ABSTRACT

Investment is a common form of capital investment, with stocks being a popular investment instrument. A portfolio consisting of more than one stock can be used by investors to minimize risk and maximize profits. Stock selection and portfolio risk measurement are important aspects that must be considered in portfolio investment. This research aims to apply Ward Clustering analysis in stocks grouping, Mean-Semivariance in determining optimal portfolio weights, VaR Cornish-Fisher Expansion in portfolio risk measurement, and Stress Testing analysis to examine portfolio risk under extreme conditions. These portfolio risk analysis methods are applied to the PEFINDO i-Grade index, which contains 30 stocks from companies with investment grade ratings, using daily stocks closing prices from January 1, 2023 to December 31, 2024 as the basis for calculation. In conducting clustering, the variables used are Price to Earning Ratio (PER), Price to Book Value (PBV), and Market Capitalization which are able to provide information on financial performance, valuation, and company size. Representatives from each cluster are selected based on expected return values. The selected stocks are arranged in a portfolio with Mean-Semivariance weighting, while the risk is calculated using VaR Cornish-Fisher Expansion, which is then analyzed under extreme market conditions with Stress Testing. The resulting portfolio consists of 3 stocks with a weighting of 74,217% for BMRI, 19,793% for MFIN, and 5,990% for BRPT. The VaR value of resulting portfolio is 1,503% of the initial capital invested within a period of one day. In extreme scenarios, the Stress Testing results show an increase in risk, where the Cornish-Fisher VaR in scenario 1 is 2,704% and scenario 2 is 2,197%, while the historical simulation VaR in scenario 1 is 3,387% and scenario 2 is 3,187%. This means that the Stress Testing method can be used to identify potential risks in extreme market conditions.

Keywords: Ward Clustering, Mean-Semivariance, VaR Cornish-Fisher Expansion, Stress Testing, PEFINDO i-Grade