

KEY WORD : CHANGEPOINT/NON-PARAMETRIC TEST/POWER OF THE TEST

JIRAKUL SUTJARITKUL : A COMPARISON ON THE POWER OF THE TEST STATISTICS FOR CHANGEPOINT PROBLEM. THESIS ADVISOR : DR. ARUNEE KUMLUNG, 99 pp. ISBN 974-581-379-6

The purpose of this study is to compare three tests used in the changepoint problem, namely, Pettitt's test, Schechtman's test and Wolfe's test. The comparisons among the probabilities of type I error and among the powers of the test are made under the following conditions: the distributions of population are normal, logistic and double exponential, coefficients of variation are 5%, 10%, 15%, 20% and 30%, sizes of experimental unit are 5, 10 and 20, levels of significance are 0.01 and 0.05 . The Monte Carlo technique was used for the simulation and data generation.

The results of this study can be summarized as follow:

1. Three tests, namely, Pettitt's test, Schechtman's test and Wolfe's test can nearly control the probability of type I error when the level of c.v. of population is at most 15% for all distributions, normal, logistic and double exponential and all $\alpha = 0.01, 0.05$. When c.v. is more than 15%, Wolfe's test can control the probability of type I error better than Schechtman's test.

2. Schechtman's test is the most powerful when the changepoint occurred at the nearly beginning ($r=3$) and the end ($r=8$) of the period of measurement. While Wolfe's test is the most powerful when the changepoint occurred at the middle of the period of measurement. These results are for all distributions, normal, logistic and double exponential and all levels of significance, when c.v. are 5%, 10% and 15% and sizes of experimental unit are 5, 10 and 20.

3. For distribution of population is symmetric , power of the test of three tests is the most powerful when the changepoint occurred at the middle of the period of measurement and the power is decreases when the changepoint occurred at the beginning or the end of the period of measurement.