

BOOK REVIEW

HILARY SEAL, *Stochastic Theory of a Risk Business*, Wiley New York, London, Sydney, Toronto 1969

This monograph is an impressive review of the literature in risk theory up till 1969. The author proves to be aware of all the important publications in the field and he is reorganizing them in a systematic manner.

The book contains 6 chapters and 2 appendices. Chapter I introduces the subject on intuitive grounds whereas from Chapter II on the mathematical style is prevailing. Here the author leads us through the different possibilities to describe the distribution of aggregate claims, in particular the claim ratio distribution and the convolution mixed distribution built up from the basic distributions of claim number and claim amount. Chapter III deals with the calculation of "fair" net premiums. All methods from parameter estimation and hypothesis testing in classical statistics to experience rating, sequential rating by Markov chain theory and credibility are discussed. One could object that the author has missed to put his personal accents as to the value of all these methods. Personally I consider chapter IV as the most interesting part of Hilary Seal's book. The reader familiar with the literature in risk theory will be surprised to find a treatment of the problem which differs from the by now classical presentation by Lundberg and Cramér. Instead of the Wiener Hopf technique one finds methods which are geared to the Laplace transform. Again as in the classical treatment one finds asymptotic formulae but the author gives also methods for exact numerical inversion (Appendix B). It is further explained that the ruin problem is a special case of the general renewal problem (Appendix A) which again is connected with the probabilistic law governing a single server queue. The competence of the author in all these interrelating fields makes the presentation very valuable. Chapter V (premium loading and reinsurance) says little about the problem of loading whereas the retention problem is discussed both from the maximum as well as the relative retention angle. It remains somewhat vague how these two are depending upon each other. Chapter VI on utility theory and its applications is rather short. Nevertheless most aspects relevant for the practical actuary are reviewed, so the utility of reinsurance, the value of future expected dividends and the theorem on reciprocal reinsurance treaties.

This book has obviously been written by an author who is not satisfied when arriving at neat conclusions and formulae but wants to evaluate them numerically. Particularly in the Chapters II and IV this basic philosophy is quite evident. This personal note gives to the whole publication a special character which will be appreciated by the practical actuary as well as by the specialist in risk theory.

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