Abstract: The probability distribution of $S_d := X_1 + \cdots + X_d$, where the vector $(X_1, \ldots, X_d)$ is distributed according to the Marshall–Olkin law, is investigated. Closed-form solutions are derived in the general bivariate case and for $d \in \{2, 3, 4\}$ in the exchangeable subfamily. Our computations can, in principle, be extended to higher dimensions, which, however, becomes cumbersome due to the large number of involved parameters. For the Marshall–Olkin distributions with conditionally independent and identically distributed components, however, the limiting distribution of $S_d/d$ is identified as $d$ tends to infinity. This result might serve as a convenient approximation in high-dimensional situations. Possible fields of application for the presented results are reliability theory, insurance, and credit-risk modeling.
Proceedings

Entries: