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Proceedings of

INTERNATIONAL CONFERENCE ON MATHEMATICAL AND COMPUTER SCIENCES

PREFACE

This event is a forum for mathematician and computer scientist for discussing and exchanging information and knowledge in their area of interest. It aims to promote activities in research, development and application not only on mathematics and computer sciences areas, but also all areas that are related to those two fields.

This proceeding contains sorted papers from the International Conference on Mathematical and Computer Sciences (ICMCS) 2013. ICMCS 2013 is the inaugural international event organized by Mathematics Department Faculty of Mathematics and Natural Sciences University of Padjadjaran, Indonesia.

In this proceeding, readers can find accepted papers that are organized into 3 track sections, based on research interests which cover (1) Mathematics, (2) Applied Mathematics, (3) Computer Sciences and Informatics.

We would like to express our gratitude to all of keynote and invited speakers:

- Prof. Dr. M. Ansjar (Indonesia)
- Assoc. Prof. Dr. Q. J. Khan (Oman)
- Prof. Dr. Ismail Bin Mohd (Malaysia)
- Prof. Dr. rer. nat. Dedi Rosadi (Indonesia)
- Prof. Dr. T. Basarudin (Indonesia)
- Assoc. Prof. Abdul Thalib Bin Bon (Malaysia)
- Prof. Dr. Asep K. Supriatna (Indonesia)

We also would like to express our gratitude to all technical committee members who have given their efforts to support this conference.

Finally, we would like to thank to all of the authors and participants of ICMCS 2013 for their contribution. We hope your next participation in the next ICMCS.

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KEYNOTE SPEAKER

Mean-Variance Portfolio Optimization on Some Islamic Stocks by Using Non Constant Mean and Volatility Models Approaches

Endang SOERYANA[a*], Ismail BIN MOHD[b], Mustafa MAMAT[c], Sukono[d], Endang RUSYAMAN[e]
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Abstract: Investment in Islamic stocks investors are also faced with the issue of risk, due to daily price of Islamic stock also fluctuate. To minimize the level of risk, investors usually forming an investment portfolio. Establishment of a portfolio consisting of several Islamic stocks are intended to get the optimal composition of the investment portfolio. This paper discussed about optimizing investment portfolio of Mean-Variance to Islamic stocks by using mean and volatility is not constant approaches. Non constant mean analyzed using models Autoregressive Moving Average (ARMA), while non constant volatility models are analyzed using the Generalized Autoregressive Conditional heteroscedastic (GARCH). Optimization process is performed by using the Lagrangian multiplier technique. As a numerical illustration, the method is used to analyze some Islamic stocks in Indonesia. The expected result is to get the proportion of investment in each Islamic stock analyzed.

Keywords: Investment risk, portfolio Mean-Variance, ARMA models, GARCH models, Lagrangian multiplier.

1. Introduction

Investment is basically invest some capital into some form of instrument (asset), can be either fixed assets or financial assets. Investing in financial assets can generally be done by buying shares in the stock market. Investing in stocks, investors will be exposed to the risk that the magnitude of the problem along with the magnitude of the expected return (Kheirollah & Bjarnbo, 2007). The greater the expected return, generally the greater the risk to be faced. Investment risk is describing rise and fall stock price changes at any time can be measured by the value of variance (Sukono, et al., 2011).

The strategy is often used by investors in the face of the risks of investing is to form an investment portfolio. Establishment of an investment portfolio is essentially allocates capital in a few selected stocks, or often referred to diversify investments (Panjer et al., 1998). The purpose of the establishment of the investment portfolio is to get a certain return with minimum risk levels, or to get maximum returns with limited risk. To achieve these objectives, the investor is deemed necessary to conduct analysis of optimal portfolio selection. Analysis of portfolio selection can be done with optimum investment portfolio optimization techniques (Shi-Jie Deng, 2004).

Therefore, this paper studied the paper on portfolio optimization model of Mean-Variance, where the average (mean) and volatility (variance) assumed the value is not constant, which is analyzed using time series model approach (time series). Non constant mean analyzed using models Autoregressive Moving Average (ARMA), whereas non constant volatility analyzed using models of the Generalized Autoregressive Conditional Hetroscedasticity (GARCH) (Shi-Jie Deng, 2004). Methods such analysis is then used to analyze a Islamic stock in Indonesia. the purpose of this analysis is to obtain the proportion of investment capital allocation in some Islamic stocks are analyzed, which can provide a maximum return with a certain level of risk.