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The viability of using markowitz portfolio theory as a passive investment strategy on the JSE

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Abstract

Markowitz Portfolio Theory (MPT) and related research was studied. Objectives were then formulated around whether an MPT model could outperform the returns of the Johannesburg Securities Exchange (JSE) and other financial instruments such as unit trusts. An MPT model was then created in Matlab using the information learnt from the theory and other appropriate sources. The model was used to generate a range of results depending on different inputs into the model. The model outputs were further analysed in Excel and results in the form of tables and graphs were created. It was found that the MPT model considerably outperforms the JSE ALSI and JSE Top 40. There were many positive Sharpe Ratios for various different inputs and model parameters. The JSE ALSI had a 1 year return of 17.13% and 3 year annualised return of 12.83%. The MPT model had 1 year returns of between 17.07% and 37.81%. The MPT model had 3 year annualised returns of between 11.81% and 26.24%. The MPT model outperformed the JSE ALSI with 5 out of 6 portfolios created. The JSE Top 40 had a 1 year return of 18.37% and 3 year annualised return of 13.02%. The MPT model had 1 year returns of 21.49% and 24.24% and 3 year annualised returns of 18.53% and 20.72%. The MPT model for Top 40 data thus outperformed the JSE Top 40 over 1 year and 3 years annualised. The MPT model had two out of its eight portfolios in the top four of the best performing unit trusts over 3 years of total returns. Over a 1 year return, two of the MPT portfolios were the top two performers compared to other unit trusts. This research has thus shown that an MPT model using historical data can outperform the JSE and can perform competitively with other unit trusts.