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Asymptotic correlation structure of discounted incurred but not reported claims under fractional Poisson arrival process. (English) Zbl 1430.90188
Eur. J. Oper. Res. 276, No. 2, 582-601 (2019).

Summary: This paper studies the joint moments of a compound discounted renewal process observed at different times with each arrival removed from the system after a random delay. This process can be used to describe the aggregate (discounted) incurred but not reported claims in insurance and also the total number of customers in an infinite server queue. It is shown that the joint moments can be obtained recursively in terms of the renewal density, from which the covariance and correlation structures are derived. In particular, the fractional Poisson process defined via the renewal approach is also considered. Furthermore, the asymptotic behaviour of covariance and correlation coefficient of the aforementioned quantities is analyzed as the time horizon goes to infinity. Special attention is paid to the cases of exponential and Pareto delays. Some numerical examples in relation to our theoretical results are also presented.

MSC:

90B22 Queues and service in operations research
60K10 Applications of renewal theory (reliability, demand theory, etc.)
60G22 Fractional processes, including fractional Brownian motion

Cited in 1 Document

Keywords:

applied probability; fractional Poisson process; incurred but not reported (IBNR) claims; infinite server queues; correlation

Full Text: [DOI](#)

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