ABSTRACT

Investment is a strategy for allocating funds with the aim of achieving optimal results in the future. Stock investment in the capital market offers high potential returns but is also accompanied by significant price fluctuation risks. A deep understanding of risk and return is crucial for investors when investing. The risk in stock investment can be managed through portfolio formation to observe high market volatility by requiring an analytical model capable of identifying trends and stock price changes. One such model used is ARIMA-GARCH, which combines the advantages of ARIMA in forecasting trends with the strengths of GARCH in measuring volatility and capturing heteroskedasticity effects. This study aims to model the volatility of stock returns using the ARIMA-GARCH model and to form an optimal stock portfolio using the Mean-Semivariance method. The Mean-Semivariance method is chosen because it does not require data normality assumptions and uses a risk measure that can help reduce the likelihood of large losses. The data analyzed are the daily return data of ACES, ITMG, ESSA, BBTN, TLKM, UNTR, and KLBF stocks from the LQ45 Index for the period from January 2, 2020, to November 14, 2023. The stocks used are selected based on high volatility from each sector. The results show that the best ARIMA-GARCH model for ITMG stock is ARIMA(1,0,1)-GARCH(1,1) and for TLKM stock is ARIMA(2,0,1)-GARCH(1,1). The Pearson correlation coefficient between ITMG and TLKM stocks is 0.37778, indicating that the two stocks have a weak positive correlation, thus can be used for forming an optimal portfolio. The optimal portfolio formed with the Mean-Semivariance method consists of 59.4670% weight for ITMG stock and 40.5330% weight for TLKM stock. The Value at Risk (VaR) calculated with Historical Simulation at a 95% confidence level for a 264-day holding period is 0.00000000296.

Keywords: Stock Investment, Optimal Portfolio, ARIMA-GARCH, Mean-Semivariance, Pearson Correlation, Value at Risk, Historical Simulation