

Abstract

The thesis compares GARCH volatility models and Stochastic Volatility (SV) models with Student's t distributed errors and its empirical forecasting performance of Value at Risk on five stock price indices: S&P, NASDAQ Composite, CAC, DAX and FTSE. It introduces in details the problem of SV models Maximum Likelihood examinations and suggests the newly developed approach of Efficient Importance Sampling (EIS). EIS is a procedure that provides an accurate Monte Carlo evaluation of likelihood function which depends upon high-dimensional numerical integrals.

Comparison analysis is divided into in-sample and out-of-sample forecasting performance and evaluated using standard statistical probability backtesting methods as conditional and unconditional coverage.

Based on empirical analysis thesis shows that SV models can perform at least as good as GARCH models if not superior in forecasting volatility and parametric VaR.