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Title: Skew-elliptical distributions

Source: Skew-elliptical distributions and their applications: a journey beyond normality (2004, Chapman & Hall/CRC, ISBN 1-58488-431-2)

Class.: 60E05 62E10 62H05

Keywords: skewness; skew-normal distribution; elliptical distributions

Review: In recent years, there has been an intense activity connected to extensions of classical parametric probability distributions, with special emphasis to the multivariate setting. Although earlier work existed for the univariate context, the interest in the area has been triggered by the paper by *A. Azzalini* and *A. Dalla Valle* [Biometrika 83, 715-726 (1996; Zbl 0885.62062)] which has introduced the multivariate skew-normal distribution. Since then, a large number of papers have appeared at increasing rate per year, presenting additional properties and further levels of extension. An important instance of the latter is produced by the introduction of skewness in the family of elliptical probability distributions.

The book edited by Marc G. Genton represents the first volume-length account of the research work produced in the above-described area. The book is composed by twenty chapters, nine of which comprise the part entitled 'Theory and Inference', and the remaining eleven the part entitled 'Applications and Case Studies'. The first nine chapters present the multivariate skew-normal distributions and its extensions, with special emphasis on skew-elliptical distribution, and a variety of related probabilistic aspects, with some lesser emphasis on statistical issues. The other eleven chapters illustrate how this set of concepts can be useful to tackle a variety of applied problems; these include modelling firm size, capital asset pricing, a form of skew GARCH model, stochastic frontier analysis, modelling coastal flooding, a skew variant of Kalman filtering, spatial prediction of rainfall, shape representation, aid to astronomical distance determination, a frailty model in survival analysis, longitudinal data analysis.

The aim of the book is to "review the state-of-the-art advances in skew-elliptical distributions" collecting in a single volume contributions which examine many diverse aspects of this area. Some of chapters are largely reviews of material which represent the basis of more recent developments discussed in other chapters. This combination allows a reader novice to the area to read the volume without resorting to original papers, with the possibility of getting to the front-line of the research area. The book plays then a very useful role, especially so for those who want to join this exciting and expanding area.