



A Partially Reduced-Bias Class of Value-at-Risk Estimators

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For any level q , $0 < q < 1$, and on the basis of a sample (X_1, \dots, X_n) of either independent, identically distributed or possibly weakly dependent and stationary random variables from an unknown model F with a heavy right-tail function, the value-at-risk at the level q , denoted by VaR_q , the size of the loss that occurred with a small probability q , is estimated by a recent semi-parametric procedure based on a partially reduced-bias extreme value index (EVI) class of estimators, a generalization of the classical Hill EVI-estimator, related to the mean-of-order- p of an adequate set of statistics. Such an estimator depends on two tuning parameters p and k , with p any real number and $1 \leq k < n$ the number of top order statistics involved in the semi-parametric estimation, and outperforms previous estimation procedures. The adequate choice of k and p can be done through the use of either a computer-intensive double-bootstrap method or through reliable heuristic procedures. An application in the field of finance is also provided.

Keywords: extreme value theory; semi-parametric estimation; statistics of extremes; value-at-risk.