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Analysis of stochastic claims reserving uncertainty

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Abstract

Traditionally, the claims reserves are settled by using deterministic methods such as chain-ladder method. However, the question of statistical quality of the reserve estimates can not be answered unless a model is found. The goal of this thesis is to analyze the uncertainty of the reserve which comes from a stochastic model called Over-dispersed Poisson model. To achieve the purpose, a data-set of one product for the past 24 years' period is used. The analysis is done by checking the underlying assumptions of the stochastic reserving model, testing different distributions and investigating the ultimate risk and the one-year reserve risk by three simulation methods. Based on the real data and the results of the back test, we can conclude that the Over-dispersed Poisson model works well. The results in all three risk analyses indicate that the Over-dispersed Poisson model works as expected when the underlying assumptions are fulfilled.

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