UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

Portfolio Optimisation for Malaysia's Top 30 and Mid 70 Risky Asset Using Mean-Variance Model

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AIDAH NAJIHAH BINTI ABDUL AZIZ (2016718333)
FARAH NAJIHAH BINTI ITHNIN (2016314979)
NURIN ADRIANA BINTI ARIFF (2016584097)

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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Abstract

The goals of this research are to minimise the risk of losses for specified returns using the mean-variance model and to compare the risk and return valuations (in terms of in-sample and out-of-sample analysis) when the optimisation is implemented on three different set of assets. The assets consists of constituents of FBMKLCI which represents the Top 30 Risky Asset and FBMM70 which represents the Mid 70 Risky Asset. The closing price data are drawn from Thomson Reuter Eikon. The mean-variance model is implemented using AMPL and the numerical results were analysed in Microsoft Excel. The general assumption on mean-variance is the higher the return, the higher the risk. Main findings show that the higher the expected return, the higher the risk at Top 30 Risky Assets. The number of assets constructed the portfolios were more diversified as the risk decrease. While Mid 70 Risky Assets does not follow the general assumption of mean-variance and this is due to Mid 70 asset does not consist of "really risky" asset as in the Top 30 assets. The combination of the two assets provide more interesting outcome. The result improved in terms of level of risk where the risk values were lower compared to constructing a portfolio based on risky asset only. The insertion of the "really risky" asset in a basket of asset somehow affect the behaviour of asset in terms of risk. We validate our in-sample portfolios by using out-of-sample analysis. The result shows that combination of both Top 30 and Mid 70 risky assets gave better performance mainly for low and medium target return. Overall, we can say that involvement of the "not so risky" asset in a basket of asset will give relatively lower risk. As for future improvement, we planned to observe on how many constituents in the less risky asset will be selected in the optimal portfolios of combination of both Top 30 and Mid 70 assets.

Contents