



Article from

ARCH 2017.1 Proceedings

General Insurance Deductible Ratemaking

Gee Y. Lee – University of Wisconsin, Madison

Insurance claims have deductibles, which must be considered when pricing for insurance premium. Deductibles may cause censoring and truncation to the observed insurance claims. For this type of data, the regression approach is often used with deductible amount included as an explanatory variable inside a frequency-severity model, so that the resulting coefficient can be used for an assessment of the relativities for deductibles. This approach has the advantage of incorporating the selection effect into deductible ratemaking. On the other hand, standard actuarial textbooks recommend the maximum likelihood approach for estimating parametric loss models, which can be used for calculating the coverage modification amounts due to the deductibles. In this paper, a comprehensive overview of deductible ratemaking is provided, and the pros and cons of various approaches under different parametric models are compared. The regression approach proves to have an advantage in predicting aggregate claims, when deductible choices influence the frequency and severity distributions. The maximum likelihood approach becomes necessary for calculating theoretically correct relativities for deductible levels beyond those observed, for each policyholder. For demonstration, loss models are fit to the Wisconsin Local Government Property Insurance Fund data, and examples are provided for the ratemaking of per-loss deductibles offered by the fund. Selected parametric models from the generalized beta family distributions are compared. Models for specific peril types can be combined to improve the ratemaking, and estimation issues for such models under truncation and censoring are discussed.