Goodness-of-fit Test for the SVM Based on the Noisy Observations

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Abstract

In financial high frequency data analysis, the efficient price is commonly assumed to follow a continuous time stochastic volatility model, contaminated with a microstructure noise. In this study, we consider a goodness of fit test problem for the efficient price models based on discretely observed samples and employ the empirical characteristic function based goodness of fit test. Simultaneously, we investigate the empirical distribution of the microstructure noise from a real data analysis. It is shown that the proposed test asymptotically follows a weighted sum of products of centered normal random variables. To evaluate the proposed test, a simulation study to use a bootstrap method is implemented. A real data analysis is provided for illustration.

Keywords: Empirical characteristic function, goodness of fit, high frequency data, microstructure noise, stochastic volatility model.