Εβδομαδιαίο Σεμινάριο

On theory and applications of second-order least-squares estimation for regression

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This talk reviews the theory second-order least squares estimation (SLSE) in order to improve the estimation of regression parameters. We generalize the theory of SLSE to regression models with autocorrelated errors. Under certain regularity conditions, we establish the consistency and asymptotic normality of the proposed estimator and provide a simulation study to compare its performance with the corresponding OLSE and GLSE (Generalized Least Square Estimator). It is shown that the SLSE performs well giving relatively small standard errors (se) and bias in estimating parameters of such regression models with autocorrelated errors. Based on our study, we conjecture that for less correlated data, the standard errors of SLSE lie between those of the OLSE and GLSE which can be interpreted as adding the second moment information can improve the performance of an estimator.

Keywords: Second-order least square, Asymptotic normality, Regression model, Autocorrelated errors

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