Portfolio Optimization base on Value at Risk (VaR) by using combination of Ant Colony Optimization

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Abstract
This paper presents a novel Meta-Heuristic method for solving an extended Markowitz Mean–Variance portfolio selection model. The extended model considers Value-at-Risk (VaR) as risk measure instead of Variance. Depending on the method of VaR calculation its minimizing methodology differs. if we use Historical Simulation which is applied in this paper then the curve would be non-convex.

On the other hand the Mean-VaR model here includes three sets of constraints: bounds on holdings, cardinality and minimum return which cause a Mixed Integer Quadratic Programming Problem. The first set of constraints guarantee that the amount invested (if any) in each asset is between its predetermined upper and lower bounds. The cardinality constraint ensures that the total number of assets selected in the portfolio’s equal to a predefined number.

Because of above mentioned reasons, in this paper, we propose a new Meta-Heuristic approach based on combined Ant Colony Optimization (ACO) method and Genetic Algorithm (GA). The computational results show that the proposed Hybrid Algorithm has the ability to optimized Mean-VaR portfolio for small portfolio.

Keywords: Markowitz, Historical Simulation, Genetic Algorithm.

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Integrated Approach with Econometric Methods (ARMA & GARCH) and Analytic Network Process for Asset Allocation

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Abstract

Asset allocation is the capital distribution process among various types of assets as bonds, equity, commodity, etc. to balance risk versus reward, considering certain situations and objects of institutional or individual investors. Asset allocation is the first phase in investment portfolio construction and a principal concept in money management and financial planning. Most of the previous asset allocation studies have been concentrated on return and risk parameters as two major factors in investment decision makings. Thus, Authors expect that methods which consider both quantitative and qualitative factors in asset allocation, would lead to better results.

This study proposes a hybrid approach that combines analytic network process (ANP), time series and econometrics to consider quantitative and qualitative influential factors in asset allocation problem. In this approach we predict return and risk of assets with ARMA and GARCH models. Finally we determine the optimum weights of each asset group, using ANP model considering quantitative and qualitative influential factors in asset allocation problem and their interactions. In conclusion, Sharpe ratio pair test indicates that investment based on weights of the proposed hybrid approach outperforms investment based on the weights of the Markowitz model.

Keywords: Asset Allocation, Analytic Network Process, ARMA & GARCH, Markowitz Model

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Estimating an efficient Threshold for the modelling and computation of Operational Risk Capital

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Abstract
In this paper we conduct an empirical study to quantify and model Operational Risk by using loss distribution approach. Our main goals are to implement Extreme Value Theory (EVT) and propose a new method to estimate the tail threshold by minimizing the Mean Squared Error of spliced distribution. We have used popular parametric model (Lognormal, Weibull, Gamma, and Exponential), Generalized Pareto Distribution (GPD) and the combination of them in constructing spliced distribution (log-Gp and Wbl-Gp) to model severity distribution based on operational loss data which belongs to a large European bank.

Results indicate that parametric distributions are insignificant in fitting to data, especially in the tail region. But spliced distributions in comparison with other distributions have more efficiency to fit to the empirical quartiles. Errors in estimating very high quartiles of severity distribution, is the main reason for different figures of capital at risk in significant distributions. Therefore, it’s better to compute OpVaR figures in lower confidence level by spliced distribution based on introduced threshold.

Key Words: Operational Risk, Loss Distribution Approach (LDA), Extreme Value Theory (EVT), Threshold, Two-pattern distribution, Capital at Rik

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providing a new model for optimization of exchange portfolio using of Markowitz method and modifying that, using of hovel cosine's model using genetic algorithm

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This is research compiled with exchange portfolio optimization subject, using of genetic algorithm based on markowitz model and convergence unique method in order to evaluate the risk and yield for minimizing the risk for appropriate investment toward portfolio optimization by considering expected yield rate.

In this research it is tried to design a model in order to evaluate the risk and yield for appropriate investment in the optimized portfolio by considering the financial management knowledge and OR.

In this research 50 top companies in 1389 have been studied, then using of CCI indicator 50 companies have been reduced to 21 ones. In the second step using of markowitz model, we will Individually solve the portfolio risk of 21 shares by genetic algorithm using of matlab software. we will solve the shares risk separately using of genetic algorithm for various yields.

An assumption would be considered for modifying the Markowitz model that using of vilcacson statistical test we have got positive result.

And finally we realize that diversification of portfolio always is not interested for investor and in a special place it is better to stop diversification.

Keywords: portfolio, genetic algorithm, CCI indicator, risk and yield

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Abstract
One of the subjects, which have always drawn attention of experts and even the public, was the rate of profitability and revenue of banks and due to this fact that optimal performance of banks may essentially influence in economic growth and development of the country so preparation of the needed conditions and platforms for qualitative and quantitative improvement in banks performance under the light of a healthy competitive scene may play a noticeable role in achieving their goals. Given those derived results, the financial perspective in Balanced Scorecard has the highest possible weight (0.47) in linear allocation method and Technique of Order Preference by Similarity Ideal Solution (TOPSIS). At the end, the three admitted banks in Security and Exchange Organization (SEO) were ranked by adaption of three Multiple Criterion Decision Making (MCDM) methods. EN Bank possesses the first rank by means of the employed ELECTRE (ELimination Et Choix Traduisant la Réalité) method.

Keywords: Multiple Criterion Decision Making (MCDM), Balanced Scorecard, Fuzzy Analytical Network Process (FANP), TOPSIS, ELECTRE, Linear Allocation, Banks admitted in SEO (Bourse), Evaluation of Performance

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Determining strategic policy for Iran Endowment & Reclamation Association by GE matrix to properly manage investment portfolio

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Abstract
The issue of religious endowment and donation in Islamic societies, especially in Islamic Republic of Iran, has of vital importance. Although there are a lot of endowed estate in Iran, exploitation of this potentials are not progressive. The aim of this research, in regard to existing special consideration, is defining strategic policy for Iran Endowment & Reclamation Association to properly manage investment portfolio in realms of civil, agriculture, ranching, and mining by means of GE matrix and introduce the priorities. To reach this goal, after identifying the main potential fields in mentioned realms, the alternatives in each realm were introduced. Then, by means of some criteria for analyzing attractiveness of realms and fields and moreover some other criteria for analyzing strength of association for having activity in those realms and fields, realms and fields with higher priority were identified and introduced. The sample of the research, containing 17 people, was chosen from related experts. Survey has been the methodology of the research and the questionnaire has been used to collect data. Finally realms of civic and mining have been assessed as attractive realms and for activity in the 31 fields, strategic recommendations were proposed.

Keywords: Strategic policy, Investment portfolio, GE Matrix, Endowment, Endowed estate

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Bankruptcy forecasting model using Adaptive Neuro-Fuzzy Inference System (ANFIS)

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Abstract
One of the most significant threats of a national economy is the bankruptcy of its firms. Assessment of bankruptcy provides valuable information on which governments, investors and shareholders can base their financial decisions in order to prevent possible losses. The aim of this study was to model bankruptcy by using Adaptive Neuro-Fuzzy Inference System (ANFIS). Statistical society for performing of this research is companies which were listed at Tehran Stock Exchange since 2001 up to 2010 and according to article 141 of commercial code, including 40 bankrupt companies and 40 non-bankrupt companies. These companies were divided randomly in three sets: train set for creating model, test set and check set for validating model. Financial ratios of the companies in the year before bankruptcy were considered as input variables ANFIS. The result of this study points out that percentage of success predictions one year before bankruptcy is 83.75. Finally, according to this study, the ANFIS selection is helpful to predict the financial distress situation for companies which were listed at Tehran Stock Exchange.

Key words: Adaptive Neuro-Fuzzy Inference System (ANFIS), Bankruptcy Forecasting, Financial Ratios.

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Survey the impacts of momentum investors on stock market behavior by agent-based model

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Abstract
In this study we consider a population consisting of two types of agents: random investors and momentum investors. The random investors trade all the time randomly. The momentum investors implement an action threshold to assess the most recent movement in the price and decide on their actions which could be idle, buying or selling. The time series of a stock price generated by the model shows some of the well-known stylized facts observed in real markets, including volatility clustering, fat-tail in the returns, weak long-term correlation and scaling behavior in the kurtosis. When real market data sets are analyzed by the model, it is found that: (a) the less efficiency of an emerging market provides more opportunity for the momentum strategy; and (b) the momentum investors respond to large fluctuations amounting to nearly three times the standard deviations in the returns generated by the random investors.

Keywords: Momentum investors, Random investors, Stock market behavior, Agent-based model

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