Robust Diagnostics for the Heteroscedastic Regression Model

Tsung-Chi Cheng
Department of Statistics, National Chengchi University

Abstract

Assuming homogenous variance in a normal regression model is not always appropriate as invalid standard inference procedures may result from the improper estimation of the standard error when the disturbance process in a regression model presents heteroscedasticity. When both outliers and heteroscedasticity exist, the inflation of the scale's estimate can deteriorate. In this talk, we first propose the residual trimmed maximum likelihood (RTML) estimator to obtain a robust estimation of modelling variance heterogeneity. Then, we offer a graphical analysis to identify outliers under heteroscedastic error without specifying a functional form for variance. A jigsaw plot with two kinds of cut-off points differentiates both outlying and heteroscedastic characteristics for each observation in the data.