

# Box-Cox Transformation Technique to Detect Outliers in Ridge Regression

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Deletion diagnostics for assessing the influential cases on the power transformation parameter estimator in the Box-Cox linear unbiased regression model has been intensively studied in the last two decades. Rather than deleting the influential cases, Cook (1986) proposed a general method for assessing the local influence of minor perturbations of a statistical model. Lawrance (1988) adapted Cook's approach to obtain a diagnostic that can be used to examine the local changes of the transformation parameter estimator caused by small perturbations on a constant-variance assumption.

In the literature, many authors noted that the influential observations on biased ridge type estimators are different from the corresponding unbiased estimators. The use of Box-Cox power transformation in regression analysis is now common; in the last two decades there has been emphasis on diagnostic methods for Box-Cox transformation.

The aim of this study was to apply local influence of minor perturbation of constant variance to biased ridge regression Box-Cox power transformation technique. Two real macroeconomic data sets are used to illustrate the methodologies. The first Data set is macro impact of foreign direct investment in Sri Lanka. This data set contains four regressors and a response variable with 27 observations. The second data set is Longley (1967) data set. It consists of six regressors and a response variable with 16 observations.

**Keywords:** Box-Cox transformation, Influential observations, Local influence, Perturbation, Ridge regression.