Some New Developments in the Credible Distribution Estimation

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Abstract

This paper presents the credible distribution estimation of forecasting the distribution of individual risk in cases where the observations are weighted or are grouped in intervals. The credibility estimation is obtained by applying the optimal projection theorem. Distribution credibility estimators are also established and numerical illustrations are presented. The main contribution of the paper is how to embed the empirical distribution to credibility modelling in the form of the Bühlmann & Straub (1970) [1] model. In the first part of the paper we present the model of the weighted credibility distribution and in the second part, a model that applies to a grouped data in intervals. With our models, we examine two datasets, one with motor claims amount and the number of motor claims from 10 selected European countries for the period 2004 to 2020, and a second with monthly returns from July 1926 - July 2022 for 10 industry portfolios.

Keywords: credibility distribution estimation; empirical Bayes.

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References

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