Dynamics of Continuous, Discrete and Impulsive Systems
Series **B:** *Applications & Algorithms* **20 (2013)** 577-589

INFORMATION FLOW AND CROSS-CORRELATION OF CHINESE STOCK MARKETS BASED ON TRANSFER ENTROPY AND DCCA

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Abstract. Identifying the mutual interaction is a crucial problem that facilitates the understanding of emerging structures in Chinese stock markets. In this paper, we employ transfer entropy and detrended cross-correlation analysis (DCCA) measurement to investigate the mutual interactions of Chinese stock markets. Transfer entropy is a model-free approach in principle and allows us to detect statistical dependencies of all types, i.e. linear and nonlinear temporal correlations. DCCA is the extension of detrended fluctuation analysis (DFA) and is designed to investigate power-law cross correlations between different simultaneously recorded time series in the presence of nonstationarity. The information transfers and cross-correlation behaviors in Chinese stock markets are studied respectively by applying the transfer entropy and DCCA. The results of DCCA show that there are long-range cross-correlations between Chinese industry classification indices. Furthermore, transfer entropy analysis can infer the directions of information flow between every pair of these industry classification indices.

Keywords. transfer entropy, information flow, stock market, DCCA, industry classification index.

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Received May 2012; revised October 2013

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