

## **Robust feasible generalized least squares: a remedial measures of heteroscedasticity**

### **ABSTRACT**

The assumption of equal error variances (homoscedasticity) is one of the important assumptions for Least Squares (LS) method in linear regression. However, in many practical situations equal error variances do not exist and the problem of heteroscedasticity occurs. As a consequence, although the LS method gives unbiased estimates of parameters but it gives biased estimates of the standard errors of the parameters. To overcome this problem of LS method, the Feasible Generalized Least Squares (FGLS) estimator is often suggested in the literature. The FGLS gives unbiased estimates of the parameters and also their standard errors. Nevertheless, there is an evidence that OLS and FGLS estimators suffer a huge setback in the presence of a few atypical observations that we often call outliers. When both outliers and heteroscedasticity exist, the FGLS gives biased estimates and biased standard errors of the parameters. In this article, we proposed to use the Robust Feasible Generalized Least Squares (RFGLS) which is a modification of FGLS by incorporating the robust LTS estimator. Numerical results show that the RFGLS offers substantial improvements over the existing FGLS.

**Keyword:** Feasible generalized least squares; Heteroscedasticity; Robust; Outliers; LTS estimator