

Accepted Manuscript

Crash forecasting in the Korean stock marketbased on the log-periodic structure and pattern recognition

Bonggyun Ko, Jae Wook Song, Woojin Chang

PII: S0378-4371(17)30966-4
DOI: <https://doi.org/10.1016/j.physa.2017.09.074>
Reference: PHYSA 18679

To appear in: *Physica A*

Received date : 7 September 2016
Revised date : 11 January 2017

Please cite this article as: B. Ko, J.W. Song, W. Chang, Crash forecasting in the Korean stock marketbased on the log-periodic structure and pattern recognition, *Physica A* (2017), <https://doi.org/10.1016/j.physa.2017.09.074>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Crash forecasting in the Korean stock market based on the log-periodic structure and pattern recognition

Bonggyun Ko^a, Jae Wook Song^a, Woojin Chang^{a,*}

^a*Department of Industrial Engineering, Seoul National University, Seoul 151-742, Republic of Korea*

Abstract

The aim of this research is to propose an alarm index to forecast the crash of the Korean financial market in extension to the idea of Johansen-Ledoit-Sornette model, which uses the log-periodic functions and pattern recognition algorithm. We discover that the crashes of the Korean financial market can be classified into domestic and global crises where each category requires different window length of fitted datasets. Therefore, we add the window length as a new parameter to enhance the performance of alarm index. Distinguishing the domestic and global crises separately, our alarm index demonstrates more robust forecasting than previous model by showing the error diagram and the results of trading performance.

Keywords: Log-periodicity, Price forecasting, diffusion model, Pattern recognition, Non-linear time series, Financial market

1. INTRODUCTION

A financial bubble is an artificial growth of an asset price incurred by irrationally aggressive expectations among market participants, which can be seen as the state of over-valued financial market [1, 2, 3]. Moreover, it usually bursts at the zenith of the economic cycle. The outbreak of such event appears with the large drop of asset price, which is also known as the market crash [4, 5]. If a bubble is created from a non-popular asset, the severity of market crash is insignificant since only limited number of market participants will be harmed. In contrast, if

*Corresponding author.

Email address: changw@snu.ac.kr (Woojin Chang)

Download English Version:

<https://daneshyari.com/en/article/7376564>

Download Persian Version:

<https://daneshyari.com/article/7376564>

[Daneshyari.com](https://daneshyari.com)