

J. van Eeghen (1981): *Loss Reserving Methods*. Surveys of Actuarial Studies No. 1. Nationale-Nederlanden N.V., Rotterdam. 114 pages

A non-life insurance company receives premiums in advance of the risk period insured. At the end of that period it must have reserves to cover unsettled claims. The loss reserve at a given time is the expected present value of all future payments for claims which have arisen by that time and which may not even have been reported as of the assessment date.

Traditionally insurance companies estimate loss reserves by the case by case method where the claim files of all the outstanding claims are investigated once a year and a subjective assessment of the claim cost is made for each claim. It is obvious that this solution is expensive and time consuming. Therefore, there has been an ever increasing demand for actuarial models where you obtain a collective estimate of the loss reserve for all or most of the claims.

During the recent years many papers have appeared in the actuarial journals on loss reserving. It has become complicated and time consuming to get an overview over this important field of insurance mathematics. To lighten this task J. van Eeghen has assembled and arranged all the most important contributions to loss reserving as of April 1981. The book "Loss Reserving Methods" which is published by the Dutch insurance company Nationale-Nederlanden contains summaries of some 13 papers. The author has not intended to develop new ideas but here and there he puts forward critical comments. As a general rule, the order of presentation of the different methods obeys the following pattern: (a) Model and assumptions, (b) Comments on the assumption, (c) Comments on the data, (d) Computations, (e) Numerical example. The numerical example serves as a check for people who want to write a computer program for the estimation procedures. Unfortunately, it is not mentioned which portfolios the data originate from.

Some very simple methods such as the average value method use data which can be produced by any accounting department. However, it is a common feature of the actuarial methods that they use the so called run-off triangle as a starting point, and these methods also make some assumptions about the structure of the run-off pattern. A run-off triangle is a natural way to represent the payment history of several consecutive accident years. The figures in the cells of the triangle may represent different quantities such as claim numbers, total payments, average payments etc. Some of the actuarial methods are easy to apply and have been used with good results in practice. In this category we find the chain ladder method and Taylor's separation methods. The former method is based on the assumption that the columns in the run-off triangle are proportional apart from random fluctuations where the triangle is filled with cumulative loss figures. Taylor's separation methods is based on the assumption that the entries in the triangle are only influenced by a column effect and diagonal effect apart from random fluctuation. Here the run-off triangle is filled with average payments per claim. This method gives an estimate of the past insurance inflation.

The more complicated models which are summarized in the book are not widely applied in practice to-day. However, as there are still many unsolved

problems in loss reserving, the researcher may here find ideas and inspiration to build upon.

The presentation of the various methods is clear and systematic, and the book represents, therefore, a valuable guide to the actuary who wants a survey of an important field of insurance mathematics.

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Astin-groep Nederland (1982). *New Motor Rating Structure in the Netherlands Actuarial, Statistical and Market Aspects*. 128 pages

At the end of 1981, a new motor rating structure was introduced in the Netherlands, after an extensive research performed by a working group of Dutch non-life actuaries. The Dutch ASTIN Group had the excellent idea to make the results of this study available to the actuarial community.

In the introductory paper (*The Motor Insurance Market in the Netherlands*), G. W. DE WIT provides some statistical, commercial and economic background to motor car third party liability and accidental damage. In spite of the fact that the companies are free to set up their own premiums and conditions, tariffication in the Netherlands was based, industry-wide, on the following classification criteria: the catalogue value of the vehicle, the number of kilometers driven per year, the claims experience of the driver (with maximal discounts reaching 40%, or even 60%), and certain occupations. The companies gathered extensive statistical data (700 000 policies observed during one year, 80 000 claims), and appointed a study group to propose a new rating structure; one of the requirements was premium neutrality on a large scale: the premium volume had to be the same before and after the introduction of the new structure (of course on the policy-holder's level large modifications were to be expected; therefore the new structure had to be approved by the Government Insurance Board before implementation, like any premium increase).

The second paper (*Development of the Study*, by F. K. GREGORIUS) is the more important of the booklet, since it summarizes all the important steps of the study: collection of the statistical material, presentation of the methodology and of the main statistical results, construction and presentation of the new structure, modifications induced by market forces. The reading of this paper should be a "must" for any actuary interested in motorcar insurance, whether from a theoretical or a practical point of view. Indeed all compromises that had to be made between theory and practice are thoroughly explained; for instance the author is fully aware that the study group did not develop a "perfect" rating system, scientifically based in every respect. The main objective was rather to achieve an improved rating structure in the shortest possible term. First, all the possible rating factors are listed, and critically examined with respect to measurability, reliability, and usefulness. For instance, common sense and some statistical studies show that the driver's carefulness or driving skill, his nationality