

Variance Estimation in Time Series Regression Models

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The Journal of Modern Applied Statistical Methods, 2009, Vol. 8, No. 1

Abstract:

We study the effect of variance estimation of the regression coefficients when the disturbances are serially correlated in time series regression models. This is important because variance estimation enter into the confidence interval estimation, hypotheses testing, spectrum estimation, and in expressions for the estimated standard error of prediction. Using computer simulations, we consider the robustness of various estimators, including Estimated Generalized Least Squares (EGLS). We consider the estimates of the variance of the coefficient estimators produced by computer packages. In particular, we generate models with a second order auto-correlated error structure, but consider the robustness of estimators based upon misspecified order. The major finding is that, Ordinary Least Squares (OLS) (order zero) estimates outperform first order EGLS. A full comparison of order zero and four estimators indicate that over specification is preferable to under specification.

Keywords: Autoregressive models, Auto-correlated, Disturbances, Or-

dinary Least Squares, Generalized Least Squares.