

TRACKING A BENCHMARK INDEX IN PORTFOLIO OPTIMIZATION WITH TWO-STAGE MIXED INTEGER PROGRAMMING MODEL

(Menjejak Indeks Tanda Aras dalam Pengoptimuman Portfolio dengan Model
Pengaturcaraan Integer Bercampur Dua-Tahap)

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ABSTRACT

The investors wish to achieve higher portfolio return than the benchmark index return at minimum tracking error (TE) in enhanced index tracking. This study aims to develop the optimal portfolio to track the benchmark sectorial index in Malaysia with two-stage mixed integer programming (MIP) model by minimizing the TE at the first stage followed by maximizing the portfolio mean return at the second stage. The data consists of Technology Index and the index components from Malaysia stock market. The results indicate that the two-stage MIP model gives higher mean return than the benchmark sectorial index at minimum TE. This study is significant because it helps to develop the optimal portfolio with two-stage MIP model to outperform the benchmark sectorial index without holding all index components.

Keywords: Enhanced index tracking; mixed-integer programming; optimal portfolio

ABSTRAK

Pelabur ingin mencapai pulangan portfolio yang melebihi pulangan indeks tanda aras dengan ralat penjejakan (TE) yang minimum dalam penjejakan indeks dipertingkat. Kajian ini bertujuan untuk membangunkan portfolio optimum untuk menjejak indeks sektor tanda aras di Malaysia dengan model pengaturcaraan integer bercampur (MIP) dua-tahap yang meminimumkan TE pada tahap pertama diikuti dengan memaksimumkan min pulangan portfolio pada tahap kedua. Data terdiri daripada Indeks Teknologi dan komponen indeks dari pasaran saham Malaysia. Keputusan menunjukkan bahawa model MIP dua-tahap memberi min pulangan yang lebih tinggi daripada indeks sektor tanda aras dengan TE yang minimum. Kajian ini adalah signifikan kerana ia membantu untuk membangunkan portfolio optimum dengan model MIP dua-tahap yang dapat mengatasi indeks sektor tanda aras tanpa memegang semua komponen indeks.

Kata kunci: Penjejakan indeks dipertingkat; pengaturcaraan integer bercampur; portfolio optimum

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