EDITORIAL AND ANNOUNCEMENTS

EDITORIAL

Actuarial Software Packages: a Chance and a Challenge

Actuaries working in non-life insurance know very well how long is the road from theory to practical application. In other words, how difficult it is to put mathematical methods and models to practical use. Here are just some of the difficulties involved: time pressure; the available data are incomplete and/or inexact; real life problems tend to be complex, "dirty" and difficult to fit into the strict corset of a mathematical model; practical actuaries usually have little time for research and hardly get around even to following passively the new developments in actuarial science by reading the relevant literature. This means that an actuary working in practical insurance has to fulfill high demands. He is constantly required to bridge the considerable gap between correct scientific methodology and the practical needs of the insurance business. He ought to have large practical experience, profound knowledge in risk theory and non-life insurance mathematics, and, last but not least, be an expert in numerical methods and programming. This last point especially is not to be found among the first preferences and interests of an actuary. Although most actuaries are accustomed to using a computer as a technical aid and to writing their own programmes, the programming work for implementing a sophisticated mathematical method is in general very time consuming. Hence new advanced actuarial methods are often rejected for the simple reason that the time required for the programming is considered to be too much. This is where suitable actuarial software packages would bring welcome relief.

Just a few years ago, software packages did not exist in the field of non-life mathematics. Only recently have things started to improve. The first actuarial software packages have come onto the market, especially in the fields of claims reserves, credibility theory and calculation of total claims distributions. Such a development is only to be welcomed. A look across the fence to related fields shows that suitable software packages are likely to have a substantial stimulating impact on applying theoretical results in practice. In classical statistics, for example, methods such as general linear models or time series analysis are nowadays widely used in practice, e.g. in natural science, economics and medecine. The basic theory was already developed in the fifties (linear models) and in the sixties (time series). But the breakthrough in practice only happened some fifteen years later with the availability of statistical software packages. In financial mathematics, the Markowitz approach, one of the bases of modern portfolio theory, goes back to 1952. The famous CAPM-relation (capital asset pricing model) was discovered in the mid sixties. But only in recent years have these theories begun to establish themselves in the practical routines of banks, financial institutions, and insurance companies. One of the reasons for this

time-lag is that well-tested computer software with fast and efficient numerical algorithms, carrying out the numerous calculations within the required short period of time, only appeared on the market a relatively short time ago.

It is certain that software packages can only relieve the actuary of a part of his programming. The necessary data have first to be selected, prepared and put into a given format. It is also certain that practical problems in non-life insurance are often individual and specific. It is therefore argued that standard software is of limited use. I agree with this. But is it not equally true for the related fields mentioned above, where software packages are already widely used? In any case, it seems to me, that well tested computer programmes in the field of actuarial mathematics can only be an advantage to the actuarial community. They are a chance for the practitioners to apply more mathematics and to put more sophisticated methods and models to use. Furthermore, certain standards will be set, which should have a positive effect on the overall professional level. One condition of such software being used by a larger group of users is, however, that the input-output-interfaces are well organised and that the programmes are user-friendly. There is also a great danger connected with such software packages: they can be used in the wrong way. A glance at the related fields mentioned above shows what nonsense often results if such packages are used as a magic black box by non-professionals. A profound knowledge of the underlying theories and implications are indispensable to make the best use of such packages for practical purposes. Hence they are also a challenge to the actuary to keep his mathematical knowledge up to date.

ASTIN should be the breeding place for the interaction between sound theoretical thinking and practical application. One of our targets is to support all activities with the aim of putting mathematical models to practical use. In connection with actuarial software, this could mean that ASTIN promotes the spread of knowledge about such products among the actuarial community. A first step in this direction was the decision of the ASTIN Committee in 1987 to establish an actuarial software library (see IAA Bulletin Nr. 6, p. 19). The editors of the ASTIN Bulletin are also prepared to supplement the Book Reviews column with Software Reviews provided they can find persons willing to write such reviews. Should more be done? One could, for example, consider selling advertising space in the ASTIN Bulletin to the suppliers of such software. Would it be an idea for the local ASTIN groups to organise from time to time a demonstration of and discussion on actuarial software? Any suggestions as well as any opinions coming from our readers will be welcomed by the editors.

ALOIS GISLER