Local Projections, Autocorrelation, and Efficiency

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A more accurate estimator of causal effects may help economists better evaluate how monetary policy affects the economy.

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It is well known that Local Projections (LP) residuals are autocorrelated. Conventional wisdom says that LP have to be estimated by OLS with Newey-West (or some type of Heteroskedastic and Autocorrelation Consistent (HAC)) standard errors and that GLS is not possible because the autocorrelation process is unknown and/or because the GLS estimator would be inconsistent. I derive the autocorrelation process of LP and show that it can be corrected for using a consistent GLS estimator. Estimating LP with GLS has three major implications: 1) LP GLS can be less biased, more efficient, and generally has better coverage properties than estimation by OLS with HAC standard errors. 2) Consistency of the LP GLS estimator gives a general counterexample showing that strict exogeneity is not a necessary condition for GLS. 3) Since the autocorrelation process can be modeled explicitly, it is now possible to estimate time-varying parameter LP.

JEL Classification: C32, C36

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Related Research

- Jordà, Òscar. 2005. "Estimation and Inference of Impulse Responses by Local Projections." *American Economic Review*, vol. 95, no. 1, pp. 161–182.

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