Robust estimation for fixed and random effects panel data models with different centering methods

ABSTRACT

In the presence of outlying observations in panel data set, the traditional ordinary least square estimator can be strongly biased, lead to erroneous estimation and misleading inferential statement. However, Weighted Least Squares (WLS) are usually used to remedy the effect of outliers. Visek used Least Weighted Squares (LWS) based on mean-centering technique for data transformation. The mean-centering was found to be very sensitive to outliers. Furthermore, robust method for data transformation is needed in order to down weight the effect of outliers. We employed a new method of transformation based on MM-estimate of location termed MM-Centering method. A simulation study was used to evaluate the performance the proposed method. The Weighted Least Square based on the proposed MM-centering Method (WLSMM) was found to be the best method for both the high leverage points and vertical outliers.

Keyword: Centering method; Fixed and random effect model; Outlier; Ordinary least square; Weighted lease