

Comparison of the tail thickness estimators under GARCH using the extremal exchange rate changes

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This research study aims to compare and evaluate the performance of Hill's tail index estimator and the estimator proposed in Bacro and Brito (1993). The analysis was performed on GARCH (1,1) data which are widely used for modelling processes with time varying volatility. These include financial time series, which can be particularly heavy tailed. The tail index is a key parameter for quantifying the extreme tail behavior of financial time series, which is crucial for the risk management and decision-making. The work is the empirical continuation of Ilic et al. (2019) and it tracks the behavior of the tail index estimators in the simulated GARCH sample and also in the case of the GBP/CAD exchange rate between 1st May 2007 and 18th October 2010. The accuracy and precision of the estimators are also compared in the case when certain portion of the sample is missing. The results highlight the strengths and limitations of each estimator and thus provide the possibility of certain improvement of the risk assessment and decision-making processes in various financial applications.

References

- [1] I. D. Ilic, Simple tail index estimation for dependent and heterogeneous data with missing values, *Braz. J. Probab. Stat.* **33(1)** (2019), 192–203.