A study on nonlinear dynamic characteristics between crede oil price and plastic industry index using recurrence plots a

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ABSTRACT

This research investigates the complex relationships between international crude oil prices and plastic index of Taiwan stock market. The time series from an observed complex system usually exhibits non-stationary and complex behavior, it is difficult to apply the traditional linear method to analyze such data series. In the past, some chaotic methods such as fractal dimensions, Lyapunov exponents or mutual information, were applied to solve the problem. However, most of these methods require rather long data series. It is difficult to observe long data series for this research topic. To conquer this problem, this research uses recurrence plot, recurrence quantification analysis and cross recurrence quantification analysis to analyze the cross complex relationships between the two time series. By using this approach, the relationship between two time series lies between complete stochastic and deterministic with noise.

Keywords : Recurrence Plot、Recurrence Quantification Analysis、Cross Recurrence Quantification Analysis、Crude Oil Prices、Plastic Index of Taiwan Stock Market、Nonlinear Characteristic

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