Limit Theorems for Bipower Variations of Lévy Driven Moving Average Processes

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Lévy driven moving average processes provide a unifying framework to some well-known processes such as the fractional Brownian motion and the Ornstein-Uhlenbeck process. They have infinitely divisible marginals, which results from the driving Lévy process, and depending on the chosen kernel function a general correlation structure.

We derive from the results for power variation of Lévy driven moving averages proven in (Podolskij, 2017) and (Podolskij, 2015) limit theorems for bipower/multipower variations of Lévy driven moving averages, which in a similar way as in the origal papers heavily depends on the interplay between the given orders of the increments, the considered powers, the Blumenthal-Getoor index of the driving pure jump Lévy process and the behaviour of the kernel functions at 0.

Lévy driven moving average processes are of relevance for stochastic volatility models, which often utilize limit theorems for power, bipower and multipower variations. Especially bipower and multipower variations provide tools to separate continuous components and jump components in the underlying models.

References

Andreas Basse-O'Connor and Raphaël Lachièze-Rey and Mark Podolskij (2017). Power variation for a class of stationary increments Lévy driven moving averages. Annals of Probability (to appear).

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