

The objective of this study is to investigate the efficiency of the estimators of parameters β_0 , β_1 using 5 statistical methods namely 1) Least Squares Method 2) Generalized Least Squares method in the case of heteroscedasticity 3) Generalized Least Squares method in the case of autocorrelation 4) Generalized Least Squares method in the case of autocorrelation and heteroscedasticity 5) Generalized Least Squares method in the case of autocorrelation and heteroscedasticity on the transformed data

The data for this experiment were obtained through simulation using Monte Carlo technique. The error terms were subject to autocorrelation and heteroscedasticity where variance of the error terms was assumed to be proportional to the squared mean of the independent variable, the dependent variable and at random. Four levels of correlation were considered, i.e. 0.3, 0.5, 0.7, 0.9, with sample sizes of 15, 30, 45, and 60 at the level of significance 5% and 1% in testing hypothesis about autocorrelation and heteroscedasticity.

Computer programs were written to calculate the variance in order to study the efficiency of the estimators. The results obtained indicated that no specific method proved to be superior to other methods for all conditions considered in this study. However, the superiority of each method in specific circumstances can be described as follows:

1. When variance of the error terms was proportional to the squared mean of the independent variable: Generalized Least Squares method in the case of autocorrelation and heteroscedasticity was found to be very efficient for correlation of 0.3. But Generalized Least Squares method in the case of autocorrelation and heteroscedasticity and Generalized Least Squares method in the case of autocorrelation and heteroscedasticity on the transformed data were found to be very efficient for correlation of 0.5, 0.7 and 0.9.

2. When variance of the error terms was proportional to the squared mean of the dependent variable : Generalized Least Squares method in the case of autocorrelation was found to be very efficient for all levels of correlation.

3. When variance of the error terms was at random : Generalized Least Squares method in the case of autocorrelation and heteroscedasticity and Generalized Least Squares method in the case of autocorrelation and heteroscedasticity on the transformed data were found to be very efficient for all correlation levels.