transactions hang together. This book will fill in those gaps, leaving the reader with an appreciation of how these deals come about, the rating, legal and tax considerations that determine the structure of a transaction, and what is required for successful completion. I found the case studies, from some of the key players in the market, particularly useful in consolidating some of the understanding derived from the earlier chapters.

Another thing I liked about this book is that it is written to be accessible. As an example, my knowledge is relatively limited in the tax and legal aspects of ILS deals, but I managed to find my way through these chapters without too much trouble. But that isn't to say that the book lacks depth — on the contrary, there's more than sufficient detail to keep the not-so-novice reader's interest. To this end, the editors should be congratulated for bringing together so many opinions from such a wide variety of backgrounds — accountants, tax professionals, lawyers, actuaries, bankers, and academics — whilst keeping the right level of focus.

I feel this book will serve as an invaluable reference source to those currently working in the sector, those looking to move into ILS, and for students seeking concrete examples to give some context to the theory. A worthy addition to your bookshelf.

JUSTIN GRAINGER

Insurance Risk and Ruin. By DAVID C. M. DICKSON (Cambridge University Press, 2005. 229pp. ISBN: 0521846404)

This is a clear, concise and well written text-book on two daunting actuarial areas of risk models and ruin theory. A background in elementary probability and distribution theory is sufficient without any requirement of probability measure theory or stochastic process. In just 228 pages, it covers both the classical and modern insurance risk and ruin theory completely with full proofs and derivations of numerous recursive formulae, numerous worked examples, and 75 end-of-chapter exercises with outline of solutions.

The book can be read as four parts. First part covers the basics consisting Chapters 1-3. Second part, first focus of the book, covers risk models consisting Chapters 4-5. Third part, second focus, covers ruin theory consisting of Chapters 6-8. Fourth part covers the application of risk and ruin theory consisting Chapter 9.

Chapter 1 — Probability distributions and insurance applications

The chapter starts by presenting the important discrete and continuous distributions then goes on to concept of mixed distributions which may be new to actuarial students. It then covers proportional and excess of loss reinsurance. The chapter ends with recursive formulae for probability function.

https://doi.org/10.1017/S1748499500000646 Published online by Cambridge University Press

Chapter 2 — Utility theory

This is a simple and the shortest chapter on the Jensen's inequality and the exponential, the quadratic, the logarithmic and the fractional power utility functions.

Chapter 3 — Principles of premium calculation

Another simple chapter, it starts with listing five desirable properties, namely non-negative loading, additivity, scale invariance, consistency and no rip-off, for premium calculation principles. It then presents six classical premium principles, namely the pure premium principle, the variance principle, the standard deviation principle, the principle of zero utility and the Esscher principle, and finalises with a more modern principle — the risk adjusted premium principle. Comments or proofs are given as to which of the five properties are satisfied by these seven premium principles.

Chapter 4 — The collective risk model

This is the longest chapter where the classical collective risk model together with conditional expectation and conditional variance, and compound Poisson distribution are introduced. Proportional and excess of loss reinsurance are covered with some details. The second half of the chapter covers extensively on the derivation and application of the most important Panjer recursion formula for the (a,b,0), the (a,b,1) and the Schröter's classes of distributions. Finally, two approximate methods, the normal and the translated gamma approximation, are introduced to overcome the computationally intensive problem of the recursive formulae.

Chapter 5 — The individual risk model.

Three methods of individual risk model, namely the De Peril's recursion formula method, the Kornya's method and the compound Poisson approximation method, are introduced. The chapter ends with a comparison of performance of these methods. The remarks that collective risk model is appropriately applied to general insurance while the individual risk model to life insurance are helpful to beginning students.

Chapter 6 — Introduction to ruin theory

This short chapter can be described as introducing ruin theory using compound binomial model. The well known gamble's ruin problem is presented as worked example. Finally, the classical Lundberg's inequality is presented.

Chapter 7 — Classical ruin theory

The more advanced materials in this chapter cover the Laplace transform of the probability that ruin never occurs (also known as survival probability) and the De Vylder's method to approximate ultimate ruin probability. Exercise 10 covers the Beekman-Bowers' approximation to survival probability and ultimate ruin probability.

https://doi.org/10.1017/S1748499500000646 Published online by Cambridge University Press

Chapter 8 — Advanced ruin theory.

This is the most difficult chapter which may be skipped by actuarial students but will be most useful for practitioners. It first covers the barrier problem — the probability that ruin occurs from initial surplus without the surplus proves reaching the barrier level. Next it covers severity and maximum severity of ruin, then the distribution of the surplus immediately prior to ruin and time of ruin, and finally the modified surplus process where dividend income is paid to shareholders whenever the surplus attains a certain barrier level.

Chapter 9 — Reinsurance

Practitioners will be most interested in this chapter. Both life and general actuaries will inevitably at some point in his or her career be asked to examine the company's current retention limit and the optimality of the different types of reinsurance arrangement. These topics are covered fully in this chapter.

Professor Dickson, a distinguished actuary and educator, succeeded in explaining many intricate recursive formulae succinctly. The proofs were elegant and there are many numerical illustrations given to enhance understanding. He was generous with comments at the end of each section which provided great insights on the applications and implementations of these formulae. Each chapter ends with some insightful remarks and useful references for further readings. The exposition was so clear that it felt like he was talking to you.

Although the book is designed for the final year university students, practitioners will be delighted by three unique features of this book. Firstly, it covers ruin theory in such depth not found in any insurance risk theory books I have read. Secondly, it covers reinsurance extensively more than any other same level introductory books. Thirdly, it covers many modern recursive methods and formulae that can be easily implemented in any software. Many materials covered are beyond typical actuarial exam syllabus, for example, De Pril's recursion formula, Kornya's formula, De Vylder's method and Beekman-Bowers' approximation.

My only criticism of the book is its limited coverage. For example, credibility theory and IBNR are not covered. Thus this book is not recommended to be used as sole text-book for students studying for the actuarial exams.

In conclusion, this is an excellent book equally suitable for self-study and classroom instruction. It is highly recommended as a supplementary reading for students studying for their professional exams and as an overview of the latest development in risk models, ruin theory and reinsurance for practitioners.

SEOW FAN CHONG

https://doi.org/10.1017/S1748499500000646 Published online by Cambridge University Press