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The Discontinuous Trend Unit Root Test with a Break Interval

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Abstract: Dickey and Fuller proposed tests for the unit root hypotheses in a uni-variate time series. Perron (1989) extended the t-ratio type unit-root tests so that they allow for a break in the deterministic trend and/or in the intercept term. In practice, it seems not easy to specify the break point correctly. Zivot and Andrews (1992) proposed a test in which the break point is estimated by repeated calculations. Morimune and Nakagawa (1999) studied the effect of a misspecified break point on the Perron tests, and the accuracy of the asymptotic expression is examined under various specifications of the error. This paper proposes to set an interval that possibly covers a break point in the Perron tests. The χ^2 type test statistic which is termed Ψ and defined by the equation (9) is calculated for all possible sub-intervals, and the mean of all Ψ values is used as a test statistic. The critical values of the mean-Ψ test are calculated by simulation.

Keywords: unit-root test; discontinuous-trend; break-interval

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