

**Change-point Estimation in Random Coefficient AR( $\infty$ ) Model**

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Abstract: The paper considers a random coefficient AR( $\infty$ ) model,

$$y_t = \mu + \sum_{i=1}^{\infty} \phi_i(a + \xi_{it})y_{t-1} + \alpha\eta_t ,$$

where  $\eta_t \sim i.i.d.N(0,1)$  and the random coefficient  $\xi_{it} \sim i.i.d.N(0,1)$  , and  $\xi_{it}$  and  $\eta_t$  are mutually independent. It is shown that the sufficient condition for the existence of a strictly stationary solution to the model is  $\lambda B^{1+\delta} < 1, \delta > 0$  , defined in the paper. The bounds for the cross-covariance function of the model are derived and explicit formulae are obtained in special cases. Consistency of a CUSUM type change-point estimator is proved and its rate of convergence is established.

Keywords: Random coefficient AR( $\infty$ ) model; Change-point estimation; Stationarity; Cross-covariance function