

A Multi-Objective Programming Approach with Different Importance and Priorities for Optimum Investment Decisions

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Abstract

This study proposes a novel fuzzy portfolio selection model that takes into accounts the risk preferences in accordance with the market moving trends as well as the risk – return tradeoff, and allows the decision makers to define a certain importance and priority among their objectives. To construct this model, firstly the portfolio return, risk and beta coefficient are assumed as main objectives including the possibilistic uncertainties. To define possibilistic uncertainty, the specific fuzzy membership functions are constituted for these objectives with respect to the risk preferences of investors and market moving trends. By means of the fuzzy goal programming techniques, a novel portfolio selection model is developed using these specific fuzzy membership functions. In the application section, three investment terms are examined in the Istanbul Stock Exchange National 30 Index (ISE30). While the first two implementations include the scenarios of ISE30 index having upward (bullish) and the downward (bearish) moving trends, the third implementation deals with a scenario in which the investors desire to chase the ISE30 index. In the analyses, the proposed model is compared with the classical Mean-Variance, Mean-Absolute-Deviation and Maxmin models in terms of their portfolio returns based on the selling prices in the test periods.

Keywords: Multiple Objective Programming, Fuzzy Goal Programming, Portfolio Selection Model, Risk Preferences of Investors, Capital Asset Pricing Model.