

Bootstrap Estimation of the Predictive Distributions of Reserves Using Paid and Incurred Claims

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Abstract

This paper presents a new bootstrap approach to the estimation of the prediction distributions of reserves produced by the Munich chain ladder (MCL) model. The MCL model was introduced by Quarg and Mack (2002) and takes into account of both paid and incurred claims information. In order to produce a bootstrap distribution, this papers addresses the application of bootstrapping methods to dependent data, with the consequence that correlations between the data sets is considered. Numerical examples are provided to illustrate the algorithm and the prediction errors are compared for the new bootstrapping method applied to MCL and a more standard bootstrapping method applied to the chain-ladder technique.

Keywords

Bootstrap, Munich chain ladder, Correlation, Simulation