



A universal approach to estimate the conditional variance in semimartingale limit theorems

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Abstract

The typical central limit theorems in high-frequency asymptotics for semimartingales are results on stable convergence to a mixed normal limit with an unknown conditional variance. Estimating this conditional variance usually is a hard task, in particular when the underlying process contains jumps. For this reason, several authors have recently discussed methods to automatically estimate the conditional variance, i.e. they build a consistent estimator from the original statistics, but computed at different time scales. Their methods work in several situations, but are essentially restricted to the case of continuous paths always. The aim of this work is to present a new method to consistently estimate the conditional variance which works regardless of whether the underlying process is continuous or has jumps. We will discuss the case of power variations in detail and give insight to the heuristics behind the approach.

Keywords Asymptotic conditional variance · High-frequency statistics · Itô semimartingale · Jumps · Stable convergence

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