New Model for Stock Price Prediction Using Hybrid Approach of EEMD and ARIMA

Khadijeh Hassanlou1*, Laya Ayati2

1Assistant Prof. Industrial engineering department, Khatam University, Iran
2M.Sc. Student, Faculty of Financial engineering, industrial engineering, Khatam University, Iran

*Corresponding Author Email: kh.hassanlou@khatam.ac.ir

Abstract

This paper tries to use hybrid model ensemble empirical mode decomposition to predict stock prices in Tehran Stock Exchange. In order to achieve this goal, EEMD model is coupled with one of the mean time series model econometrics autoregressive integrated moving average (ARIMA). Data Coverage in this paper is weekly stock price of Mobarakeh Steel Company for period of July 2011 to August 2016. At first the EEMD method is used to decompose the original stock price into several intrinsic mode function (IMF), then ARIMA models are considered to each IMFs. Finally, sum of each IMFs forecasting results will be the final stock price prediction. To justify the performance of developed hybrid model, it’s prediction were compared with ARIMA and it was found that the suggested model, compared to ARIMA, in rescheduling, is better for prediction with less error in its price forecast in terms of root mean squared error (RMSE), mean absolute percentage error (MAPE), and directional symmetry (DS).

Keywords: Stock Price, Prediction, Time Series, EEMD, ARIMA.