Quantitative Risk Management: Concepts, Techniques and Tools, by Alexander J. McNeil, Rüdiger Frey and Paul Embrechts. Revised edition. Published by Princeton University Press, 2015. Total number of pages: 720. ISBN: 978-0-691-16627-8 (Hardback)

As we face frequent economic crises, large-impact environmental disasters and climate change, risk management is more important than ever. The field of financial risk modelling is evolving rapidly in response to the increasing complexity of risks and the ever more sophisticated regulatory guidelines faced by the banking and insurance sectors. These recent developments stimulated Alexander J. McNeil, Rüdiger Frey and Paul Embrechts to prepare a second, revised edition of their highly influential book published under the same title in 2005. The first edition was already a magnificent piece of work that earned much critical acclaim. Rightly so, for even in the context of the 2007–9 financial crisis that forced many risk managers to rethink their approach to risk quantification, the methodological core of the book proved to be relevant and the main messages stand tall.

The impressive new edition of *Quantitative Risk Management: Concepts, Techniques and Tools* is written for the same audience consisting of students, professionals from the financial and insurance industry, as well as academics with interest in risk management. It continues to offer a cutting-edge treatment of the three main components of financial risk: market risk, credit risk, and operational risk, for which the book provides a compendium of statistical methodology. The theoretical core centres around highly relevant areas such as extreme-value theory, dependence modelling, copulas, risk aggregation, and of course the modelling of financial time series, which readers of the *Journal of Time Series Analysis* may find particularly interesting.

A cursory glance at the table of contents of this impressive monograph already shows that the revision is substantial. The authors have reorganized the material by dividing the book into four parts, comprising risk management basics, methodology, applications, and advanced topics. A second, more thorough look reveals the sizeable amount of work that the authors have accomplished in this revision. The material on credit risk has been considerably extended and now contains new sections on portfolio credit derivatives and counterparty credit risk. A new chapter entirely devoted to market risk has been added, including statistical tools for backtesting. The chapter on risk aggregation has been enhanced with recent developments. Actuaries

will particularly welcome the added material on Solvency II and insurance risk modelling. Taking recent developments into account, the content was thoroughly updated throughout, including the careful and well commented literature review that already appeared at the end of each section of the original edition.

The readers of this book will profit from the vast expertise of the authors, their remarkable pedagogical talent and attention to detail. All three are accomplished academics who have long been working with professionals in the financial and insurance industry. They have contributed to a substantial portion of the methodology, implemented the tools with statistical software, and tested their book in numerous undergraduate, graduate, and professional training courses. This shows on every page. The text is beautifully crafted and the material is extremely well researched. Just as in the first edition, the explanations and proofs are crisp and accessible, while remaining rigorous. The authors succeed in guiding the readers through the mathematical and statistical core, allowing them to gain a deep understanding of the concepts and tools of contemporary risk management. A particularly nice aspect of the book are the many well-thought-out examples which alert to subtle details that can have serious consequences in applications.

The new division of the book into four main parts with shorter sections makes it particularly suitable both for teaching and self-study. As in the first edition, every chapter begins with a summary, which helps the reader to see the forest for the trees. The design of the book makes it a natural tool on which to base risk management courses, both at the introductory and the advanced level. But there is more. With this new edition, specialized courses in market risk, credit risk, risk measurement, risk aggregation or insurance risk modelling can be easily developed as well. I have no doubt the readers will share my own very rewarding experience with teaching from this source.

In short, this is a fantastic book that anyone interested in risk management should have on their desk. Professional risk managers, regulators and actuaries who read it will be amazed by just how much an understanding of the mathematical and statistical background can deepen their knowledge of the tools they are already familiar with. Researchers will learn much about the way statistical methodology is being applied in risk management. All readers will draw inspiration for future work from the current issues faced by the banking and insurance industry. There is no risk whatsoever involved in buying this book.

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