N. H. Bingham (2006) "Statistical Tools for Finance and Insurance by P. Cizek, W. Härdle and R. Weron (eds)", Journal of the Royal Statistical Society: Series A (Statistics in Society) 169 (4), 1005-1005. doi: 10.1111/j.1467-985X.2006.00446_4.x

appreciated. A copy of S-PLUS is essential to make optimum use of the material in the text.

The book is endowed with many examples that have been taken from real modelling situations including central banks and financial institutions. A comprehensive reference section is given and the book has the S-PLUS codes that are needed to perform the statistical modelling. I thought that the comprehensive nature of the text together with the non-mathematical treatment make it highly desirable for the workplace. In this respect, this text is likely to be recommended over that produced by Zivot and Wang (2003). The reference section is extremely useful and comprehensive. Libraries should be encouraged to purchase copies of this text for undergraduate and post-graduate students in finance and statistics.

Reference

Zivot, E. and Wang, J. (2003) *Modeling Financial Time Series with S-Plus*. New York: Springer.

Isaac Dialsingh
Data Trends and Surveys Limited
Cunupia

Statistical Tools for Finance and Insurance
P. Cizek, W. Härdle and R. Weron (eds), 2005
New York, Springer
518 pp., £54
ISBN 3-540-22189-1

The finance and insurance industries have grown both more interlinked and more quantitative and statistical in recent years, partly under the pressure of computerization and partly through the growth of the financial services industry. As a result, the need has grown for texts aimed at academics, students and practitioners providing accessible treatments of appropriate statistical tools. The present book, written by Wolfgang Härdle and some of his collaborators, is a welcome addition to the literature in this area. The format is of 21 separately authored chapters, linked by theme.

Part I (Chapters 1–12) is on finance. Chapter 1 (Borak, Härdle and Weron) is on stable distributions, with particular emphasis on their use in modelling heavy tails, and on parameter estimation. Chapter 2 (Jajuga and Papla) is on extreme value theory and copulas, and looks particularly at separating marginal from dependence structure in multivariate time series. Chapter 3 (Rafael Schmidt) is on tail dependence, focusing on when extremely low (or high) values in, say, a bivariate time series are independent or not. Catastrophe bonds and how to price them are studied in Chapter 4 (Burnecki, Kukla and Taylor), focusing on doubly stochastic Poisson (Cox) process methods. Chapter 5 (Benko and Härdle) is on modelling implied volatility surfaces, using smoothed versions of functional principal component analysis. Here volatility is a well-named concept from finance, meaning the sensitivity of prices to new information; as it is not directly observable, it must be estimated indirectly, and hence implied volatility. Though supposed in the benchmark Black–Scholes model to be constant, volatility actually varies, with stock price and with strike price (the price that is specified in an option, or a financial derivative). The observed volatility surfaces may be fitted, or calibrated, to those implied by certain binomial or, more generally, trinomial, trees (discrete forms of the diffusion-based Black–Scholes model), as in Chapter 6 (Cizek and Komoracki). Stochastic volatility models may be developed to account for the 'smile' (a surface whose sections go up at the edges, like a smile); Heston's model to this effect is studied in Chapter 7 (Weron and Wystup). The fast Fourier transform is valuable in pricing options in more general, and so more realistic, models than the Black–Scholes model (Chapter 8, Borek, Detlefsen and Härdle). Chapter 9 (Gaussel and Tamine) is on mortgage-backed securities, where the option of repaying early has aspects in common with optionality and early exercise features in stock and bond markets. In Chapter 10 (Härdle, Moro and Schäfer), predicting bankruptcy is studied by using support vector machines, which are a technique from statistical learning theory. After a chapter on modelling Indonesian money demand, Chapter 12 (Härdle and Jeong) is on nonparametric productivity analysis.

Part II (Chapters 13–20) is on insurance. There are chapters on loss distributions (Burnecki, Misiorek and Weron), modelling of risk processes (Burnecki and Weron), ruin probabilities in finite and infinite time (Burnecki, Mista and Weron), stable and diffusion approximations to risk processes (Furrer, Michna and Weron), risk models with good and bad periods (Michna) and three chapters on various aspects of premiums.

Part III, 'General', consists of the final Chapter 21 (Borak, Härdle and Lehmann), a tutorial on the use of the authors' recommended computer package XQC, the XploRe Quantlet Client (which is available from `www.xplore-stat.de`).

The book covers a wide range of topical and useful ground. It has plenty of data analysis, plenty of graphics and plenty of references, most of them recent standard texts or recent research contributions or preprints. It will certainly be useful for its intended audience and is worth having for the range of topics and the references alone.

N. H. Bingham
University of Sheffield