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The Analysis of the Efficient Market Hypothesis for BIST-Industrial Index by Using Long Memory Models

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Abstract

The weak-form effectiveness of the efficient markets hypothesis is based on the assumption that investors cannot generate abnormal returns using past price movements. The current prices formed in this type of market reflect the information that led to the prices in the past. In the study, the validity of the weak-form efficient market hypothesis for the BIST-Industrial index (XUSIN) was investigated using data for the period between January 03, 2000 and October 06, 2020. In the study, the existence of long memory in the mean and variance of the XUSIN was investigated with ARFIMA-FIGARCH, ARFIMA-FIEGARCH, ARFIMA-FIGARCH models that take into account breaks in variance, and ARFIMA-FIEGARCH models that take into account breaks in variance. The best-fitting model was found to be ARFIMA-FIEGARCH with two breaks in variance. According to the results of the ARFIMA-FIEGARCH estimation, which takes into account structural breaks, the parameter of long memory in the mean model is statistically significant at 0.033, which means that there is a positive dependence between the observations of the series. In other words, the XUSIN returns can be used to estimate the current returns. In the variance model, the long memory parameter was estimated as 0.434 and was statistically significant. This result indicates that the volatility of the return series has long memory properties. According to these results, the existence of long memory has been determined in the volatility of the XUSIN, and it can be said that volatility includes long term dependence and volatility can be predicted with historical data. The predictability of returns and volatility means that the BIST industry sector is not a weak-form efficient market. In addition, the leverage effect was found in the XUSIN in the model, which means that negative news (negative shocks) to the market increase volatility more than positive news (positive shocks).

Keywords: Efficient market hypothesis, ARFIMA-FIGARCH, Long-memory, Weak-form efficiency, BIST.

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