Book Review


This is an excellent book, which should be added without delay to the collection of anyone working in the areas of insurance mathematics, financial mathematics, statistics or applied probability in general. It is successful on many levels and should appeal to both an academic audience as well as quantitative actuaries seeking an authoritative reference work. It will make a fine teaching text and contains enough material to fill an introductory course as well as more advanced courses on stochastic modelling. It has the great virtue of being a largely self-contained book and the researcher will find it has encyclopedic qualities, with sections providing useful overviews of many diverse topics in risk theory as well as extensive references to primary sources and further works.

Chapter 1 whets the appetite with a readable summary of the main themes that are to come. Chapter 2 is about probability distributions and nicely links basic topics with more advanced ideas like heavy-tailed distributions. Premiums, utility theory and stochastic orderings of risks are covered in Chapter 3. Chapters 4 and 5 are thorough accounts of classical actuarial material on aggregate claim distributions and risk processes. Renewal processes are addressed in Chapter 6 while Chapters 7 and 8 treat Markov processes in discrete and continuous time. These first eight chapters thus contain ample material for a first course on either risk theory or stochastic processes. There follow five further chapters on more advanced topics such as martingale techniques in discrete and continuous time, piecewise deterministic Markov processes, point processes and diffusion processes. These chapters contain a real wealth of material suitable for intermediate to advanced teaching courses as well as for self-study and reference.

If I have one minor quibble it is with the title. Including the words “for insurance and finance” on texts in applied probability is obviously fashionable at the moment but, while this book has much to say about applications in insurance, there is relatively little on applications in finance. Black Scholes makes a belated entrance on p. 582 (of 639) in the context of a final chapter on diffusions that also treats stochastic integrals and interest rate models, but it would be misleading to suggest that this book is about mathematical finance. On the other hand, for a financial audience, it may well be the ideal book to learn about risk theory and insurance mathematics.

In conclusion, it must be stressed that this book is also a joy to read, being both rigorous and elegantly written. The typesetting is attractive and the notation clear. Clearly, much thought and effort have gone into the structuring of this substantial work and the result is surprisingly seamless, given the involvement of four authors from four different European lands. This book deserves to be, and I am convinced will be, widely read and appreciated.

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