

MEAN-RISK OPTIMISATION OF RISKY ASSETS
USING VARIANCE AND LOWER PARTIAL
MOMENTS (LPM)



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Abstract

In order to satisfy investment goals, the problem always which models of portfolio must be selected to get the minimum risk given a level of return. Two risk measures namely variance and lower partial moments are considered in a mean-risk portfolio selection model. The aim of this research is to minimize the risk of a portfolio for some pre-determined target returns. The optimised portfolio in terms of in-sample and out-of-sample performances are compared between mean-variance and mean-lower partial moments. The models coded in Mathematical Programming Language (AMPL) and results are analysed in Microsoft Excel. The 23 components stocks of FBMKLCI are used in this analysis. Every expected target return d_1 , d_2 and d_3 gives the different performance between two different mean risk models. The results of 10 in-sample portfolios constructed under the mean-variance model shows a lower risk measure of standard deviation compared to their lower partial moment measure. Consequently, the results of 10 in-sample portfolios constructed under the mean lower partial moments model shows a lower risk measure compared to their standard deviation measure. The out-of-sample analysis are conducted to validate our 10 in-sample portfolios where the realised returns are analysed in term of their average, minimum, maximum, standard deviation and lower partial moments (d) used to represents our risky assets for this study. From the results obtained, mean-lower partial moments shows a better performance in minimising risk compared to the mean-variance because out-of-sample statistic of mean-lower partial moments shows lower risk measure while attaining higher returns. Then this portfolio optimization is an option to get maximum target of return and minimizing risk

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