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EXCHANGE RATES AND STOCK PRICES RELATIONSHIP: CLUSTERING BY DYNAMIC TIME WARPING & LONGEST COMMON SUBSEQUENCES

Abstract:

One of the most discussed topics in finance is the relationship between Exchange Rates and Stock Prices. This obscurity is tried to determine by different causality methods. Unfortunately, these studies usually compare countries' Stock Prices and Exchange Rates without applying any clustering or classifying methods. As a result, outcomes vary with each country. This study aims to produce a pre-processing method for examining the linkage between Stock Prices and Exchange Rates by the clustering methodologies of Dynamic Time Warping and Longest Common Subsequences, examining G8 countries, BRICS countries and Turkey. Dynamic Time Warping is an algorithm which aligns two different time series by certain constraints, even if they are non-linear or not having the same length. In this study, daily data of ten years from 2005 to 2015 are employed and similarity criterion is measured with respect to Turkish Data Set. Empirical results showed that there are significant differences between Stock Prices of G8 countries and BRICS countries compared to Turkish Stock Prices. Both Turkish Exchange Rates movements and Stock Prices movements show more correspondence with Russian and Chinese Stock Prices and Exchange Rates movements than other countries'. This pre-processing methodology enables researchers to investigate more interrelated exchange markets and stock markets by applying clustering. Discussions of possible improvements and issues of future researchers are concluded.

Keywords:

Exchange Rates, Stock Prices, Dynamic Time Warping, Longest Common Subsequences

JEL Classification: F31, F36, G15