Assessing credit risk rating with Artificial Neural Network method (the Case of an Iranian Bank)

Ahmadreza Ghasemi[1]

Tahereh Donyaee[2]

Abstract

Nowadays, Loans in the banking industry has a crucial role in productivity because a substantial portion of the assets of a bank formed though the individuals and companies. So today's credit risk has known as a biggest contributing factor of failure in the banks and financial institutions. Because of mentioned factors, control and management of these risks are necessary.

As it mentioned before, the aim of this research is a model designed for customers in the areas of Assessing credit risk rating with a synthesized MADM and SOM method. For this purpose, the first step is identifying 29 indices that influence credit risk. After that, according to expert opinion and the past researches 12 indices was extracted. So the optimal clusters were determined by neural network pattern recognition algorithm. Then customers were categorizing with SOM and K-mean. Finally, the relative weight of each indicator of the credit risk assessment was determined.so research show that the customer experience in the economic sectors and account duration has high percentage. Finally, some recommendations are offered for future research and suggestions for researchers and practitioners in the field of banking are. At the end, some of the limitations mentioned in this research.

Keyword: Credit Risk, Clustering , Artificial Neural Network,K-Man, Banking Industry

[1] Assistant Prof. Faculty of Management and Accounting, Farabi College, University of Tehran, Qom, Iran

[2] MSc. Student in Industrial Management, Nonprofit Guidance Damavand, Tehran, Iran

Evaluation of downside risk and stock returns in Tehran Stock Exchange via Extreme value theory

M. F. Fallah Shams[1]
Samira Ghazanfari[2]

Abstract

In recent years, Contention lead to intensify in money and finance market. So firm performance involved high fluctuation. Determining and convening appropriate portfolio require to consider basis risk and return. It's defined investment desirability. Simultaneous considering risk and return are the main element of investor decision making. In the following research, we are trying to evaluate downside risk and stock return in Tehran stock exchange, with due attention to reduce asset value in order to lead to decrease risk, via extreme value theory. Accordingly we apply extreme value theory in order to estimate extreme value parameters. This is done using Garch(1,1) type model, auto regressive and maximum likelihood estimation method. We use four factor Carhart model in order to extract abnormal return. For this purpose, according to the information available in TSE index real data between 1382-1392 years. This research employs panel least square to show virtually relation between stock return and extreme value quantity. Eventually, the outcomes of examining the research hypotheses demonstrate a relation between abnormal return and downside risk in the studied period. Moreover, the results revealed that panel data examining demonstrate direct relation between expected return and extreme value magnitude.

Keywords: abnormal return, extreme value theory, maximum likelihood estimation method, panel data model

[1] Assistant professor of Islamic Azad University ,Central Branch
[2] Graduated of Business Management ,Central Branch , Corresponding author

Controlling the Effect of Microstructure Noise and Removing Jumps Effect in Estimating of Systematic Risk by High Frequency Data

M. Roknossadati Ezabadi[1]
Parinaz Jala[2]

Abstract

Today, another important significant time series exist in markets. These time series include a lot of information such as the price of bid-ask, trading volume, trading time and etc. in one day, these time series are known as high frequency data which have issues such as: Non-synchronous trading, microstructure noise and jumps; they have different analyzing compared to conventional time series and the researcher is able to use them in a short period of time. This article will discuss about estimating of national Iranian copper industries companies' systematic risk by "pre-averaging" approach and removing jumps in Khordad until Aban 1393(June-November). The outcome of this research indicates that jumps and microstructure noises have impression over estimating of realized volatility and consequently on the systematic risk; and it is crucial to control them then estimating of systematic risk would be more reliable and as a result, risk management of portfolio will be more functional.

Keywords: High frequency data, Microstructure noise, Pre_averaging, Jump, Systematic risk, Realized volatility.

[1] Member of Board, Department of Financial Engineering, University Science and culture
[2] Master of Financial Engineering, University Science and culture, (Corresponding Author) parinazjala@yahoo.com

Examining Security of Investment in the Stock, Gold, Exchange and Housing Market of Iran using Value at Risk (VaR) Criteria

Gholamreza Zomorodian[1]
Farkhondeh Nariman[2]

Abstract

Official statistics show that in the recent decades, on average, only about 12% of the country's real GDP has been allocated to investment in the manufacturing sector, including the production of goods and services and a considerable portion of it has been absorbed into unproductive speculative activities.Accordingly, this study with purpose to examining and comparing security of investing in different markets has evaluated the risk of investing in four market including stocks, gold, currency and Iran's housing using the Value at Risk (VaR) Criteria. Also in this study to providing a more accurate analysis of the security investment based on investors' attitudes TOPSIS method has been used.All information required for the study was collected on a monthly basis for during 2002 - 2013.The result of this study showed based on VaR Criterion, the security of investment in the stock market is much lower than other markets, so investors in this market face higher risk of investments relative to other markets.Also, the result of this study showed based on TOPSIS method (according to risk and return critrias) risk averse and risk neutral Investors have the Similar behavior, So that the two groups prefer The investment in the housing market and then investment in the gold market on the parallel markets including exchange and stock. However, unlike the aforementioned groups, risk-taking investors prefered investing in the stock market and then investing in the housing market on the investment in the gold and currency markets.

Keywords: Security of Investment, Value at Risk, Stock, Gold, Exchange and Housing Markets, TOPSIS Method.

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[1] PhD and Faculty Member of Azad Islamic University Central Tehran branch
[2] Graduated of Azad Islamic University Central Tehran branch.

Testing capital asset pricing model based on exogenous information assumptions in TSE

Mohammadreza Rostami[1]
Leyla beykzadeh[2]
Fatemeh Ajdari[3]

Abstract

This research conducts a survey on the application of endogenous information for equilibrium pricing of assets and selecting optimum portfolio.

Literatures in this research is based on Admati's linear logical expectations equilibrium theory.

Not like traditional paradigm of asset pricing and logical expectations, this research first surveys the correlation between prices and future returns of price conditioned portfolios. then we compare the performance of price conditioned portfolios with buy and hold portfolios during 1381-1391.

Results shows that there is a significant positive correlations between relative Prices and monthly returns. Also results show that price – conditioned strategy performs better than buy and hold strategy.

[1] Assistant professor of finance – Alzahra university – Tehran- Iran

[2] Ms of finance – Alzahra university – Tehran- Iran.

[3] Ms of accounting – Azad university – Tehran – Iran.

Prioritize the factors affecting the choice of mode of financing in Iran using TOPSIS method based on the fuzzy linguistic variables

Ehsan Zakernia[1]
Mahdi khajehzadeh Dezfouli[2]
Meysam Fadaei Vahed[3]

Abstract

In recent years Financing tools have increasingly growth. With Development of tools and methods of financing, financial managers are faced with a very important decision. Financial managers are always faced with the question of what financial instruments can be be useful in financing their needs. In this study, we have tried to identify, categorize and prioritize the factors affecting the choice of financing methods by using verbal variables and in fuzzy environment. Factors affecting the choice of financing is divided into three general categories. These factors include: factors relating to sources of financing, the financed company or project and macro-political and economical factors. Then, for each of the general categories, a number of sub- factors expressed and the factors based on the importance has been prioritized. This study is functional study and by using the fuzzy TOPSIS method has prioritized the factors.

Keywords: financing, source of funding, company, political factors, economical factors

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[1] PhD student, Imam Sadeq University, Faculty of Islamic Studies and Management ehsanzakernia@gmail.com
[2] Master of Financial Engineering University of Economic Sciences, Faculty of Management
[3] PhD student, University of Allameh Tabatabai, Faculty of Management

A Novel intelligent trading system using Meta-heuristic Algorithms and Fuzzy logic

Maqsood Amiri[1]
Hamidreza Haddadian[2]
Mostafa Zandie[3]
Ali Raiszadeh[4]

Abstract

One of the new areas in financial researches is using artificial intelligence to assist building decision making systems. Stock trading system is one of those systems developed to help investors make successful trading operations. Successful trading operation must be done near turning point of price trends. In recent years many studies focused on preparing systems to suggest price trend reversal. Technical analysis which tries to provide trading signals is mostly used in such systems and is usually one part of the system.

Technical analysis with a lot of rules try to give trader the signals of price trend reversal but the disadvantage of technical analysis is its dependency to investors experience to decide on technical rules and parameters. In fact the performance of technical analysis is deeply dependent to quality of setting technical parameters.

In this study we try to build a trading system based on technical rules and enhance its performance by using Genetic Algorithms, Fuzzy Logic and Artificial Neural Networks. GA helps us to train technical parameters in technical rules. Fuzzy logic helps us to discern how is the condition of market (trending market or none trending market). Because it is important to select kind of rules. When different enhanced rule provide their trading signal concerning market condition, an ELMAN network combines different signals together to provide trading suggestion.

Results from Tehran stock exchange consist of 10 stocks demonstrate that statistically there is significant difference between performance of our proposed system and grand trading strategies such as buy and hold strategy. In other words, our system possesses profitability potentials.

Keywords: Stock Trading System; Technical analysis; Genetic Algorithm; Artficial Neural Network; Fuzzy Logic

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[1] Ph.D in Industrial Engineering, Associate Professor of Management, Faculty Member of Allame tababai University

[2] MA in Financial Engineering, Raja University, (Corresponding Author), hr.haddadian@gmail.com

[3] Ph.D in Industrial Engineering, Associate Professor of Management, Faculty Member of shahid beheshti University

[4] Assistant Professor of Management, Faculty Member of Raja University

Credit risk assessment of corporate customers using support vector machine and genetic algorithm hybrid model - a Case Study of Tejarat Bank

A. Mohammadian Hajikord[1]
M. Asgharzade Zaferani[2]
M. Emamdoust[3]

Abstract

Design and implementation of credit rating model in the banking system plays an important role in enhancing the efficiency of resource allocation is to target customers. In this research aims to develop a model for evaluating the credit risk of the bank's corporate clients have been used Support Vector Machine (SVM) and Genetic Algorithms (GA). Therefore, a study has been on the financial variables of 282 companies during the years 2007 to 2010, have received loans from TEJARAT bank. In this research, to optimize the input of support vector machine is used of genetic algorithms. The power of the genetic algorithm to select the optimum points, always provides confidence that the optimal-made for the proposed going to be higher optimum points.

In the hybrid model GA-SVM, genetic algorithm optimizes SVM model inputs the data.

Research findings show GA-SVM hybrid model performed better than the SVM model in the identifying good customer accounts and bad customer accounts and credit risk prediction.

Keywords: Credit rating, credit risk, support vector machine, genetic algorithms.

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[1] MSc in Financial Management Tehran University
[2] Master of Business Administration Tehran University
[3] Ph.D Student financial management Tehran University

Fuzzy MCDM Approach of Portfolio Evaluation and Selection

Zahra Amirhosseini[1]
MasumehGhobadi[2]

Abstract

There are many models in portfolio evaluation and selection. The first study in this area is the Markowitz mean-variance modeling 1952. Since increasing crisis in the organizational activity makes uncertainty rising, the evaluation and selection of stocks problem will consist of the important parameters. Therefore, the fuzzy sets are a powerful tool for dealing with the uncertainty caused by trade markets and the investors 'decision making. So, in this paper, the fuzzy theory along with multi-criteria decision-making has been used for portfolio evaluation and selection. To this end, 12 of the 50 active companies listed in Tehran Stock Exchange were evaluated in 1393 (solar year). A result represented the 72% rate of return of the selected portfolio. Moreover, Information Services Inc. has the highest performance and Persian Bank has the weakest performance in the proposed portfolio.

Keywords: portfolio evaluation and selection; fuzzy multi-criteria decision-making; fuzzy hierarchical analysis; fuzzy weighting simple set method

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[1] Assistant Professor of Islamic Azad University. Shahr -e- Qods Branch- Department of Management-Tehran- Iran. Email: z.amirhosseini@shahryariau.ac.ir

[2] D.B.A. student of IFEA (Iran Financial Engineering Association)