

Adaptability of Tehran Stock Exchange Index Behavior with Elliott Wave Theory Model

Samira Seif*

Babak Jamshidinavid**

Mehrdad Ghanbari***

Mansour Esmailpour****

DOI: 10.22096/esp.2022.131682.1399

Received Date: 23/08/2020 - Accepted Date: 08/01/2021

Abstract

One of the most important issues in the world economy is the use of stagnant capital for the economic development of any country. This requires a strategic policy to attract domestic and foreign investors. The general purpose is to investigate the adaptability of Iranian stock market behavior with other foreign financial markets according to the Elliott wave theory model of technical analysis tools and classification algorithms. Therefore, the price movement trend in the total index and the total weighted index of the Iranian Stock Exchange as a thermometer of the economy and an indicator of the general situation of the Iranian stock market has been studied. First, the variables of the Elliott wave oscillation, relative strength index, close changes daily for the total index from 14/05/2008 to 25/11/2020, and the total weighted index from 04/05/2015 to 01/12/2020 calculated. Accordingly, the movement trends were labeled as buying, selling and maintaining. Then, classification algorithms such as decision tree, the K nearest neighbor, linear support vector machine were used to predict future trends. The results showed that the accuracy of the decision tree and the K nearest neighbor algorithms in predicting labels was above 90%. Therefore, the use of technical methods and proposed algorithms can help investors in determining the future trend of the total index and the total weighted index.

Keywords: Predicting; Tehran Stock Exchange Index; Technical Analysis; Elliott Wave Theory; Classification Algorithms.

JEL Classification: E47. G17. C38.

* PhD Student of Accounting, Faculty of Humanities, Kermanshah Branch, Islamic Azad University, Kermanshah, Iran. Email: samiraseif@pnu.ac.ir

** Assistant Professor of Accounting, Faculty of Humanities, Kermanshah Branch, Islamic Azad University, Kermanshah, Iran. Email: jamshidinavid@iauksh.ac.ir

*** Assistant Professor of Accounting, Faculty of Humanities, Kermanshah Branch, Islamic Azad University, Kermanshah, Iran. Email: ghanbari@iauksh.ac.ir

**** Assistant Professor, Computer Eng. Dept., Hamadan Branch, Islamic Azad University, Hamadan, Iran. Email: esmaeilpour@iauh.ac.ir



Bibliography

- Abe, Shigeo. *Support vector machines for pattern classification*. London: Springer, 2005.
- Afshari Rad, Elham, Seyed Enayatollah Alavi, & Hassan Ali Sinaei. "Intelligent model for stock price forecasting using technical analysis methods", *Financial Research Quarterly* 20, no. 2 (2018): 249-264. [In Persian]
- Aggarwal, Charu. *Data Classification: Algorithms and Applications*. Minneapolis, Minnesota: Chapman and Hall/ CRC, 2014.
- Alavi, Seyed Enayatollah, Hasanali Sinaei, & Elham Afsharirad. "Predict the trend of stock prices using machine learning techniques", *International Academic Journal of Economics* 2, no. 12 (2015): 1-11.
- Badri, Ahmad, & Mohsen Sadeghi. "Study of the effect of different days of the week on return, volatility and trading volume on the Tehran Stock Exchange", *Management Perspective* 17, no. 18 (2006): 55-83. [In Persian]
- Elliott, Robert. *The wave principle*. Detroit, Michigan: Investment Counsel Inc, 1935.
- Eugene, Fama. "Efficient Capital Markets: A Review of Theory and Empirical Work", *Journal of Finance* 25, no. 2 (1970): 383-417.
- Eugene, Fama. "The Behavior of Stock Market Prices", *Journal of business* 38. no. 1 (1965): 34-105.
- Fallahpour, Saeed, Gholam Hossein Golarzi, & Nasser Fatorehchian. "Predicting the movement of stock prices using support vector machines based on genetic algorithm in Tehran Stock Exchange", *Financial Research* 15, no. 2 (2013): 269-288. [In Persian]
- Farid, Dewan, Li Zhang, Chowdhury Mofizur Rahman, Hossain Alamgir, & Rebecca Strachan. "Hybrid decision tree and naive Bayes classifiers for multi-class classification tasks", *Expert Systems with Applications* 41. no. 4 (2014): 1937-1946.
- Ford, NL., BG. Batchelor, & Wilkins, BR. "A learning scheme for the Nearest Neighbour Classifier", *Information Sciences* 2. no. 2 (1970): 139-157.
- Fox, Justin. *The Myth of the Rational Market*. Harper Collins. *Fundamental Analysis*. New York: Retrieved from Investopedia, 2009.
- George, Atsalakis, Emmanouil Dimitrakakis, & Zopounidis Constantinos. "ElliottWace Theory and neuro-fuzzy systems, in stock market prediction, the WASP system", *Expert Systems with Application* 38. no. 8 (2011): 9196-9206.
- Huiming, Duana, Xiping Xiaob, Yangb Jinwei, & Bo Zen.g "Elliott wave theory and the Fibonacci sequence-gray model and their application in Chinese stock market", *Journal of Intelligent & Fuzzy Systems* 34. no. 1 (2018): 1813-1825.
- Ismaili, Mehdi. *Concepts and Techniques of Data Mining*. First Edition, Tehran: Niaz Danesh Publications, 2012. [In Persian]
- Kazeruni, Alireza. "Testing the classical model of inflation in Iran: Convergence method", *Journal of Commerce* 6, No. 23 (2002): 50-65. [In Persian]
- Khan, Wasiat, Usman Malik, Mustansar Ali Ghazanfar, Muhammad Awais Azam, Khaled Alyoubi & Ahmed Alfakeeh. "Predicting stock market trends using machine learning algorithms via public sentiment and political situation analysis", *Soft Computing*, Springer-Verlag GmbH Germany 24. no. 5 (2019): 11019-11043.

- Kritzler, Adam. *Forex for beginners: A comprehensive guide to profiting from the globalcurrency markets*. Berkeley, Apress: 2014.
- Murphy, John. *Technical Analysis in Capital Markets*. translated by Kamyar Farhanifard-Reza Ghasemian Langroudi. 10th edition, Tehran: Chalesh Publications, 2005. [In Persian]
- Patel, Jigar, Sahil Shah, Priyank Thakkar, & Ketan Kotecha. "Predicting stock and stock price index movement using trend deterministic data preparation and machine learning techniques", *Expert Systems with Applications* 42. no. 1 (2015): 259-268.
- Perruchet, Pierre, & Ronald Peereman. "The exploitation of distributional information in syllable processing", *Journal of Neurolinguistics* 17. no. 1 (2004): 97-119.
- Pourzamani, Zahra, & Mohsen Rezvani Aghdam "Comparison of the effectiveness of combined strategies of technical analysis with the method of buying and holding to buy stocks in ascending and descending periods", *Quarterly Journal of Securities Financial Research* 10, no. 33 (2017): 17-31. [In Persian]
- Prechter, Robert. *Elliot Wave Analysis*. New York: John Wiley & Sons, 2013.
- Stone, M. "Cross-validatory choice and assessment of statistical predictions", *Journal of the Royal Statistics Society* 36. no. 2 (1974): 111-147.
- Wagner, T.J. "Distribution-free performance bounds for potential function rules", *IEEE Transactions in Information Theory* 25. no. 2 (1979): 208-210.