

Editorial

The idea of publishing an SII special issue entitled “Non-linear Time Series: Threshold Modelling and Beyond” was conceived during the International Workshop under the same title hosted by the Department of Statistics and Actuarial Science, University of Hong Kong in 17–19 December 2009. A selection of papers presented at the workshop was supplemented with several additional articles to make up this volume.

We are particularly grateful to Howell Tong, the pioneer and the main architect of the threshold modelling methodology, for the feature article “Threshold models in time series analysis — 30 years on”. Together with the six contributed discussions by Peter Whittle, Murray Rosenblatt, Bruce Hansen, Peter Brockwell, Noelle Samia and Francesco Battaglia, they represent a compact and also comprehensive survey on the current state-of-the-art in threshold modelling and its ever increasing applications in other disciplines.

This special issue contains five other papers on the modern developments of threshold modelling. Qian Jiang and Yingcun Xia look into the selection of the threshold variable based on the L_1 -penalized approach, which exhibits the asymptotic oracle property. Xingfa Zhang, Heung Wong, Wai Cheung Ip and Yuan Li consider the inference for a class of threshold ARCH models for modelling volatilities. Wilson Kwan, Wai Keung Li and Guodong Li propose a new class of threshold time series models with hyperbolic generalized autoregressive conditional heteroscedasticity, to reflect both nonlinearity and long memory in volatility. Cathy Chen, Mike So and Feng Chi Liu present a survey on the threshold modelling in finance and provide a streamlined ap-

proach to financial time series analysis. Dong Li, Wai Keung Li and Shiqing Ling investigate the least squares estimation in the context of threshold ARMA models.

This issue also presents six papers in the category of “beyond”. Kun Chen and Kung-Sik Chan propose an adaptive LASSO method for selecting the optimal subset ARMA model, which is practically attractive when the true ARMA orders are high. Wei Biao Wu provides a survey on the asymptotic theory for stationary processes defined by a general form of nonlinear MA models. Ngai Hang Chan and Chi Tim Ng look into non-negativity, asymptotic normality and consistency of QMLE for FIGARCH models. Henghsiu Tsai, Kung-Sik Chan and Patrick Fayard study the likelihood ratio test for the presence of measurement errors with discrete-time data sampled from a continuous-time ARMA model. Jiti Gao, Jia Chen and Degui Li deal with semi-parametric time series regression models. Philippe Naveauy, Zhengjun Zhang and Bin Zhu consider a new extension of max AR models which overcomes some difficulties in modelling maxima behaviours of time series data.

Finally we thank all the authors who contributed their new research results to this issue. We also thank the referees for their invaluable help in improving the quality of this final product. We sincerely hope that this special issue will give you at least some part of the joy and the fun that we have had in editing it.

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Wai Keung Li (Guest Editor)
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