Title: "Robust and Efficient Fitting of Claim Severity Distributions"

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Abstract:

Many quantities arising in non-life insurance depend on claim severity distributions, which are usually modeled assuming a parametric form. Obtaining good estimates of the quantities, therefore, reduces to having good estimates of the model parameters. However, the notion of 'good estimate' depends on the problem at hand. For example, the maximum likelihood estimators (MLE) are efficient, but they generally lack robustness. Since outliers are common in insurance loss data, it is therefore important to have a method that allows one to balance between efficiency and robustness.

In this talk, we suggest a general estimation method that we call the method of trimmed moments (MTM). This method is appropriate for various model-fitting situations including those for which a close fit in one or both tails of the distribution is not required. The MTM estimators can achieve various degrees of robustness, and they also allow the decision maker to easily see the actions of the estimators on the data, which makes them particularly appealing. We illustrate these features with detailed theoretical analyses and simulation studies of the MTM estimators in the case of location-scale families and several loss distributions such as lognormal and Pareto. As a further illustration, we present two real-data examples that involve ratemaking and risk measuring exercises. The first data set concerns hurricane damages in the United States from 1925 to 1995, and the second represents total damages done by 827 fires in Norway for the year 1988.