Abstract

As a result of the additional innovations of a stochastic volatility (SV) model, it can be difficult to estimate its parameters and forecast volatility through it. Recently, a method has been introduced which applies a modified joint unscented Kalman filter to one such model to tackle both volatility forecasting and parameter estimation at the same time [1]. However, in this method the underlying SV model does not incorporate the leverage effect which can lead to inaccurate results on real-world data. Therefore, in this work, the method is applied to a different SV model which incorporates the leverage effect. This modification is tested on simulated data and is shown to effectively forecast volatility and accurately estimate most of the parameters. Additionally, the updated method is shown to be effective on real-world data and superior to a particle filter method in a number of areas.