# Asymptotic analysis for a simple explicit estimator in Barndorff-Nielsen and Shephard stochastic volatility models

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## Abstract

We provide a simple explicit estimator for discretely observed Barndorff-Nielsen and Shephard models, prove rigorously consistency and asymptotic normality based on the single assumption that all moments of the stationary distribution of the variance process are finite, and give explicit expressions for the asymptotic covariance matrix.

We develop in detail the martingale estimating function approach for a bivariate model, that is not a diffusion, but admits jumps. We do not use ergodicity arguments.

We assume that both, logarithmic returns and instantaneous variance are observed on a discrete grid of fixed width, and the observation horizon tends to infinity. This anaysis is a starting point and benchmark for further developments concerning optimal martingale estimating functions, and for theoretical and empirical investigations, that replace the (actually unobserved) variance process with a substitute, such as number or volume of trades or implied variance from option data. This is joint work with Friedrich Hubalek, Technische Univesität Vienna.

## References

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