

REVIEWS

Loss Distributions. By ROBERT V. HOGG & STUART A. KLUGMAN. Published by Wiley.

This book was commissioned by the Actuarial Education and Research Fund and the Casualty Actuarial Society, as a textbook for the casualty actuarial examinations.

The reviewer has waited many years for a book as comprehensive as this to be published. The book itself describes in detail mathematical methods for analysing claim loss distributions. The importance of this book lies not only in developing comprehensive mathematical models, but shows how they can be applied to practical examples.

<p>Chapters 1 & 2 GENERAL STATISTICAL BACKGROUND Chapter 3 STATISTICAL INFERENCE</p>	<p>In particular it introduces the reader to log normal, log gamma, generalized pareto and Burr distributions.</p> <p>Discusses in detail simulation techniques. Then it develops point estimates, using maximum likelihood methods the examples which are extensive in the book are developed to show how to estimate the parameters of interest, for different distributions.</p> <p>The final part of the chapter details methods to fit models and gives clear instructions of how to use computer methods to estimate parameters.</p>
<p>Chapter 4 MODELLING LOSS DISTRIBUTIONS</p>	<p>This is the main chapter of the book and deals extensively with modelling loss distributions when there is truncation, at the bottom end of the distribution i.e. a deductible, or at the top end i.e. an excess of loss point.</p> <p>The importance of this chapter lies in the many examples for the various distributions.</p> <p>The final part deals with clustering, truncated distributions, combining samples, and a brief description of bivariate distributions.</p>
<p>Chapter 5 APPLICATIONS OF DISTRIBUTIONAL MODELS</p>	<p>Extensions of previous models are considered, for example, the effect of inflation and alternative methods of estimation. The final part discusses premiums for excess of loss contracts.</p>

In summary this book is highly recommended. It gives the actuary the tools in which to fit models to skew data, but even more noteworthy, it describes in detail, with numerical examples, how the fit is accomplished.

S. M. COUTTS

Risk Theory—The Stochastic Basis of Insurance. By R. E. BEARD, T. PENTKAINEN & E. PESONEN. Published by Chapman & Hall.

This book is a new edition of *Risk Theory* which was first published in 1969. Since then the art of probabilistic insurance models has changed significantly. This edition reflects these changes and therefore is very different from the first edition.

The emphasis of the book is on the practical side of insurance and the authors are to be congratulated on the wide sources of practical researches they have included in the text.

It is not possible in a short review such as this to enumerate and discuss the wide variety of concepts which have been developed. However, I hope the following will give the reader a flavour:

Chapters 1, 2 & 3
Basic Chapters

These chapters develop the mathematics which are necessary to build the models discussed in later chapters. The mathematics have been tidied up and are easier to understand than in the previous edition.

Chapter 4
APPLICATIONS RELATED
TO ONE-YEAR TIME-SPAN

Discusses the basic mathematical methods for insolvency for the one year horizon. It then continues by developing methods for reserve funds, rules for the greatest retention, excess of loss reinsurance premium and application to stop loss reinsurances. The final section looks at experience rating and credibility theory.

Chapter 5
VARIANCE AS A MEASURE
OF STABILITY

This is a more theoretical chapter, which discusses the optimal strategy for reinsurance companies.

Chapter 6
RISK PROCESSES WITH A
TIME-SPAN OF SEVERAL
YEARS

Is brand new and develops methods to include in the risk theory processes, such items as investment yield and trading profits. The final section discusses Monte Carlo methods for developing realization of risk processes.

Chapter 7
APPLICATIONS RELATED
TO FINITE TIME-SPAN

Basically analyses a dynamic insurance company and investigates the inter-relationship between retention levels, inflation, risk portfolios, business cycles. Then it attempts to quantify the effect of these factors.

Chapter 8
RISK THEORY ANALYSIS
OF LIFE INSURANCE

Investigates a probability approach to life insurance premium rating.

Chapter 9
RUIN PROBABILITY DURING
AN INFINITE TIME PERIOD

Correctly demotes the problem of insolvency in the infinite time period to just 7 pages.

Chapter 10
APPLICATION OF RISK
THEORY TO BUSINESS
PLANNING

Explains the model for a dynamic company to investigate business decisions relating to dividends and competition.

There is a section at the beginning of the book which gives definitions of all the notations used. Given the complexity of the book this is most welcome and will eliminate criticism of previous editions where notations seem to be inconsistent.

Finally, as with the first edition there are numerous problems at the end of each chapter for the interested reader to solve. The solutions at the back of the book give helpful hints if the solution alludes.

In summary, this book is a must for any actuary interested in understanding the process of insurance. However, it is not written as a text book for actuarial students.

The reviewer found the book very readable and in particular the publishers are to be congratulated on the clear and concise way in which this edition has been edited.

S. M. COUTTS