

THE BAYES PREMIUM IN AN AGGREGATE LOSS GEOMETRIC-EXPONENTIAL MODEL

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ABSTRACT

One of the most important topics in actuarial science is to obtain the distribution of the total or aggregate loss of the insurance portfolio, S , and individual and collective models are the two main approaches considered. We focus on the collective risk model (hereafter crm) which is described by a frequency distribution for the number of claims K and a sequence of independent and identically distributed random variables representing the size of the single claims X_i . Frequency and severities are assumed independent. Then, the aggregate loss S is the sum of the individual claim sizes, i.e. $S = \sum_{i=1}^K X_i$, for $K > 0$, and $S = 0$, for $K = 0$. The distributions of K and X are termed primary and secondary distribution, respectively.

Another important problem in insurance theory is that of premium calculation, in particular, determining the Bayes Premium. Hence, we combine both topics and deal with the problem of premium calculation in the crm , assuming the Geometric distribution (Ge) as primary distribution and the exponential as secondary distribution (hereafter $crmGeE$). We obtain the Bayes premiums both when the number and severity of claims are considered separately and for the aggregate loss model.

Keywords: Collective risk model; Bayes premium; aggregate loss.