The application of two stage robust weighted least squares and robust bootstrapping procedure on food expenditure data.

ABSTRACT

This paper analysed a real data set that were obtained from a simple random sampling of Faculty of Sciences staffs in Universiti Putra Malaysia. It represents the relationship between total food expenditure (response variable) and monthly income (independent variable). This data set has been extensively analysed and found to have outliers and also heteroscedastic problems. The Ordinary Least Squares (OLS) method is not appropriate to analyse this data because the homogeneity of error variances (homoscedasticity) which is one of the important assumption in linear regression is not met. The commonly used Weighted Least Squares (WLS) method to remedy the heteroscedastic problem is also not appropriate as the WLS estimators are easily affected by a few atypical observations that we often call outliers. In this paper we have used Two Stage Robust Weighted Least Squares (TSRWLS) and bootstrapping method to analyse the food expenditure data. The results of the study indicate that the TSRWLS method is more efficient than the OLS, the WLS, and the other existing methods.