

Group orthogonal greedy algorithm for structural break time series: from univariate to multivariate

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Abstract

The problem of estimating change-points in a structural break autoregressive (SBAR) model when the number of change-points m is unknown is considered in this paper. By reformulating the problem in a high-dimensional regression context, a modified high-dimensional variable selection method, namely, the so-called GOGA+HIDC+Trimming, is proposed to estimate the change-points $\{t_1, \dots, t_m\}$ and the unknown parameter m . It is further shown that these estimators are consistent and the computation can be efficiently performed. This method is further extended to the multivariate case to consider the structural break vector autoregressive (SBVAR) model. It is shown that the proposed method can be adopted to integrate the information across different components even when the change-points are relatively packed across components. Simulation studies are conducted to assess the finite sample performance.

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