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Monitoring persistent change in a heavy-tailed sequence with polynomial trends. (English)
Zbl 1294.62030

Summary: This paper considers, for the first time, sequential monitoring against a change from $I(1)$ to $I(0)$ in a heavy-tailed sequence with polynomial trends. To detect the persistent change quickly and powerfully, a moving kernel-weighted variance ratio statistic is proposed, which is based on the sequentially updated residual process. The null distribution of the monitoring statistic and its consistency under the alternative hypothesis are proved. Simulations indicate that our procedure can achieve a good performance on a finite sample for both early change and late change. The effectiveness of the proposed procedures is well demonstrated by two sets of financial series.

MSC:
62F03 Parametric hypothesis testing
62F40 Bootstrap, jackknife and other resampling methods
62P05 Applications of statistics to actuarial sciences and financial mathematics
91G70 Statistical methods; risk measures

Keywords:
monitoring; persistent change; heavy-tailed sequence; polynomial trends

Full Text: DOI

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