

**A Frequency Domain Approach for Detecting  
Self-Exciting Threshold Autoregression (SETAR)  
Nonlinearity**

by

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## ABSTRACT

A testing procedure for detecting nonlinearity of the self-exciting threshold autoregressive (SETAR) type is developed in this study. The test developed is compared to Tsay's TAR-F (TF) test and Petrucelli-Davies' reverse CUSUM (RC) test using simulations for several well-known, extremely analyzed data series as well as generated bilinear, EXPAR and SETAR models.

The simulation results indicate that the proposed test has comparable power to the TF and RC tests when the sample sizes are sufficiently large. It outperforms the other tests in the case of a SETAR with marked volatility.

The study also shows that, provided the presence of a threshold parameter is a tenable possibility, the proposed test is consistent.