An Improved Test for Multiple Mean Shifts of a Time Series

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In order to test for shifts in the mean of a time series, we need to estimate the long-run variance of the error term for the scale adjustment. If we estimate the long-run variance under the null hypothesis of no mean shifts, the tests have non-monotonic power. On the other hand, if we estimate the long-run variance assuming mean shifts, the tests have serious size distortion. In this paper, we develop an improved test for multiple mean shifts by using the bias-corrected long-run variance estimator based on Yamazaki and Kurozumi (2015). We find through simulations that the proposed test has good finite sample properties.

References

Yamazaki, D. and E. Kurozumi (2015), "Improving the finite sample performance of tests for a shift in mean," *Journal of Statistical Planning and Inference* 167, 144–173.