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ACTUARIAL METHODS FOR CALCULATING INSURANCE TARIFFS IN THE CONTEXT OF FUTURE LOSS RESERVES

Summary

Relevance. Problem statement. In up-to-date reality, the shortcomings of existing methods for estimating insurance loss reserves are highly probable, especially regarding the further application of multifactor models for tariff calculation. Therefore, it is necessary to propose an approach to reserving losses for actuarial pricing based on generalized linear models. Furthermore, it is crucial to address the problem of loss reserves distribution, estimated by actuaries using well-known reserving models, by policies or by tariff "cells" in order to build a multifactor net premium model.

The aim of the study is to develop theoretical principles and practical applications in the field of the development and justification of actuarial methods for calculating insurance tariffs while considering future loss reserves.

Methodology. This study examines the independent normalized loss increments and the Bornhuetter-Ferguson models, which resemble an "averaging" of the expected loss amount estimates. It also explores chain-ladder-based models, the Bühlmann-Straub model, and models based on cross-parameterization of normalized loss increment to improve and apply them practically in insurance tariff determination.

Results. The research has shown that actuarial methods remain essential tools in the development and justification of insurance tariffs, as well as in risk mitigation strategies. Based on the findings, a method for estimating late loss reserves using multifactor models that account for the structure of the rated risks has been proposed. The proposed method application allows for a more accurate consideration of individual factors affecting the overall insurance tariff and its net premium component in particular. The results of the analysis based on these models demonstrated that an attempt to assess the quality of the insurance event period,

which is taken into account by the chain ladder, Bühlmann-Straub or cross-parameterization models, can also be carried out by adding the event period factor to the set of factors used.

Practical significance. The study results can be valuable for analysts and underwriters in insurance companies aiming to improve risk assessment and loss reserve planning, especially when the final loss amount is unknown at the time of reserve formation. The obtained findings will help account for factors influencing loss origination in insured events and enable a more precise construction of a unified tariff model in the future. **Prospects for further research** involve expanding the use of mathematical and actuarial methods in tariff justification of an insurance company, considering probable risks under conditions of increased uncertainty in the current domestic environment.

Keywords: insurance, actuarial calculations, loss reserve, late losses, normalized loss increment, generalized linear model, net premium.

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