

Time series shape association measures and local trend association patterns

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Abstract

© 2015 Elsevier B.V. All rights reserved. The paper gives the new definition of non-statistical time series shape association measures that can measure positive and negative shape associations between time series. The local trend association measures based on linear regressions in sliding window are considered. The methods of extraction and presentation of positive and negative local trend association patterns from the pairs of time series are described. Examples of application of these methods to analysis of associations between securities data from Google Finance and between exchange rates are discussed. It was shown on the benchmark example and in the analysis of real time series that the correlation coefficient in spite of its fundamental role in statistics does not useful here and can cause confusion in analysis of time series shape similarity and shape associations.

<http://dx.doi.org/10.1016/j.neucom.2015.05.127>

Keywords

Exchange rates, Google finance, Local trend association, Pairs trading, Positive and negative associations, Time series shape association measure