Essays on nonstationary nonlinear time series models

PROPOSITIONS (STELLINGEN)

attached to the thesis

ESSAYS ON NONSTATIONARY NONLINEAR TIME SERIES MODELS

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1. A monotone and continuous cubic polynomial transformation of the trend break estimates can well capture the asymmetry and bimodality of the finite sample distributions. (Chapter 2)

2. When the errors are weakly stationary, the ordinary, quasi-differencing and generalized least squares estimators are asymptotically equivalent in linear trend models with or without breaks. (Chapter 2)

3. Two factors affect the performance of feasible generalized least squares estimators substantially: (a) the estimation of *inverse* covariance matrices, (b) the parameter estimation errors that contaminate errors estimation. (Chapters 2 and 3)

4. Linear hypothesis tests based on fully modified analysis often have severe size distortions in cointegrating polynomial regressions. Simulation-based methods provide a way out. (Chapters 3 and 4)

5. Many procedures, such as the Bonferroni, control the probability of making false discoveries. Yet, out-of-control "false discoveries" are still possible when improperly used. (Chapters 3 and 4)

6. The smooth, slowly increasing/evaporating deterministic trends need not be polynomial with integer powers. A simple extension to noninteger is already valuable in practice. (Chapter 4)

7. The growth trajectories of the Environmental Kuznets Curve (EKC) support a "grow now, clean later" development tactic. Its false discovery may lead to irreversible changes in Earth's climate system. Therefore, a critical evaluation of the EKC can never be over-emphasized. (Chapter 4 and Impact Paragraph)

8. Econometric analysis should answer questions and question answers.

9. At least for me, three phases are recurrent and periodic during research: "yes, it is", "no, it is not", "oh yes, it is". The same reactions occur when Ph.D. students are informed about their teaching tasks.