PORTFOLIO OPTIMIZATION OF THE TRANSPORTATION AND TECHNOLOGY SECTORS USING MEAN-VARIANCE

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Abstract

Portfolio optimization is a process of selecting a portfolio that minimize risk and/or maximize the expected return of an asset. The mean risk model of mean-variance with risk quantified by the measure of variance is consider the model that is frequently used in the problem of optimization. Hence, the sectors of the asset is considered as the main constraint that affects the performance of the portfolio. The objective of the research is to obtain the optimal portfolio on various assets of the transportation and technology sectors by minimizing the risk using mean-variance. Also, a comparison on the performance of the portfolio is conducted where the in-sample analysis is evaluated. The results from the in-sample are also verified with the backtesting method for the out-sample analysis. The closing price of the assets are obtained following their contributed sectors which are transportation and technology sector. The weekly return is evaluated to simulate the risk return following the simulation of the in-sample and out-sample of the portfolio with the use of the model mean variance subject to variance as its risk measure. The findings indicate that the performance of the sector differs one another as the results of the optimization of the portfolio are indifference their collateral sectors. A comparison between the results of the portfolio are conducted to determine which combination seeks advantage with least risk. Following the analysis, it is shown that the portfolio of the combination of sector carries the least risk out of the three portfolios'. A recommendation is for a more efficient result it is needed to increase the number of assets or increase the sectors used.

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