

# A multivariate discounted renewal sums with time-dependent claims in the presence of reporting/payment delays

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## Abstract

In this talk, we consider an insurance portfolio containing several types of policies which may simultaneously face claims arising from the same catastrophe. A renewal counting process for the number of events causing claims and multivariate claim severities which are dependent on the occurrence time and/or the delay in reporting or payment are assumed. A unified model is proposed to study the time-dependent loss quantities. Furthermore, some numerical examples involving covariances and correlations of the different types of discounted aggregate (reported/unreported) claims until time  $t$  are provided.

**Keywords:** Multiline insurance; Renewal process; Multivariate distribution; Discounted aggregate claim costs; Reported/Unreported claims; IBNR claims; Joint moments; Covariance; Correlation.