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Literary Editor : Shabani, Fatemeh

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Address: P. O. Box: 19395- 3486
Tehran, Islamic Republic of Iran
WebSite: <http://jferm.khatam.ac.ir>
E-mail: jferm@khatam.ac.ir

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Intraday Value at Risk Estimation Based on an Asymmetric Autoregressive Conditional Duration Approach

Ahmad Pouyanfar¹, Ali Damerloo Abhari²

Abstract: The most important parameter in risk evaluation by intraday value at risk (IVaR) simulation is the irregular spaced high frequency data. There are several methods for model high frequency data and in this paper we propose a method to compute IVaR using real time high frequency transaction data for 10 stock of Tehran Stock Exchange. Transactions durations are modeled by asymmetric autoregressive conditional duration (AACD) and autoregressive conditional duration (ACD) methods and IVaR has been calculated by Monte Carlo simulation. Research results show that IVaR calculated using AACD method outperforms. And also results of IVaR calculation shows a daily pattern in IVaR variation.

Keywords: *Intraday Value-At-Risk, High-Frequency Data, Asymmetric Autoregressive Conditional Duration Model.*

JEL: *G23, G32*

1. Assistant Prof., Finance Department, Khatam University, Tehran, Iran

2. MSc. in Finance, Khatam University, Tehran, Iran

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Accepted: 10 / September / 2017

Corresponding Author: Ali Damerloo Abhari

Email: a.damerloo@khatam.ac.ir

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A Model for Measuring Predictability Strength and the Relationship of Stock Index Return and Mutual Fund Flow

Ehsan Taiebysani¹, Saeed Fallahpour²

Abstract: In this Thesis we examine the dynamic relationship between stock returns and mutual fund flows in Tehran Stock Exchange (TSE) by using VAR model. Afterthat, we checked the impulse response function and forecast error variance decomposition of VAR by Cholesky and generalized function. We find that spillover shocks that is, Tehran Stock Exchange main index (TEDPIX) return shocks and mutual fund flow shocks together explain some percent of the total forecast error variance of stock returns and mutual fund flows. Base on above mentioned results we used Artificial Neural Network (ANN) with different learning functions for examining the relationship between Tehran Stock Exchange main index (TEDPIX) return and mutual fund flow. For selecting the best learning function in ANN, mean square Error has been used. For statistical significance, T-statistical paired comparison test was used. We create a spillover index of shocks emanating from stock returns and mutual fund flows and tests whether it can actually predict Tehran returns. We find it does. Using the spillover index, we forecast TEDPIX returns. At the end because of endogeneity, persistency and heteroscedasticity of predicting regression, we used Feasible-Quasi Generalized Least Square (FQGLS) for examining the statistics significance of spillover index, which turns out to be statistically significant.

Keywords: *Vector Autoregression (VAR), Spillover Effect, Mutual Funds.*

JEL: *G17, G23*

1. Ph.D. in Finance, University of Tehran, Iran

2. Assistant Prof. Financial Management, university of Tehran, Iran

Submitted: 07 / June / 2017

Accepted: 02 / August / 2017

Corresponding Author: Ehsan Taiebysani

Email: ehsantaieby@ut.ac.ir

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Financial Bankruptcy Risk Prediction Based on Accounting, Market and Hybrid Models by using RBF and MLP Neural Networks Technique in TSE

Alireza Atefatdoost¹, Maryam Mahmoudi², Najmeh Ramooz³

Abstract: In this paper have been studied Financial Bankruptcy Risk Prediction based on accounting and market and hybrid models (combining the two above models) with the use of MLP and RBF techniques of neural networks and the results of these techniques are compared based on the mean square error index in the three mentioned models. The results show that the RBF neural network is more efficient than the MLP network in all three models (accounting, market and hybrid variables) and the accuracy of the hybrid model is more than the accounting and market models.

Keywords: *Neural Networks, Bankruptcy prediction models, Financial Bankruptcy.*

JEL: *C45, G17, G33*

1. Assistant Prof., Business Management, Shahab Danesh University, Qom, Iran

2. MSc.in Business Administration, Qom University, Qom, Iran

2. Assistant Prof., Business management Department, Qom University, Qom, Iran

Submitted: 20 / June / 2017

Accepted: 04 / September / 2017

Corresponding Author: Maryam mahmoudi

Email: maryam.mahmoodi9370@gmail.com

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The Impact of the Investment Horizon in Optimizing Portfolio using Wavelet and GARCH- COPULA

Mohammad Ali Rastegar¹, Mohammad Okeinezhad²

Abstract: The purpose of our paper is to show how investors can use the multi-scale nature of assets into their portfolio decisions. We decompose weekly return series of 3 stocks listed in the Tehran stock exchange Index (TSE) from 2011 to 2014 into different time scales to separate short-term noise from long-run trends. We decompose data by applying wavelet Transform techniques. Then, we apply ARIMA(p,d,q)_GARCH(1,1)_Copula to determine return and Value at Risk (VaR). The process first extracts the filtered residuals and variance from each return series with an ARIMA and asymmetric GARCH model, then constructs the sample marginal cumulative distribution function (CDF) of each asset using a Gaussian kernel estimate for the interior and a generalized Pareto distribution (GPD) estimate for the upper and lower tails. A Student's t copula is then fit to the data and used to induce correlation between the simulated residuals of each asset. Finally, the simulation assesses the Value-at-Risk (VaR) of the equity portfolio over a different horizon. We get the best weight of each stock in the portfolio. We have identified the best VAR based ratio. In this study, we had predicted a portfolio for each time horizon according to risk and return portfolio. Our results provide evidence that accounting for the multi-scale nature of return distributions in portfolio decisions might be a promising approach from a portfolio performance perspective.

Keywords: *Investment Horizon, Portfolio Risk, Wavelet, GARCH-COPULA.*

JEL: *G32, G11*

1. Assistant Prof., Financial Engineering, Tarbiat Modares University, Tehran, Iran

2. MSc. Student in Financial Engineering, University of Khatam, Tehran, Iran

Submitted: 28 / May / 2017

Accepted: 30 / August / 2017

Corresponding Author: mohammad okeinezhad

Email: : m.okinejad@khatam.ac.ir

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Optimization of Multi-Objective Portfolios Based on Mean, Variance, Entropy and Particle Swarm Algorithm

Reza Raei¹, Saeed Bajelan², Mostafa Habibi³, Ali Nikahd⁴

Abstract: Most optimization problems in the real world have several goals that are usually in conflict with each other. Investors in the capital market are also pursuing several goals for optimizing the stock portfolio. The purpose of this paper was to optimize multi-objective portfolios based on ARMA-GARCH predictions and entropy. to provide solutions using the method of particle swarm algorithm. The statistical sample of this study includes the top 30 Tehran Stock Exchange (TSE). Initially, Autoregressive integrated moving average (ARIMA) efficiency series was modeled. Then, in order to evaluate the asset portfolio risk, we first calculated the risk based on generalized autoregressive conditional heteroskedasticity (GARCH) models. Also, the results of this study show that the multi-objective optimization algorithm based on the method of particle swarm algorithm is successful in creating stock portfolios. According to the findings of the research, the application of the Particle Swarm Algorithm (PSO) in the selection and optimization of stock portfolios is recommended.

Keywords: *Multi-Objective Optimization, Entropy, Particle Swarm Method.*

JEL: *G10, G17, G19*

1. Prof. Finance Department, Tehran University, Tehran, Iran

2. Assistant Prof., Finance Department, Tehran University, Tehran, Iran

3. MSc. Student in Finance, Tehran university, Tehran, Iran

4. MSc. Student in Finance, Tehran university, Tehran, Iran

Submitted: 12 / June / 2017

Accepted: 26 / August / 2017

Corresponding Author: Mostafa Habibi

Email: mostafahabibi_68@yahoo.com

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Asset Allocation Modeling: A Combined Regime-Switching and Black-Litterman Model

Mohammad Mahdi Mousavi¹, Shahireh Naderi², Khadijeh Hassanlou³

Abstract: One of the most debated issues of investment management is the relative importance of asset allocation versus security selection. Regimes changes present a big challenge to traditional asset allocation, demanding a more adaptive approach. The purpose of this study is to develop a framework for dynamic asset allocation modeling in the presence of regime switching. This research builds on previous works to develop a combined regime-switching and Black-Litterman for optimal asset allocation in Iran asset classes considering data during 212 months, ranging from March 1999 to September 2016. The results show the existence of different financial regimes that lead to variable optimal asset allocations across different regimes. Finally, it is suggested that the combination of regime-switching and Black-Litterman model for mixture of stock and 1-year banking deposit investment gives significantly better results than other models in terms of performance and a modified sharp ratio.

Keywords: *Asset Allocation, Black-Litterman, Regime Switching, Security Selection.*

JEL: *G11, G17*

1. Associate Prof., Economic Department, Khatam University, Tehran, Iran

2. MSc., Finance Management, Khatam University, Tehran, Iran

3. Associate Prof., Industrial Engineering Department, Khatam University, Tehran, Iran

Submitted: 24 / June / 2017

Accepted: 13 / September / 2017

Corresponding Author: Shahireh Naderi

Email: shahire.naderi@gmail.com

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Empirical Study on the Existence of Long-term Memory in TSE Returns

Ali Raoofi¹, Taymoor Mohammadi²

Abstract: Over the past few decades, long memory processes were assigned an essential part of the time series analysis. This feature changes the statistical behavior of estimations and predictions drastically. Consequently, many theoretical results and methodologies used in time series with short memory such as ARMA processes are not suitable for long memory models. Therefore, time series memory of Tehran Stock Exchange returns are estimated and interpreted in this paper. To do this, R/S, MRS, and GPH tests are used to estimate the fractional difference parameter. Test results show the existence of long memory in stock exchange returns series; therefore, long memory models should be used to estimate and forecast. Also the weak form of market efficiency hypothesis can be disaffirmed by using the results.

Keywords: *Long Memory, Fractional Integration, Time Series, Stock Exchange.*

JEL: *C16, G1, G14*

1. *PhD. Student in Economics, Allameh Tabataba'i University, Tehran, Iran*

2. *Associate Prof., Economics Department, Allameh Tabataba'i University, Tehran, Iran*

Submitted: 28 / May / 2017

Accepted: 19 / August / 2017

Corresponding Author: Ali Raoofi

Email: raoofi931@atu.ac.ir

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