

Testing the compound symmetry structure in large- and high-dimensional setting

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Abstract

In this paper the Rao score test and likelihood ratio test for testing the hypothesis related to compound symmetry structure of multivariate data covariance matrix are studied. The normal approximation of the Rao score test statistic distribution under large-dimensionality setting as well as the exact and approximate distributions of the likelihood ratio test are derived. The tests are compared via simulations. The Rao score test is available also in the case of high-dimensionality, and it is shown that the normal approximation matches well its distribution in this case. Thus, the normal approximation could be recommended for practice.

Keywords

Rao score test, Likelihood ratio test, Large dimensional asymptotics, High-dimensional asymptotics, Compound symmetry structure.

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