared by an ad-hoc committee of the Non – Life Sub – Committee of the Cyprus Actuarial Association in order to help both practicing actuaries as well as those wishing to have a reference guide for the determination of the Unexpired Risk Reserve in General Insurance business. The Guideline provides guidance on the various components used to determine the need and level of the reserve, guidance and advice on the data used in this process.

## A. Purpose

The purpose of this guideline is to provide guidance to the Actuary and set out recommended practices for the implementation of models necessary for the proper determination of an Unexpired Risk Reserve relating to the in force portfolio of general insurance business as at a particular valuation date.

It is stated here at the outset that certain issues addressed by this guideline have been drafted with existing Cyprus legislation and accompanying relevant guidance notes in mind.

## B. Scope

The guideline applies to the Unexpired Risk Reserve (URR), determined for the purpose of establishing an insurer's ability to cover expected claims and expenses arising from the portfolio in force as at the valuation date that are expected to be over and above the unearned portion of the premium (Unearned Premium Reserve - UPR) pertaining to the said portfolio as at that date.

The following guidelines must be observed when considering the scope of the exercise for purposes of calculating the URR:

- i. All "*accounting classes*" must be assessed for the need to establish an URR
- ii. The need for the establishment or not of an Unexpired Risk Reserve (URR) must be assessed for each class of business separately.
- iii. Positive excesses of Unearned Premium over Unexpired Risk in a particular accounting class should not be used to offset partially or fully situations leading to an Unexpired Risk Reserve (where the unearned premium reserve is insufficient to cover the expected costs and claims from the unexpired risk) in another accounting class
- iv. It is reasonable to group certain classes of business together if it can be established that the method of calculation and the prospective claims are similar.
- v. In cases where the data lacks statistical credibility for the calculation of a separate URR it is also reasonable and probably recommended to group certain classes of business together. However, this should be done with caution and the reasons for doing so should be fully documented
- vi. In those cases where the actuary feels that within a certain class of business, different segments of the business may produce different results then the analysis may be refined to separate these.

## C. Definitions

### *Accounting Class*

An Accounting Class is a defined grouping of certain lines of general insurance business as per relevant regulation. For Cyprus these are set out in Part B of Appendix 1 to the Law where General Insurance business is required to be classified into 8 *accounting classes* corresponding to defined groupings of the 18 authorization classes.

*Unexpired Risk Reserve (URR)*

The Unexpired Risk Reserve is defined as a prospective assessment of the amount that needs to be set aside in order to provide for the claims and expenses which will emerge from unexpired risks and which is over and above the Unearned Premium Reserve pertaining to the same risks as at the same valuation date. In other words, it is the excess, if any, of the Expected Claims and Expenses of a portfolio in force as at the valuation date over and above the Unearned Premium Reserve for that class as at the same date.

*Unearned Premium*

The portion of premium which is not earned by the insurer i.e. the amount of premium that covers the period from the valuation date until the date of expiration of the contract.

*Unearned Premium Reserve'*

Unearned premium reserves (UPR) are premiums which have been set aside because the corresponding period of insurance cover has not yet elapsed. It is the portion of the premium written in one accounting period which is held at the end of the accounting period in respect of the unexpired risks. It is usually taken to be net of acquisition costs and so is equal to the unearned premium less deferred acquisition costs.

*Unpaid Premium Installments (UPI)*

These are all premium installments not yet recognized in the written premiums, relating to the period from the valuation date to the expiration of the contract date. In other words,

$$\text{UPI} = \text{Total premium relating to the contract} - \text{Installments due}$$

*Acquisition Expenses*

Acquisition expenses are all expenses (both direct and indirect) connected to the processing of proposals and the issuing of policies. They include both direct costs, such as commissions, and indirect costs, such as advertising costs or the administrative expenses connected with the processing of proposals and the issuing of policies.

*Deferred Acquisition Costs*

Deferred Acquisition costs are the amounts of the acquisition expenses payable in the financial year, but carried forward to the next financial year. These are considered as an asset in the financial statements and in the annual returns. Please note that under Solvency II Deferred Acquisition Cost asset cannot be used to cover the solvency requirement as it has no value in the solvency balance sheet.

*Maintenance Expenses*

Maintenance expenses are all other expenses not characterized as acquisition expenses

*Unexpired Exposure Period*

The time period between the valuation date and the expiry date of the policy contract. For annual policies the Unexpired Exposure Period would be a maximum one year from the valuation date. For multi-year policies the Unexpired Exposure Period can be several years from the valuation date.

*Valuation Date*

The Valuation Date is the date for which the reserve calculation is performed and for which portfolio records are drawn.

*Claims Management Expenses*

These can be broken down to the following two major categories:

- i. Direct Claims Expenses / Claims Settlement Expenses  
Those related to the settlement of particular claims, such as lawyer's and loss adjusters' fees, medical and court expenses, cost of special investigations etc.
- ii. Indirect claims expenses  
Those claims handling expenses that cannot be directly allocated to the settlement of particular claims. These are typically, claims department salaries and related costs, office costs, data processing costs, expert fees for the providing of consultancy and administration services.

## **D. Model Components**

An appropriate model for the determination of the Unexpired Risk Reserve should be developed that incorporates all those factors that either directly or indirectly affect the calculation of the reserve. Such a model should provide for the following:

The Unexpired Risk Reserve is made up of a number of different components that include:

- Unearned Premium Reserve Component
- Claims Forecast (Gross and Net of Reinsurance)
- Expense Forecast

It must be noted that all of the above components must be calculated separately for each class of business. In principle the calculation of each component should be done at the level of each homogeneous group of risk with the total amount for each class being the aggregate of the homogeneous risk groups.

### ***D.1. Unearned Premium Reserve Component***

This is the most straightforward component of the calculation as it is simply the established reserve in respect of the premium for the unexpired risk in question that has yet to be earned by the valuation date. In other words, this is the unearned premium reserve for the risk group or class of business in question.

In this amount any premium instalments not yet due should be added, if not accounted for in the revenue account

It should be noted that the aim is to test the sufficiency of the established (booked) UPR and thus the UPR which should be used is the one that the company will book in the annual returns. This is because the regulations allow for more than one approach to calculate the UPR and the resulting URR should take this into account.

For Cyprus the Cyprus legislation the calculation for the URR should be done on a net basis, hence the UPR used for this exercise should be the net of reinsurance.

### ***D.2. Claims Forecast - E[Claims]***

A forecast is made of the claims that are expected to occur in the future in relation to the unexpired exposure of a certain class of business (or homogeneous subgroup of it, if applicable), including the expected claims management expenses for that portfolio. It is important to note that for the determination of the Unexpired Risk Reserve we are only concerned with claims that might occur in the Unexpired Exposure Period.

Homogeneous risk groups should be used to forecast the claims (e.g. motor third party liability bodily injury) where there are material differences in the claims characteristics (timing, amount, uncertainty etc) within each class.

If the actuary deems it appropriate and material different models can be made for each risk group or class for either the frequency or severity or both for:

- ✦ Attritional Losses
- ✦ Large Losses
- ✦ Catastrophe Losses
- ✦ Exposure

The Claims Forecast must include all claims which might occur in the Unexpired Exposure Period including:

- ✦ Claims which are reported after the end of the Unexpired Exposure Period, but have occurred within the Unexpired Exposure Period
- ✦ Claims which are reopened at any date, but have occurred within the Unexpired Exposure Period

The forecast should allow for the ultimate cost of all claims, allowing for:

- ✦ Any future development of the claims from the date of occurrence until their final settlement
- ✦ Any claims which are expected to be reported after the end of the unexpired exposure period, but occurred within that period
- ✦ Inflation/trends which are appropriate for the type of claims (e.g. court award inflation)
- ✦ Inflation which is appropriate for the timing of expected payments
- ✦ The legal/judicial environment of the Unexpired Exposure Period and until the final settlement of all claims
- ✦ The economic environment of the Unexpired Exposure Period and until the final settlement of all claims
- ✦ Claims handling practices expected in the Unexpired Exposure Period and until the final settlement of all claims
- ✦ Changes/trends in the frequency/severity
- ✦ Claims with low frequency (and large severity) which might have not been observed in the most recent year(s).

The above list of considerations for the claims forecast is not exhaustive and could be expanded depending on factors that could or do impact the claims forecast.

### **Reinsurance Component**

- ✦ Reinsurance might be considered either in the claims component or the expense component (as reinsurance net expense)
- ✦ The reinsurance component includes the following:

#### **a. Reinsurance Claims Recoveries**

- In principle Reinsurance recoveries should be modelled separately from gross claims
- The reinsurance structure which will apply in the Unexpired Exposure Period for each risk group should be used
- The reinsurance structure should be applied to the gross claims of each risk group
- The cost of any additional expected reinstatement premiums should be included

**b. Reinsurance Premiums or other Charges Paid**

- Any reinsurance premiums or other charges which will apply in the unexpired period should be included.
- This includes the cost of any additional expected reinstatement premiums which should be consistent with the gross claims forecast and any expected reinsurance recoveries.
- Additionally this should include the cost of renewing any reinsurance policies which expire in or before the unexpired exposure period.

**c. Reinsurance Commission or other Income Received**

- Reinsurance commission would partly be considered in the DAC component if it is deferred.
- Any other income expected to be received can also be included by making conservative assumptions which are consistent with all the other assumptions regarding gross claims.

***D.3 Expense Forecast E[Expenses]***

The expenses that are associated with the unexpired part of a risk constitute an important component of the overall analysis leading to the determination of the need for an Unexpired Risk Reserve and of the level of such reserve. Therefore, it is of equal or even higher importance that the actuary has a thorough understanding of the insurance entity's expense structure in order to be able to make reasonable assessments as to the expected expenses relating to the unexpired part of in force risks.

Although this guideline deals with Unexpired Risk Reserve the Cyprus Actuarial Association considers it important enough to address within this guideline the issue of expense analysis to the extent necessary for providing actuaries with sufficient guidance on expense assumptions related to the determination of an Unexpired Risk Reserve. Appendix A at the end of this Guideline provides an overview of factors and considerations that an actuary should be aware of whenever dealing with issues relating to expense analysis and expense forecasts.

Expense data development and expense analysis in any given situation involve considerable judgement and subjectivity. In practice the actuary involved in expense analysis will have to consider many factors and determine an approach to the problem being addressed based on these factors.

As noted in the Appendix the expenses of a non – life Company can be categorized into the following major expense categories:

- 1) Acquisition Expenses
  - 2) Maintenance Expenses
  - 3) Claims Management Expenses
  - 4) Investment expenses
- ✚ Acquisition Expenses are expenses that have already been incurred as far as the portfolio in force on the valuation date is concerned. Therefore, Acquisition Expenses should be ignored for purposes of this reserve.
  - ✚ Investment expenses are usually deducted from the investment income of the company.

- ✦ Claims management expenses, for which a part of them will be allowed for in the calculation of the outstanding claims reserve and a part in the calculation of unexpired risk reserve.

Therefore, the categories of expenses that are used for the calculation of the URR are that of Maintenance Expenses and Claims Management Expenses, regarding new claims for the existing portfolio. In estimating the future expenses the actuary has to take into account:

- ✦ Inflationary increases
- ✦ Budgeting differences resulting from new staff recruits, extraordinary items in expenses that may not be recurrent, etc.
- ✦ Circumstances under which maintenance expenses may be assumed to be spread unevenly over the life span of a policy.

### **E. Determining the Unexpired Risk Reserve**

The unexpired risk reserve is calculated based on a projection for future claims and expenses (excluding investment expenses) which are expected to arise after the end of the valuation date and relate to the contracts in force at the valuation date. The above amount is compared to the established reserves for unearned premiums (and any unpaid premium installments) after any Deferred Acquisition Costs. Any excess amount is recognized as URR. All the figures are calculated net of reinsurance.

In algebraic form:

$$\text{URR} = \text{Max} \{ \text{E}[\text{Claims}] + \text{E}[\text{Expenses}] - (\text{UPR} + \text{UPI} - \text{DAC}^{\text{UPR}} - \text{DAC}^{\text{UPI}}) ; 0 \}$$

**E [Claims]** Claims Expected to be incurred after the Valuation Date on policies with Unexpired Exposure Periods as at the valuation date, including the part of claims management expenses that relates to these claims

**E [Expenses]** Expenses Expected to be incurred after the Valuation date on policies with Unexpired Exposure Periods as at the Valuation Date

**UPR** Unearned Premium Reserve as at the Valuation Date

**UPI** Unpaid Premium Installments as at the Valuation Date to the extent that they are not included in the UPR.

**DAC<sup>UPR</sup>** Deferred Acquisition Costs relating to the premiums considered for the calculation of the UPR



**DAC<sup>UPI</sup>** Deferred Acquisition Costs relating to the premium installments considered for the calculation of the UPI

**Note: All figures are net of reinsurance**

### **Additional Considerations**

- ✚ The calculated reserve should be adjusted to allow for known events between the accounting date and the computation date.
- ✚ Assumptions should be consistent between successive years except where the actuary has identified changes in circumstances which would necessitate different underlying assumptions, such as:
  - Known trends in premium rates
  - Known factors influencing the level of claims in respect of unexpired risks
  - Budgeted or planned changes to levels of expenses
  - Exceptional levels of claims in the most recent year which are not expected to repeat

### **F. Data Gathering and Quality**

Any parameters used and any assumptions made must be based on relevant experience. It is the responsibility of the Actuary to verify that the data used for the setting up of any parameters or for the development of any assumptions is of sufficient quality for the purposes of determining an appropriate figure for the reserve. The data used should be relevant and fit for purpose and to this end it is possible that a number of adjustments might be necessary to make the data relevant to the Unexpired Exposure Period.

In general the actuary should make the following considerations with respect to data used for the determination of the Unexpired Risk Reserve:

- a. The claims forecast in principle should be based on historic data as well as qualitative information.
- b. The main data items used for claims forecasting are:
  - claim payments
  - claim reserves
  - number of claims
  - exposure data
  - premium data
- c. The historic data to use depends on:
  - The relevance of the data to the Unexpired Exposure Period
  - The credibility of the data

- d. The actuary when deciding how many years of historical data to use must consider the following principles as a general guide:
- i. Using a greater number of historic years allows:
    - Greater statistical stability of the forecast, since a greater quantity of data is used
    - Better assessment of any trends in the data (e.g. frequency, severity, inflation etc)
    - Better assessment of the low frequency claims (e.g. large claims)
  - ii. The more recent data is (usually):
    - More relevant to the Unexpired Exposure Period (e.g. more representative of the latest underwriting, economic and financial environment.) and would thus require less adjustments (see Data adjustments below)
    - Subject to greater uncertainty with regards to the ultimate cost of claims (larger reserves)
  - iii. The older data is (usually)
    - Less relevant to the Unexpired Exposure Period (e.g. less representative of the latest underwriting, economic and financial environment)
    - Subject to less uncertainty with regards to the ultimate cost of claims (smaller reserves)

In practice the actuary must choose the right balance between all the above factors

e. Data adjustments

The data used might need to be adjusted to make it relevant and fit for purpose  
A number of adjustments can be made to make the data relevant to the Unexpired Exposure Period

*Reasons for Differences between Unexpired Exposure Period and Historic Data*

The following is a non-exhaustive list of considerations/adjustments of how the historic data can differ from the Unexpired Exposure Period and would thus require relevant adjustments:

- Inflation of each claim type
- Mix of business/products/covers in each risk group
- Mix of claim types
- Changes in terms and conditions
- Changes in underwriting practices
- Changes in claims handling practices
- Changes in the economic environment
- Changes in the legal environment, Changes in the tax environment
- Frequency of each claim type, Severity of each claim type
- Frequency of claims settled with nil payments
- Changes in the exposure measure (e.g. premium rates, property inflation)
- Changes in the attitude of policyholders
- Changes in cover/limits/deductibles etc
- Premium rate changes

## **G. Disclosures**

The following information relating to the determination of the Unexpired Risk Reserve should be disclosed by the Actuary:

1. The methodology used to analyze and separate expenses between the four major expense categories identified in Appendix A of this Guideline and his / her opinion as to the extent of appropriateness of such methodology.
2. The methodology used to analyze and separate expenses between the various classes of business and / or subgroups within one or more class of business and his / her opinion as to the extent of appropriateness of such methodology.
3. The resulting URR of each class of business
4. The methodology used to produce the claims forecasts used in the calculation
5. The data used for the expense forecast and the claims forecast :
  - i. *Number of historical years used*
  - ii. *Paid and / or Incurred*
  - iii. *Basis of collection such as:*
    - *Accident Year*
    - *Underwriting Year*
    - *Calendar Year*
6. The assumed levels of inflation of expenses and the bases used in the valuation to allow for such future inflation
7. A statement as to the business falling outside the scope of the reserve, if any
8. The methodology used to calculate the reinsurance URR

## **Appendix A – Expense Analysis**

### ***Major Expense Categories***

For the purposes of Expense Analysis for a non – life (general insurance) company we distinguish between four major categories of expenses. It is important, where possible and necessary, to be able to have the expense breakdowns of these major expense categories by class of insurance. The following major expense categories are considered:

1. Acquisition Expenses
2. Maintenance Expenses
3. Claims Management Expenses
4. Investment expenses

### ***Acquisition Expenses***

Acquisition Expenses as defined in the *Definitions* section are all expenses arising from the process of issuing a policy and can be further subdivided into:

- a) Direct Acquisition Expenses
  - i. Commissions paid to intermediaries in respect of production, training or other allowances paid to intermediaries in respect of new business production
  - ii. Expenses in relation to issuing of policy documents
  - iii. Expenses related to other documents that contain information provided to policyholders
  - iv. Underwriting expenses
- b) Indirect Acquisition Expenses
  - i. Benefits and other allowances paid to intermediaries in addition to the above commissions
  - ii. Advertising and promotion of business expenses for both products and company name
  - iii. Administration expenses related to issuing of policies
  - iv. Direct expenses relating to the issuing of policies, such as stamps and postage
  - v. Underwriting and Marketing department costs
  - vi. Other departments' or staff costs (the part of the department's cost related to acquisition of business)
  - vii. Property-utility expenses related to acquisition of business
  - viii. Postages & stamps expenses and printing and stationary expenses related to acquisition of business
  - ix. Depreciation expenses related to acquisition of business
  - x. Any other expenses related to acquisition of business

### ***Maintenance Expenses***

Maintenance expenses are all other expenses not characterized as acquisition expense and can be further subdivided as follows:

- i. Administration expenses in relation to ceded reinsurance
- ii. Expenses relating to the collection of premiums
- iii. Expenses relating to the issuing of brochures for policyholders in the course of maintenance of a policy

- iv. Personnel expenses, and other expenses that cannot be characterized as acquisition expenses
- v. Expenses relating to any transfer of business, or in case of any mergers and acquisitions
- vi. Expenses relating to the expansion of business to other classes.
- vii. Property-utility expenses which are NOT related to acquisition of business
- viii. Postages & stamps expenses and printing and stationary expenses NOT related to acquisition of business
- ix. Professional fees expenses
- x. Depreciation expenses NOT related to acquisition of business
- xi. Any other expenses NOT related to acquisition of business
- xii. Investment related expenses

### ***Claims Administration expenses***

#### a. Direct claims expenses

Those related to the settlement of particular claims, such as lawyer's and loss adjusters' fees, medical and court expenses, cost of special investigations etc.

#### b. Indirect claims expenses

Those claims handling expenses that cannot be allocated to the settlement of particular claims. These are typically, claims department salaries and related costs, office costs, data processing costs, expert fees for the providing of consultancy and administration services.

The actuary has to be able to identify all expenses and separate them into as many of the above categories as detail allows. Expenses such as commissions and intermediary benefits can be easily categorized, but other expenses require some analysis.

The actuary doing the analysis should work closely with the accounting department to be able to identify the various components of each expense item. Sophisticated accounting systems include an analysis of every expense item according to cost centre, which will make the task at hand easier.

Expenses can be further characterized to those that are production related or salary based. This should be further categorized by class of business.

Certain Type of expenditures can immediately be assigned to each category. Commissions are considered as acquisition costs and can immediately be assigned to each class of business, as paid or deferred acquisition costs.

#### *Staff Cost Allocation*

This can be done through worksheets assigned to each member of the staff, or through overall estimations. The percentage allocations mentioned below are for illustration purposes and do not necessarily apply to all portfolios and all companies.

- Underwriting Department  
100% acquisition expense and the breakdown between classes can be made by a number of ways. The easiest way again is the production split, or number of policies per

class, or actual assignment of people in the various classes. Some companies may have a Motor Underwriting Department, a Fire Underwriting Department etc.

- Claims Department  
100% claims management expense and the split per class of business can be made through number of claims per class, amount of claim per class or other measure as per company particulars.
- Legal Department  
May be 90% claims management expense 10% renewal, according to tasks performed. If the legal department is involved heavily in corporate matters, the split may be different.
- Accounts Department  
May be 40% acquisition, 40% maintenance and 10% claims management and the split per class may be according to premium
- Agency and branch costs, messengers  
According to tasks performed, but may be allocated as 80% acquisition, 15% maintenance and 5% claims, if the employees have any involvement in claims or dealing with complaints or other enquiries from policyholders and again the per class split can be made according to production.
- HR, IT Department and Corporate  
These have to be analyzed further and may be split according to tasks performed. For example, if a new IT system is being developed, centralizing on underwriting then the IT staff can be allocated as 80-20.

After analysis of the various members of staff a final percentage can be allocated for the overall payroll, according to acquisition, maintenance and claims management expenses, and then per class split.

The percentages for each department can then be applied to other staff related costs, such as rent, electricity, etc.

The above analysis according to time spent and tasks performed have to be applied to other expenses that can be easily identifiable, such as travelling, entertainment, motor vehicle expenses etc.

General expenses, such as directors' fees, can be allocated according to the overall split in staff costs.

## **Appendix B – Exposure Draft Process**

This Guideline has been drafted by a team of CAA members of the CAA Non - Life Sub Committee and following team discussions and exchange of views it was released to the entire CAA membership for comments on 19/02/2010.

Comments were invited during the Exposure Draft period that ended on 31/03/2010.

The comments received were reviewed and changes were made to the initial draft taking into consideration the suggestions and comments made.

## **Appendix C –Drafting Team**

This Guideline prepared based on the contributions of the following:

- ✚ Tonia Tsangaris
- ✚ Andreas Stylianou
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