

## PENGOPTIMUMAN PORTFOLIO DENGAN PENGELASAN SAHAM DAN MENGGUNAKAN UKURAN RISIKO BERBEZA

(Portfolio Optimisation with Stock Classification and Using Different Risk Measures)

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### ABSTRAK

Matlamat utama pelabur pastinya untuk memaksimumkan pulangan pelaburan dan meminimumkan risiko. Kajian ini dilakukan bertujuan untuk menentukan komposisi peratusan pelaburan satu portfolio optimal dengan menggunakan tiga model ukuran risiko berbeza, iaitu min-varians (MV), min sisihan mutlak (MAD), dan minimaks dengan saham-saham dibahagi kepada empat kategori, iaitu kategori saham mewah, saham bertahan, saham berkisar, dan saham kupang. Data kajian adalah harga tutup mingguan dari tahun 2005 sehingga 2009 bagi 20 saham syarikat yang dikelaskan kepada empat kategori dengan setiap kategori diwakili oleh lima saham syarikat. Pulangan mingguan serta tahap risiko dikenal pasti menggunakan pendekatan ketiga-tiga jenis ukuran risiko. Bagi tujuan perbandingan, data mingguan indeks komposit Kuala Lumpur digunakan. Seterusnya portfolio optimum dijana menggunakan ketiga-tiga ukuran risiko MV, MAD dan minimaks. Berdasarkan keputusan yang diperolehi, didapati model ukuran risiko minimaks bagi kes memaksimumkan kadar pulangan minimum portfolio merupakan model yang paling sesuai berbanding dengan dua lagi model ukuran risiko, iaitu MV dan MAD. Selain merekodkan nilai prestasi yang paling tinggi, model ukuran risiko menggunakan minimaks juga menghasilkan komposisi portfolio optimum yang lebih menyeluruh merangkumi kesemua empat kategori saham syarikat.

*Kata kunci:* Pengoptimuman portfolio; pengelasan saham; ukuran risiko

### ABSTRACT

The main objective for an investor is indisputably to maximise investment returns and minimise risk. This study aims to determine the investment composition of an optimal portfolio employing three different risk measures that are the mean-variance (MV), mean absolute deviation (MAD) and minimax by classifying companies' shares into 4 different categories namely the bluechips, defensive, cyclical and penny shares. The weekly closing prices from years 2005 to 2009 are collected for the 20 companies which are classified into four different categories with each category represented by five shares. Weekly returns and risk levels are determined by employing the three different risk measures. For comparison purposes, the weekly data of Kuala Lumpur Composite Indices are also collected. Optimal portfolios are then constructed using the three risk measures; MV, MAD and minimax. Findings of this study suggest that the minimax model which aims to maximise the minimum return of the portfolio to be the most suitable risk measure. Unlike MV and MAD models, the optimal portfolio constructed using the minimax model recorded the highest performance and is formed using shares from all four classifications.

*Keywords:* Portfolio optimisation; stock classification; risk measure

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