

C623645 : MAJOR STATISTICS

KEY WORD: OUTLIERS / MASKING EFFECT / SWAMPING EFFECT / LINEAR REGRESSION

SOMBOON CHAOCHAIKONG : A COMPARISON ON DETECTING OUTLIER METHODS IN LINEAR REGRESSION ANALYSIS HAVING MASKING AND SWAMPING EFFECTS.

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ISBN 974 - 635 - 758 - 1

This research has an objective to compare efficiency of detecting outliers in linear regression among four procedures ; that are, Mervyn G. Marasinge's Procedure(MV), Hadi and Simonoff's Procedure(HS), Sequential Recursive Method(SRM) and Modified Recursive Method(MRM). These procedures were used to detect outliers with a view to study of error distributions ; that are heavy-tailed and skewed distributions. Each of these cases will be studied for independent variable numbers are 1, 3 and 5 , the sample sizes are 20, 50 and 100, outlier numbers are 1, 2 and 3, respectively. The result of the research can be concluded as follow :

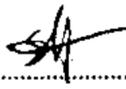
All of distributions types studied are generally found that MV's, SRM's and MRM's test statistics are able to control probability of type I error equivalently well. Another test statistics, HS is able to control probability of type I error quite well with large sample sizes. The consequence of comparison efficiency of detecting outliers with probability of an exactly correct identification (p_1), probability of masking effect (p_2) and probability of swamping effect (p_3) indicate that in case of outlier number of 1, MRM's test statistics is the most effective, HS's and MV's are effective respectively, but MV's is the lowest effective. In case outlier number of 2 and 3, HS's test statistics is the most effective, MV's and SRM's are effective respectively, but MRM's is the lowest effective.

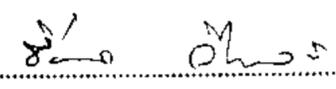
The factors influential to the efficiency of detecting outliers from more to less are location parameter, scale parameter, outlier numbers, independent numbers and sample size, respectively .

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