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Joint Heidelberg, Karlsruhe and Mannheim research seminar in Econometrics

Is Robust Inference with OLS Sensible in Time Series Regressions? Investigating Bias and MSE Trade-offs with Feasible GLS and VAR Approaches

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Abstract:

It has become commonplace in applied time series econometric work to estimate regressions with consistent, but asymptotically inefficient OLS and to base inference of conditional mean parameters on robust standard errors. This approach seems mainly to have occurred due to concern at the possible violation of strict exogeneity conditions from applying GLS: We first show that even in the case of the violation of contemporaneous exogeneity, that the asymptotic bias associated with GLS will generally be less than that of OLS. This result extends to Feasible GLS where the error process is approximated by a sieve autoregression. The paper also examines the trade offs between asymptotic bias and efficiency related to OLS, feasible GLS and inference based on full system VAR. We also provide simulation evidence and several examples including tests of efficient markets, orange juice futures and weather and a control engineering application of furnace data. The evidence and general conclusion is that the widespread use of OLS with robust standard errors is generally not a good research strategy. Conversely, there is much to recommend FGLS and VAR system based estimation.