

Non-dominated Solution of Fuzzy Maximum-Return Problem

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Abstract:

In this paper, we find a non-dominated solution of a fuzzy maximum-return problem (unconstrained single-variable fuzzy optimization problem). We establish Newton method to find the solution of the unconstrained single-variable fuzzy optimization problem using the differentiability of α -level functions of a fuzzy-valued function and partial order relation on a set of fuzzy numbers.

Key words:

Fuzzy-valued functions, Newton method, Maximum-return problem

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1. Introduction

Maximum-return problem is formulated in [2]. He has proposed an optimal portfolio by considering a composite function of return and risk using weight parameter. He has minimized the composite function using some single-variable non-linear optimization methods. The value of acceptable risk is known approximately in the problem. So, rather than to consider the approximate value of acceptable risk as a exact number, we consider it as a fuzzy number, which capture the real meaning of approximation. By this way, we fuzzify the crisp optimization to study the flexibility in the approximate data.

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