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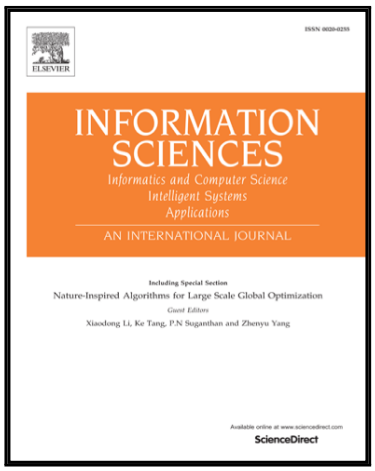

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PII: S0020-0255(18)30097-5
DOI: 10.1016/j.ins.2018.02.016
Reference: INS 13421

To appear in: *Information Sciences*

Received date: 14 October 2016
Revised date: 22 December 2017
Accepted date: 8 February 2018

Please cite this article as: Riswan Efendia , Nureize Arbaiy , Mustafa Mat Deris , A New Procedure in Stock Market Forecasting Based On Fuzzy Random Auto-Regression Time Series Model, *Information Sciences* (2018), doi: 10.1016/j.ins.2018.02.016

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ACCEPTED MANUSCRIPT

A New Procedure in Stock Market Forecasting Based On Fuzzy Random Auto-Regression Time Series Model

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Abstract. Various models used in stock market forecasting presented have been classified according to the data preparation, forecasting methodology, performance evaluation, and performance measure. However, these models have not sufficiently discussed in data preparation to overcome randomness, as well as uncertainty and volatility of stock prices issues in achieving high forecasting accuracy. Therefore, the focus of this paper is the data preparation procedure of triangular fuzzy number to build an improved fuzzy random auto-regression model using non-stationary stock market data for forecasting purposes. The improved forecasting model considers two types of input, which are data with low-high and single point values of stock market prices. Even though, low-high data present variability and volatility in nature, the single data has to be form in symmetry left-right spread to present variability and standard error. Then, expectations and variances, confidence-intervals of fuzzy random data are constructed for fuzzy input-output data. By using the input-output data and simplex approach, parameters of the model can be estimated. In this study, some real data sets were used to represent both types of inputs, which are the Kuala Lumpur stock exchange and Alabama University enrollment. The study found that variability and spread adjustment are important factors in data preparation to improve accuracy of the fuzzy random auto-regression model.

Keywords: low-high procedure, left-right spread, fuzzy random variable, auto-regression model, stock market

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1 Introduction

With the current world economic crisis, foreign exchange rates, foreign assets and stock market prices are indispensable indicators in the international financial markets. Since 1997, some Asian countries' currencies, such as, the Indonesian Rupiah (IDR), and Malaysian Ringgit (RM), have sharply decreased in value in comparison to the US dollar. This scenario has had a serious economic impact resulting in the slowdown of the economic activities in these countries. The continuing depreciation trend of the

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