Detecting structural changes in linear models: A variable selection approach using multiplicative indicator saturation*

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Abstract

We model structural breaks in regression coefficients of multivariate linear models using multiplicative indicator saturation (MIS) in Autometrics. Baseline performance is assessed using Monte Carlo experiments. First, we show that there is almost no efficiency loss under the null of no breaks, irrespecitve of the number of variables in the system. For a bivariate case with multiple breaks of varying size and timing we find that MIS can detect the break points correctly even for zero-mean iid variables. Performance is improved for the non-zero mean autoregressive case and larger break sizes. Furthermore, using a recursive procedure, we assess the number of post–break observations required for successful detection. Finally, we conduct empirical tests for structural change in inflation persistence and the Phillips curve for the UK. Our results confirm the presence of three breaks for both cases: 1965, 1971 and 1974. These are consistent with the post Bretton Woods argument and support the Lucas critique. Performance of MIS in simulations and empirical cases is compared with the Bai–Perron procedure.

Keywords: General-to-specific; Structural breaks; Multiplicative indicator saturation; Test power; Autometrics; Simulations.
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