The Role of Resampling Methods and Generalized Means in Statistics of Extremes

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Resampling methodologies have recently been revealed very fruitful in the field of *statistics of extremes* (see [5], among other articles). First, we mention the importance of the *generalized jackknife* methodology ([8]) to reduce bias. We next refer to the relevance of the *bootstrap* in the estimation of a crucial tuning parameter in the area, the number k of upper-order statistics involved in the estimation of tails (see [4] and [6], among others). Moreover, most of the estimators of parameters of rare and large events, among which we distinguish the *extreme value index* (EVI) and the Hill EVI–estimator ([9]), are averages of statistics, based on the k upper observations. Only for heavy tails, quite common in many areas of application, and trying to improve the performance of the classical estimators, classes of reliable estimators of parameters of rare events based on adequate *generalized means* are introduced and discussed (see [1], [2], [3], [7], [10], also amog others). Together, these two *resampling procedures* and *generalized means* enable the obtention of reliable semi-parametric estimates of any parameter of extreme events, like a *high quantile*, the *expected shortfall*, the *return period* of a high level or the two primary parameters of extreme events, the EVI and the *extremal index*.

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