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On Bivariate Distributions Defined with Exponential Marginals: Aggregation and Capital Allocation

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In this paper, we consider portfolios of two dependent risks whose joint distributions are defined with exponential marginals. The main goal is to consider various bivariate distributions defined with exponential marginals for which it is possible to identify the distribution of the sum of the two dependent risks. Among others, we will consider e.g. the bivariate Raftery exponential distribution, the bivariate Moran-Downton distribution, and the bivariate distribution defined with the AMH copula and exponential marginals. Based on a top-down approach, closed-form expressions for the contribution under the TVaR-based allocation rule are also obtained. The results are illustrated with numerical examples.