PORTFOLIO OPTIMIZATION OF EQUITY MUTUAL FUNDS WITH FUZZY SET THEORY (THAILAND CASE)

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ABSTRACT

Asset allocation for portfolio selection plays a vital role in investment decision for both researchers and practitioners. By investigating Thai equity mutual funds, this study proposes a preliminary asset allocation for portfolio selection model in which future returns and future risks of the funds are represented by triangular fuzzy number based on fuzzy set theory to reflect the uncertainty in market environment. In the first step, cluster analysis is anticipated to categorize varieties of equity funds into several groups based on the four evaluation indices i.e. rates of return, standard deviation, bid-ask spread, and Treynor index. After clustering, the fuzzy optimization model is proposed to determine the optimal investment proportion of each cluster. The portfolio optimization problem is developed in two ways: maximizing fuzzy return subject to a given greatest fuzzy risk and minimizing fuzzy risk subject to a given lowest fuzzy return.

Keywords: Fuzzy set theory, Clustering, Optimization