Abstract

Portfolio optimization and diversification as a tool for development and understanding of financial markets have been entered in financial management topics for guide investors to make appropriate decision. Markowitz’s modern portfolio theory (MPT) has been the most successful achievement in this field. Since, stock has a non-linear behavior in stock market; the need to non-linear models in order to identify the behavior of stock in relation to portfolio’s optimum selection should be felt. Because of successful performance of evolutionary algorithms, these algorithms can provide suitable methods for investors. In this paper, particle swarm optimization (PSO) algorithm employed to select optimum portfolio. Proposed approach was tested on monthly and yearly data set of fifty top companies accepted in Tehran Stocks Exchange which were collected from March 2007 to September 2011. PSO performance compared with genetic algorithm (GA) and artificial bee colony algorithm (ABC) in term of Sharp ratio. The computational results show that the PSO algorithm impressively outperforms GA and ABC, and monthly data is better criterion than yearly data in portfolio selection.

Index Terms

Computer Science  Algorithms
Keywords

Portfolio Optimization  Modern Portfolio Theory  Particle Swarm Optimization
Sharpe Ratio