



EMPIRICAL LIKELIHOOD RATIO TEST FOR BEHRENS-FISHER PROBLEM: COMPARISON WITH FIVE TESTS

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Abstract: Empirical Likelihood Ratio Test (ELRT) is a powerful nonparametric test for mean. Three versions of ELRT are available for testing equality of mean of two groups. When the variances are unknown and are equal, the asymptotic null distribution of all the three-test statistics is central chi-square with 1 degrees of freedom. When variances are unknown and unequal, Vikas and Rao (2019) derived the asymptotic null distribution of a version of the ELRT statistic and showed that it is scaled chi-squared with 1 degrees of freedom. In this paper, we derived the asymptotic null distribution of the remaining two versions of the ELRT and showed that it is scaled chi-squared distribution with 1 degree of freedom and the scaling factor is the same as derived by Vikas and Rao (2019). One of the versions of ELRT is computationally tedious. This paper studies the finite sample property of popular form of ELRT as a solution to Behrens-Fisher (BF) problem. The test and its corrected version maintain level of significance for moderate sample size. The test has got good power property and it is comparable with some of the popular solutions of the BF problem. The test is applied to a real-life data, which is used in many research papers.

Key words: Empirical Likelihood ratio test, Variance, Level of significance, Power, Behrens-Fisher problem.

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