Notes on estimating inverse-Gaussian and gamma subordinators under high-frequency sampling

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Abstract We study joint efficient estimation of two parameters dominating either the inverse-Gaussian or gamma subordinator, based on discrete observations sampled at $(t_i^n)_{i=1}^n$ satisfying $h_n := \max_{i \leq n}(t_i^n - t_{i-1}^n) \to 0$ as $n \to \infty$. Under the condition that $T_n := t_n^n \to \infty$ as $n \to \infty$ we have two kinds of optimal rates, $\sqrt{n}$ and $\sqrt{T_n}$. Moreover, as in estimation of diffusion coefficient of a Wiener process the $\sqrt{n}$-consistent component of the estimator is effectively workable even when T_n does not tend to infinity. Simulation experiments are given under several h_n's behaviors.

Keywords Efficient estimation · Gamma subordinator · High-frequency sampling · Inverse-Gaussian subordinator · Optimal rate