

Skew-normal Construction beyond Factor Copula Model and Pair Copula Model

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The main purpose of this paper is to derive and study a class of m -variate skew-normal distributions by factor copula model and by utilizing pair copula with given margins respectively. Copulas are used to model multivariate data as they account for the dependence structure and provide a flexible representation of the multivariate distribution. A great number of copulas has been proposed with various dependence aspects. In 1996, H. Joe gave a construction of m -variate distributions beyond pair copula which includes multivariate normal distributions (H. Joe 1996). This class of m -variate distributions with given margins is based on iteratively mixing conditional distributions. To summarize this construction, a new graphical model, called vine tree, for dependent random variables is introduced. Vines can be used to specify multivariate distributions by using the corresponding pair copula and conditional distributions.