Mathematics > Statistics Theory

Asymptotics of Asynchronicity

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In this article we focus on estimating the quadratic covariation of continuous semimartingales from discrete observations that take place at asynchronous observation times. The Hayashi-Yoshida estimator serves as synchronized realized covolatility for that we give our own distinct illustration based on an iterative synchronization algorithm. We consider high-frequency asymptotics and prove a feasible stable central limit theorem. The characteristics of non-synchronous observation schemes affecting the asymptotic variance are captured by a notion of asymptotic covariations of times. These are precisely illuminated and explicitly deduced for the important case of independent time-homogeneous Poisson sampling.

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