Parameter estimation for skew elliptical distributions

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Abstract

In the monograph [1] results on skew-normal ja related distributions are summarized. In the following we shall concentrate to the multivariate skew-normal and skew t-distributions. Both distributions have become important in data modelling as well as in building copula models in data analysis (see [2], for example). Estimation creates problems even in the simplest case of skew-normal distribution as explicit expressions of the maximum likelihood estimates are missing. The method of moments can applied but simulation experiments show that convergence to the real values of parameters can be slow. In 20 years since skew elliptical distributions were introduced asymptotic behaviour and confidence regions of estimators have not got much attention. In [3] asymptotic normality for parameter estimators of skew-normal distribution have been established and convergence to the asymptotic distributions was examined by simulation. As a data model, skew normal distribution is not favourable in many applications because of lack of the property of tail dependence. From that point of view multivariate t-distribution is preferred as the tail dependence can be taken into account. Study of the asymptotic behaviour of parameter estimates for skew t-ditribution is a topic of the ongoing project.

Keywords

Asymptotic normality, Skew-normal distribution, Skew t-distribution.

References

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