Abstract

Chain Ladder For Tweedie Distributed Claims Data

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The chain ladder algorithm is known to provide maximum likelihood (ML) parameter estimates for a model with multiplicative accident period and development period effects, provided that all observations are over-dispersed Poisson (ODP) distributed.

This result is extended to other members of the Tweedie family of distributions, provided that the ODP relation between mean and variance is preserved.

The conventional chain ladder algorithm does not yield ML estimates for the Tweedie family in general. However, a modified algorithm that does so is derived. This is illustrated numerically.

It is noted that the models underlying the chain ladder and separation methods are the same apart from an interchange of the roles of rows and diagonals of the data set. Consequently, each result on ML chain ladder estimation has its counterpart for the separation method.