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Oracle efficient estimation of structural breaks in cointegrating regressions. (English)
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Summary: In this article, we propose an adaptive group lasso procedure to efficiently estimate structural breaks in cointegrating regressions. It is well known that the group lasso estimator is not simultaneously estimation consistent and model selection consistent in structural break settings. Hence, we use a first step group lasso estimation of a diverging number of breakpoint candidates to produce weights for a second adaptive group lasso estimation. We prove that parameter changes are estimated consistently by group lasso and show that the number of estimated breaks is greater than the true number but still sufficiently close to it. Then, we use these results and prove that the adaptive group lasso has oracle properties if weights are obtained from our first step estimation. Simulation results show that the proposed estimator delivers the expected results. An economic application to the long-run US money demand function demonstrates the practical importance of this methodology.

MSC:
62E20 Asymptotic distribution theory in statistics
62M10 Time series, auto-correlation, regression, etc. in statistics (GARCH)
91B84 Economic time series analysis

Keywords:
adaptive group Lasso; change-points; cointegration; model selection; US money demand

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