

18th ASTIN COLLOQUIUM
BIARRITZ FRANCE 6th-10th OCTOBER 1985

The 18th ASTIN Colloquium was held in the impressive ambience of the Hotel du Palais in Biarritz. Delegates who arrived on Sunday the 6th found brilliant sunshine, sand and sea as well as actuarial science awaiting them. In order to ease the transition into what was clearly going to be a formidable working programme our thoughtful French hosts had arranged a splendid welcoming reception which was graced by the presence of the Mayor of Biarritz in the Hotel on the evening of the 6th.

Following the opening session on Monday morning a lecture entitled "L'évolution du Marché Français de l'Assurance" was given by C. BÉBÉAR. The insurance market in France is characterised by considerable increases in rates and by quite satisfactory results. Mr. Bebear foresees some difficulties for pension funds and social security, financed by repartition, and as a consequence the possibility of a large private market in this field.

The second lecture of the morning was given by F. DELAVENNE and was entitled "Risques de l'Intermédiation Financière". Mentioning as a starting point the recent bankruptcy of several financial institutes, he underlines that the commission of the intermediary should not be considered as pure gain but rather as containing a risk premium from which appropriate reserves should be generated.

The Colloquium then moved to *Subject 1: "Information Systems in Insurance"*. A diverse group of papers covered topics ranging from property insurance, through household insurance and motor insurance to Egyptian life tables; by techniques ranging from the practical/heuristic to theoretical statistical.

The paper on property insurance presented by T. MACK is intended for the non-actuarial reader, and proposes a method of statistical collation which raises several questions of actuarial interest. M. C. BENNETT's contribution on domestic property insurance in the United Kingdom maps out many of the practical problems arising in the effective management, and in particular the geographical analysis, of this class of business. By contrast the impressive collation of statistics by G. THIRY relating to French motor insurance in all its aspects must be an object lesson to countries not in possession of similar information, which must include most if not all of those represented at the Colloquium.

More methodological papers are those by B. H. POSTHUMA considering the practical constraints on the rating of personal lines insurance and the implications of this for methods of statistical analysis of the experience, and a proposed method for the graduation of Egyptian life experience by ABAZA and HAMDY.

Topics raised in the subsequent discussion concerned the properties of the distribution of rating methods practised by a variety of companies in a given line of business as seen by a reinsurer, and the formulation of criteria against which

the properties of rating methods could be considered. Some thought was also given to the possibility of standardising general insurance data bases globally but general opinion seemed to consider this completely impracticable—in several speakers' experience the achievement of within company standardisation could itself be considered a difficult objective.

Monday afternoon brought *Subject 2*: "Financial and Economic Factors in Insurance Operations". Again papers varied from the substantially practical to relatively abstract formulations of insurance problems.

N. E. MASTERSON's paper shows that inflation in U.S. non-life insurance claims appears to be higher than that measured by consumer price indices for the corresponding periods. Various proposals were discussed for establishing an appropriate price index, since the U.S. experience is essentially similar to that which has been found in recent years in a number of European countries.

B. J. J. A. VON GEUSAU's paper considers a frequent variant of the Stability Clause in Casualty Excess of Loss insurance.

The paper on company solvency by DAYKIN and BERNSTEIN reports an examination, through simulation, of ideas based upon the Finnish development of this subject. In particular, attention is paid to the question of "run-off" risks which necessitates modelling not only the fluctuation in claim distribution but the fluctuation in company estimates of outstanding claims also.

The first utility oriented paper of the Colloquium, that of TAPIERO and KAHANE, is concerned with the risk of ruin in a small collective of insurance where this risk is of appreciable magnitude.

The second such paper, by C. PARTRAT, discusses the question of optimal reinsurance in one year given complete knowledge of cumulative claims distribution by both the insurer and reinsurer.

A vigorous discussion clarified the differences between advocates of the Finnish/simulation school of solvency analysis and those who saw fundamental difficulties in quantifying the distribution of the target value of an estimation process and its bias.

Because of illness A. KAUFMANN's lecture "Le traitement économique dans l'incertain" scheduled for Tuesday morning had to be cancelled. As some compensation the written version of the lecture was distributed. In his place P. DEHEUVELS gave his lecture "Les Lois de type Pareto et Leurs Applications en Théorie Actuarielle", which had originally been scheduled for Wednesday morning. This dealt with a variety of perspectives and applications related to the probability of ruin.

So many contributions were received on *Subject 3*: "Practical Applications of Models" that it was decided to subdivide this subject into two parts, 3(a) and 3(b). Papers in Subject 3(a) are those starting from a practical problem, and proceeding to a solution by way of a mathematical model. Those in 3(b) follow the reverse procedure: starting from mathematical theory application is made to a practical problem.

Subject 3(a) was tackled on Tuesday morning, starting with a paper on the rating of individual model types in private car insurance in Sweden by M.

CAMPBELL. Credibility-based methods were used in an interesting attempt to combine claims experience on the model concerned with that on the whole portfolio and also with expert opinion on the classification of the model.

The paper by COHEN, DUPIN and LEVI is concerned with the subject of the credibility of fire insurance claims experience which they approach by applying the method of Buhlmann/Straub to French experience. The comments made in this paper on the effectiveness and efficiency of tariff classifications must surely raise questions on the fire insurance practice of many territories outside France.

A further paper on fire insurance, in this case domestic fire insurance in Belgium, by CORLIER, INGENBLEEK and LEMAIRE, presents the results of an investigation into a model to estimate rebuilding costs of domestic property. Aspects of this problem arise generally wherever domestic insurance is written, and the methods proposed suggest other approaches to developing the rating of this class of insurance.

Credibility theory is again invoked by FOLKESON, NEUHAUS and NORBERG in the study of Norwegian motorcycle claims, where the desire to justify a rating basis is made difficult by paucity of data. An elaborate mathematical approach has been used to investigate a hierarchical model with additional parameter structure.

The penultimate paper of the morning, by GISLER, HOFMANN and SCHNIEPER, is concerned with excess of loss rating for third party motor liability insurance in Switzerland. The subject is of general interest and the explicit model proposed very clearly presented, analysed and fitted to data. This was followed by L. G. SODERSTROM's paper dealing with the construction of IBNR reserves, with particular reference to Swedish group sickness insurance.

The vigorous discussion generated by such a wide ranging diet of actuarial fare had to be truncated in order to allow preparations to be made for the afternoon's social excursion to St-Jean-Pied-de-Port. Unfortunately, stochasticity in weather took this opportunity to reassert itself with a change from the blue skies which had earlier been so apparent. In spite of this the trip was much enjoyed by participants and accompanying persons.

The remainder of Subject 3 was discussed on Wednesday. AMSLER and MOTTINI propose the use of Markov chains for the analysis of Swiss disability experience, in an application of Non-Life mathematical methods to Life insurance. This was followed by KAAS and GOOVAERTS' calculation of stop-loss premium bounds.

In a further paper related to the calculation of solvency margins, PENTIKAINEN and RANTALA propose an elaborate model for run-off risks, which they define as the variability in claims experience arising from the delay in claims payments.

This discussion subject was completed by N. DE PRIL's paper concerned with the recursive approach to the convolution of arithmetic distributions.

Whilst the Speaker's Corner is intended to mop up subject matter not covered by the main discussion subjects, so extensive was the range of papers generated by these subjects that it was surprising that there nevertheless remained a number of residual topics which gave rise to interesting discussion.

Following this, the three finalists in the ASTIN competition for young researchers presented their work and the results of the competition were announced (see below).

At the General Meeting, the Editorial Committee and the ASTIN Committee as proposed were duly elected.

It was announced that the next ASTIN Colloquium would take place from the 20th–24th September 1986 in Tel Aviv.

A glittering gala dinner-dance, with entertainment from the Basque country, brought an end to the 18th ASTIN Colloquium.

LIST OF PAPERS PRESENTED AND WINNERS OF ASTIN COMPETITION FOR YOUNG RESEARCHERS

Lectures

C. Bébéar, L'évolution du marché français de l'assurance.

F. Delavenne, Risques de l'intermédiation financière.

A. Kaufmann, Le traitement économique dans l'incertain.

P. Deheuvels, Pareto-type laws and their applications to actuarial theory.

Subject 1: Information Systems in Insurance

G. Thiry, Recueil de données statistiques sur l'assurance automobile en France. (presented by) *T. Mack*, Risk statistics in property insurance.

M. C. Bennett, Household insurance statistics by geographical area.

A. K. Abaza and H. Hamdy, A regression model to construct Egyptian life tables.

B. H. Posthuma, Rating bulk products: the trade off between equality and efficiency.

Subject 2: Financial and Economic Factors in Insurance Operations

N. E. Masterson, Inflation—an economic factor on motor car claims costs.

B. J. J. Alting von Geusau, Indexed annuities and the stability clause.

C. D. Daykin and G. D. Bernstein, A simulation model to examine questions of solvency in the light of asset and run-off risks.

C. S. Tapiero and Y. Kahane, Insurance premiums and default risk in mutual insurance.

C. Partrat, Réassurance optimale.

Subject 3: Practical Applications of Models

M. Campbell, An integrated system for estimating the risk premium of individual car models in motor insurance.

A. Cohen, G. Dupin and G. Levi, Tarification de l'incendie des risques industriels par la methode de la crédibilité.

F. Corlier, J.-F. Ingenbleek and J. Lemaire, A model to evaluate the rebuilding cost of dwellings.

M. Folkesson, W. Neuhaus and R. Norberg, A hierarchical credibility model applied to insurance data.

- A. Gisler, S. Hofmann and R. Schnieper*, The calculation of the excess premium for unlimited cover in automobile third party liability insurance in Switzerland.
- L.-G. Söderström*, Revaluation of IBNR predictions.
- M.-H. Amsler and P. Mottini*, Un modèle markovien pour le risque d'invalidité de la théorie à la pratique.
- R. Kaas and M. J. Goovaerts*, Bounds on stop-loss premiums for compound distributions.
- T. Pentikäinen and J. Rantala*, Run-off risk as a part of claims fluctuation.
- N. De Pril*, Recursions for convolutions of arithmetic distributions.

Speaker's Corner

- B. Ajne*, Comparison of some methods to fit a multiplicative tariff structure to observed risk data.
- J.-P. Verlé*, Brève étude de l'influence de l'évolution comparée des taux d'intérêts et de la hausse générale des prix sur la liquidation des provisions de sinistres.
- W.-R. Heilmann*, Ordering of distributions and risk measurements.
- I. Reynolds*, Expert systems in insurance.
- J. P. Wajnszok*, Utilisation d'un tableur en actuariat.
- J.-M. Reinard*, Remarques sur certains modèles de risque semi-markoviens.
- C. Hipp*, Improved approximations for the aggregate claims distribution.

ASTIN Prize for Young Researchers

- P. Devolder* (1st Prize)
Opérations stochastiques de capitalisation.
- S. Harrington* (2nd Prize)
Estimation and testing for functional form in pure premium regression models.
- D. Samson* (3rd Prize)
Expected utility strategic decision models for general insurers.