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INVITATION TO

# The Asymptotic Validity of "Standard" Fully Modified OLS Estimation and Inference in Cointegrating Polynomial Regressions

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## ABSTRACT

The paper considers estimation and inference in cointegrating polynomial regressions, i. e., regressions that include deterministic variables, integrated processes and their powers as explanatory variables. The stationary errors are allowed to be serially correlated and the regressors to be endogenous. We show that estimating such relationships using the Phillips and Hansen (1990) fully modified OLS approach developed for linear cointegrating relationships by incorrectly considering all integrated regressors and their powers as integrated regressors leads to the same limiting distribution as the Wagner and Hong (2016) fully modified type estimator developed for cointegrating polynomial regressions. The only restriction for this result to hold is that all integrated variables themselves are included as regressors. Key ingredients for our results are novel limit results for kernel weighted sums of properly scaled nonstationary processes involving

powers of integrated processes and a functional central limit theorem involving polynomials of Brownian motions as both integrand and integrator. Even though simulation results indicate performance advantages of the Wagner and Hong (2016) estimator that are partly present even in large samples, the results of the paper drastically enlarge the useability of the Phillips and Hansen (1990) estimator implemented in many software packages.

**We hope to see you there!**



