

FRACTIONAL PROCESSES: MODELLING AND INFERENCE

JEANNETTE H.C. WOERNER

ABSTRACT

Recently there have been proposed different methods for analyzing the empirical characteristics of high frequency financial data, e.g. increasing realized volatility, a certain correlation structure and paths regularity. Possible models capturing at least some of these features are additive market microstructure noise or components based on fractional Brownian motion. Another possibility would be to consider fractional Lévy processes instead which combine the desirable properties of Lévy processes with the correlation structure of fractional Brownian motion.

In the following we will first give some empirical results on the fine structure of high frequency data in terms of correlation and regularity of the sample paths. Then we will propose a new type of fractional Lévy process based on the kernel $|t - s|^{H-1/\alpha} - |s|^{H-1/\alpha}$, where α denotes the Blumenthal-Gettoor index of the corresponding Lévy process. This choice of kernel unifies the approaches by Samorodnitsky and Taqqu (1994), Benassi et.al (2002, 2004) and Marquardt (2006).

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TECHNICAL UNIVERSITY OF DORTMUND

E-mail address: jeannette.woerner@math.uni-dortmund.de