

Heteroscedastic and autocorrelation consistent estimators of standard errors in robust regression

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Abstract

A regression estimator is said to be robust if it is still reliable in the presence of outliers. On the other hand, its standard error is said to be robust if it is still reliable when the regression errors are autocorrelated and/or heteroscedastic. One speaks about heteroscedastic and autocorrelation consistent (HAC) estimators of standard errors. This paper shows how robust standard errors can be computed for several robust estimators of regression. The improvement relative to non-robust standard errors is illustrated by means of large-sample bias calculations, simulations, and a real data example. It turns out that non-robust standard errors of robust estimators may be severely biased. However, if autocorrelation and heteroscedasticity are absent, non-robust standard errors are more efficient than the robust standard errors that we propose. We therefore also present a test of the hypothesis that the robust and non-robust standard errors have the same probability limit.