

OUTLIERS IN LOSS RESERVING

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Abstract

Impact of outliers in loss reserving is a very serious problem in insurance business. An insurance company needs to estimate a reserve as accurately as possible to be able to meet its future obligations arising from incurred but not reported claims. This task is often impaired by outlier-contaminated datasets. Outliers in insurance typically are not data errors but large financial claims that are an important pricing component.

Common reserving techniques include deterministic chain-ladder method, stochastic chain-ladder method, Mack’s model, Bornhuetter-Ferguson technique. They are applied on data at a certain level of aggregation, often presented in triangles. The chain-ladder method is the most popular one. The outstanding claims reserve can be obtained as a result of applying the chain-ladder method for the development triangle of a univariate business line or a multivariate chain-ladder method for several development triangles of a company with multiple business lines. But the chain-ladder method is very sensitive towards outliers, and reserve estimates can be significantly shifted in the presence of even one outlier. Widely used methods to eliminate outliers are either limiting the number of outliers by robust statistical methods or by change of development factors. But these methods have several disadvantages.

We shall discuss detection of outliers in datasets, the impact of outliers on reserve estimates, and alternative robust techniques to treat outliers, suggested in recent studies.

Keywords: chain-ladder method, loss reserving, outliers, robust estimation.

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