Minimaxity in estimation of restricted and non-restricted scale parameter matrices

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Abstract In estimation of the normal covariance matrix, finding a least favorable sequence of prior distributions has been an open question for a long time. This paper addresses the classical problem and accomplishes the specification of such a sequence, which establishes minimaxity of the best equivariant estimator. This result is extended to the estimation of scale parameter matrix in an elliptically contoured distribution model. The methodology based on a least favorable sequence of prior distributions is applied to both restricted and non-restricted cases of parameters, and we give some examples which show minimaxity of the best equivariant estimators under restrictions of scale parameter matrix.

Keywords Bayesian inference · Equivariance · Least favorable prior · Minimax estimation · Restricted parameter space · Statistical decision theory