The Classification Accuracy of Finance Data through Holder Functions

Authors : Yeliz Karaca, Carlo Cattani

Abstract : This study focuses on the local Holder exponent as a measure of the function regularity for time series related to finance data. In this study, the attributes of the finance dataset belonging to 13 countries (India, China, Japan, Sweden, France, Germany, Italy, Australia, Mexico, United Kingdom, Argentina, Brazil, USA) located in 5 different continents (Asia, Europe, Australia, North America and South America) have been examined.These countries are the ones mostly affected by the attributes with regard to financial development, covering a period from 2012 to 2017. Our study is concerned with the most important attributes that have impact on the development of finance for the countries identified. Our method is comprised of the following stages: (a) among the multi fractal methods and Brownian motion Holder regularity functions (polynomial, exponential), significant and self-similar attributes have been identified (b) The significant and self-similar attributes have been applied to the Artificial Neuronal Network (ANN) algorithms (Feed Forward Back Propagation (FFBP) and Cascade Forward Back Propagation (CFBP)) (c) the outcomes of classification accuracy have been compared concerning the attributes that have impact on the attributes which affect the countries' financial development. This study has enabled to reveal, through the application of ANN algorithms, how the most significant attributes are identified within the relevant dataset via the Holder functions (polynomial and exponential function).

Keywords : artificial neural networks, finance data, Holder regularity, multifractals