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PII: S0377-0427(16)30630-6
DOI: http://dx.doi.org/10.1016/j.cam.2016.12.020
Reference: CAM 10944

To appear in: *Journal of Computational and Applied Mathematics*

Received date: 27 June 2016
Revised date: 16 December 2016

Please cite this article as: F. Omidi, B. Abbasi, A. Nazemi, An efficient dynamic model for solving a portfolio selection with uncertain chance constraint models, *Journal of Computational and Applied Mathematics* (2016), http://dx.doi.org/10.1016/j.cam.2016.12.020

An efficient dynamic model for solving a portfolio selection with uncertain chance constraint models

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ABSTRACT This paper presents a neural network model for solving maximization programming model with chance constraint in which the security returns are uncertain variables are proposed in accordance with uncertainty theory. The main idea is to replace the portfolio selection models when the uncertain returns are chosen as some special cases such as linear uncertain variables, trapezoidal uncertain variables and normal uncertain variables, with a linear programming (LP) problem. According to the saddle point theorem, optimization theory, convex analysis theory, Lyapunov stability theory and LaSalle invariance principle, the equilibrium point of the proposed neural network is proved to be equivalent to the optimal solution of the original problem. It is also shown that the proposed neural network model is stable in the sense of Lyapunov and it is globally convergent to an exact optimal solution of the portfolio selection problem with uncertain returns. two illustrative examples are provided to show the feasibility and the efficiency of the proposed method in this paper.

Keywords: Chance constrain, Portfolio selection, Uncertain variable, Crisp equivalent programming, Neural network

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