Handbook of fitting statistical distributions with R, Zaven A. Karian and Edward J. Dudewicz, CRC Press, Taylor and Francis Group, Chapman & Hall, Boca Raton, ISBN 978-1584887119 (hardcover, $149.95), xlv+1672 pages+1 CD-ROM, weight 6 pounds, by Christian P. Robert, Université Paris-Dauphine, Institut Universitaire de France, and CREST, Paris.

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Readership: Rather topical and restricted. Not advisable for students.

The title of the book, *Handbook of fitting statistical distributions with R*, is misleading in several respects: this book is not a handbook, i.e. a reference book that can be easily consulted, it does not cover standard statistical distributions but rather a restricted class of parameterised distributions, the R content is at best marginal, and the two authors only wrote part of the book, with (a) a rather large portion being written by other authors and (b) a large overlap with the earlier Karian and Dudewicz (2000): Most of the novelty in this version is due to the inclusion of chapters written by/with additional authors.

The main purpose of *Handbook of fitting statistical distributions with R* is to promote a class of quantile distributions, the generalised lambda distributions (GLD), first introduced by Ramberg and Schmeiser (1974). Those distributions are defined via their quantile function, which is a location-scale transform of

$$Q(y|\lambda_3, \lambda_4) = y^{\lambda_3} - (1-y)^{\lambda_4}$$

(under the constraint on (λ_3, λ_4) that the above function of y is monotonous). There is nothing wrong *per se* with those distributions, but neither is there a particular reason to prefer them to the standard parametric distributions: The first part of the book spends a large amount of space on the fact that GLDs approximate reasonably well (in the L1 or L2 norm sense) those standard distributions, but it does not explain why the substitution is of interest. Furthermore, the estimation of the parameters in GLDs (i.e., the fitting part) is quite involved. Since the likelihood function is not available in closed form, alternatives to maximum likelihood or Bayesian inference

have to be devised. (Su, 2007 proposes an approximate maximum likelihood resolution based on a crude plug-in inversion of the quantile function.) The book concentrates on moment and percentile estimators as the central estimation tool, with no clear message on which method to favour (see, e.g., Section 5.5). The variability of those estimators is evaluated by parametric bootstrap later in the book.

The R aspect of the book is quite limited: the attached CD-ROM contains R codes that are mentioned within *Handbook of fitting statistical distributions with R*. While related to an earlier version of the book (Karian and Dudewicz, 2000), or to contributed chapters, MATLAB and even MAPLE codes are still to be found in this edition.

There are many finer issues I could criticise about *Handbook of fitting statistical distributions with R*, from the inclusion of numerous tables to the unconclusive assessment of estimation procedures. However I see little point in engaging into this: the book does not suit a purpose other than presenting a collection of papers on the state-of-the art research in the branch of GLDs. In my opinion, the book cannot serve as a reference for practitioners, nor as a support in an academic course and, given its unusual price, I see no reason in recommending it.

References

KARIAN, Z. and DUDEWICZ, E. (2000). *Fitting Statistical Distributions: The Generalized Lambda Distribution and Generalized Bootstrap Methods.* Chapman and Hall, New York.

RAMBERG, J. and SCHMEISER, B. (1974). An approximate method for generating asymmetric random variables. *Communications of the ACM*, **17** 78–82.

SU, S. (2007). Fitting single and mixture of generalized lambda distributions to data via discretized and maximum likelihood methods: GLDEX in R. *J. Statist. Software*, **21** 9.