
Structural change in tail behaviour and the recent financial crises

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Abstract: This paper is a contribution in exploring the empirical evidence of the instability in the tail behaviour returns of stock market indices, based on some developments in the analysis of structural change models. The proposed approach can jointly determine the number of structural breaks in a series of tail-indexes and estimate the mean tail-index levels in different regimes. Here we advocate a modified Hill estimator for the tail index. We provide simulations that indicate good finite sample properties of our procedure. The proposed method is then applied to the tail behaviour returns of two international stock market indices, SP500 (USA) and CAC40 (France). The results indicate that procedures perform reasonably well and lead to an appropriate number of breaks with locations coinciding with major financial crisis and events such as the LTCM crisis, September 11, 2001 terrorist attack, sub-prime crisis in 2008 and European Union (EU) debt crisis triggered on 2010.

Keywords: multiple structural change; extreme value analysis; tail-index; modified-hill estimator, break dates.

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Biographical notes: Raggad Bechir is an Assistant-Professor of Quantitative Methods at Carthage University-Tunisia. He received his PhD in Applied Mathematics and Econometrics from the University of Aix-Marseille II–France. He teaches Statistics, Applied Econometrics, Time Series Analysis, Quantitative risk Management. Raggad's research has focused on Extreme Value Theory, Value at Risk Methodology, Financial Risk Management. His publications appeared in Energy Economics and in Mathematical and Social sciences.