

Stocks, crude oil and foreign exchange: leading and lagging markets with respect to information propagation

Angi Rösch*/ Harald Schmidbauer†

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Abstract

Equity markets on the one hand and the crude oil market on the other do not operate in isolation, the foreign exchange market being another agent in the interplay. The focus of our study is to determine whether a leading market can be identified.

One way to assess the degree of interaction between markets is to measure news-to-volatility spillovers from one market to another in terms of forecast error variance decompositions (fevds) of daily returns on their prices. This approach leads to a directed network with markets as nodes and edge weights defined by spillovers, which provides the basis for a methodology to assess a market's relative importance with respect to shock propagation (what we call its "propagation value") and to monitor further information-theoretic aspects of the network's dynamics and stability. The concepts of wavelet coherency enable us to detect cyclicalities in the network's dynamics and to assess which markets are leading, while others are lagging.

We consider the example of Dow Jones (New York), WTI (West Texas Intermediate) crude oil, and USD per euro exchange rate.

This methodology permits to find out whether (i) markets have converged with respect to relative importance during recent years, (ii) which market is leading others with respect to information propagation.

Key words:

News-to-volatility spillovers; network dynamics; information propagation; propagation value; relative market entropy; network stability; wavelet coherency; WaveletComp

*FOM University of Applied Sciences, Munich, Germany, & Tai'an, China; e-mail: angi@angi-stat.com

†Istanbul Bilgi University, Istanbul, Turkey; e-mail: harald@hs-stat.com