

Abstract

This thesis is focused on multiple-step-ahead forecasting of Nasdaq Composite index returns and daily range-based volatility. In order to capture the complex patterns potentially hidden to traditional linear models we use artificial neural networks as nonlinear, nonparametric and robust forecasting tool. We contribute to the ongoing discussion about stock market predictability with following empirical results. In case of Nasdaq Composite returns, all four applied neural networks fail to outperform benchmark model in all time horizons, suggesting high unpredictability in accordance with Efficient market hypothesis. Also in case of Nasdaq Composite daily range-based volatility, 1 day and 1 month ahead predictions are not significantly more accurate than benchmark model. However, we find 1-week and 2-weeks-ahead forecasts to be significantly more accurate than benchmark model and able to capture the predictive patterns.

Keywords

predictability of stock returns, predictability of daily range-based volatility, multiple-step-ahead forecasting, neural networks, RPROP, BFGS learning algorithm