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On the tail index inference for heavy-tailed GARCH-type innovations

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Abstract In this study, we investigate the smoothing Hill plot and change point test for the tail index of power-transformed and threshold generalized autoregressive conditional heteroscedasticity (PTTGARCH) and autoregressive and moving average (ARMA)–GARCH innovations. It is shown that their asymptotic properties are the same as those in the i.i.d. sample case. For illustration, we provide a simulation study and real data analysis.

Keywords Tail index · Hill's estimator · Power-transformed and threshold GARCH model · ARMA–GARCH model · Residuals · Smoothing Hill plot · Change point test