Sriwana Srisomboon 2010: A Comparison of the Power of the Test Statistics for Homogeneity Testing of Variances. Master of Science (Statistics), Major Field: Statistics, Department of Statistics. Thesis Advisor: Mrs. Ampai Thongteeraparp, Ph.D. 177 pages.

The purpose of this research is to compare the powers of the test for testing homogeneity of variances with Bartletts's test statistic, T_3 test statistic, O'Brien's test statistic and Brown – Forsythe's test statistic with any samples by consideration of populations of three, four and five. The data was composed of normal distribution, t-distribution, lognormal distribution and chi-square distribution. The specified significance levels were 0.01 and 0.05. In consideration of the capability to control type I error based on the Cochran criteria and has the highest power with difference variance ratio, the data are simulated with the Monte Carlo technique and each case is replicated one thousand times with SAS software.

The study shows that for the normal distribution Bartlett's test statistic can control type I error and has the highest power of the test for equal and unequal sample size. For t-distribution, lognormal distribution and chi – square distribution the Brown – Forsythe's test statistic can control type I error and have the highest power of the test for equal and unequal sample size. Both sample size and variance ratio affect the power of the test.

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