Recursion Formulae for Counting and Compound Distributions as Insurance Risk Models

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Abstract

We consider distributions of the number of claims and of aggregate claims in the insurance risk model. Distributions of aggregate claims are modeled as compound distributions. Kitano et al. (2005) provided a recursion formula (KSO family) for counting distributions, which contains Panjer's, Sundt and Jewell's, Schröter's, two-step Sundt's recursions. The generalized Charlier series distribution introduced by Kitano et al. is a member of the KSO family. They also gave a recursion formula for discrete compound distributions whose claim-number distribution belongs to the KSO family. An extension of the non-central negative binomial distribution as another type of counting distribution is introduced by Ong and Shimizu (to appear), which also satisfies the KSO recursion. It is possible to do a unified treatment of these two distributions by using a tool in Aoyama, Shimizu and Ong (2008). Recursions for probability mass functions and descending factorial moments are studied in the new family of counting distributions.

References

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