Modeling Financial Time Series with Soft Information and its Application

Shih-Feng Huang, Hui-Chiao Huang*
Institute of Statistics, National University of Kaohsiung

Abstract

A hysteretic autoregressive model with GARCH effects and soft information is proposed to model financial time series. The soft information contained in daily news is extracted by the techniques of support vector machine and principal component analysis. The model parameters are estimated by Markov Chain Monte Carlo method. In addition, we apply the proposed model to option pricing by Esscher transform. The returns and options of the S&P500 index and the daily news posted on the website of Reuters are used for our empirical study. The numerical results indicate that the proposed model has satisfactory performance in depicting and predicting the dynamics of financial time series.

Keywords: GARCH, hysteretic autoregressive model, Markov Chain Monte Carlo, text classification