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THE EFFECTS OF NONNORMALITY ON THE UPPER PERCENTILES OF T^2_{\max} STATISTIC IN ELLIPTICAL DISTRIBUTIONS

Takashi Seo¹⁾*1) Tokyo University of Science*

Abstract: In this paper, we consider the effects of nonnormality on the upper percentiles of T^2_{\max} statistic in elliptical distributions. Some approximations based on the Bonferroni inequalities and asymptotic expansion procedure are given under the elliptical distribution setup. In order to achieve the purpose, asymptotic expansions for the distributions of univariate and bivariate Hotelling's T^2 type statistics are derived by a perturbation method when each population has the elliptical distribution. Finally, the accuracy of the approximations is investigated by Monte Carlo simulations for selected vales of parameters.

Key words: Asymptotic expansion, Bonferroni inequality, Elliptical distribution, Monte Carlo simulation, Pairwise multiple comparison

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