Mean absolute negative deviation measure for portfolio selection problem[*]

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Abstract

One of the important research areas in financial decision making is the optimization of portfolios. The uncertainty of the future returns of portfolios is an important character within this optimization problem. We utilized probabilistic methods together with optimization techniques to handle such problems. We developed *two stage stochastic programming with recourse* for risk-averse investors and the objective of the stochastic programming models is to minimize the *mean absolute negative deviation* of the portfolio returns from the expected portfolio returns. We used the so-called "*Here-and-Now*" approach where the decision-maker makes decision "now" in the first stage before observing the actual outcome in the second stage. We compared the optimal portfolios resulting from the two stage model that hedge against the risk of investment with the single stage mean absolute negative deviation model. These models were applied to the optimal selection of stocks listed in Bursa Malaysia and the returns of the optimal portfolio were compared. The results showed that the optimal portfolios from the two stage model out performed the optimal portfolios from the single stage model.

Keywords and phrases : *Portfolio optimization, deviation measure, mean absolute negative deviation, stochastic linear programming.*

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