

## Dependence structure of commodity and stock market, and relevant multi spread strategy

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Understanding the dependence structure between commodity and stock market is a crucial issue to construct portfolio. It can also help us to discover the new opportunity to implement spread trading using multiple assets classified in two different markets. This research analyzed the dependence structure of commodity and stock market using random matrix theory technique and network analysis. Our result shows that stock and commodity market must be handled as completely separated asset classes except for oil and gold market, so the performance enhancement of mean-variance portfolio is significant as expected. Using the fact that WTI 1 month futures and 4 oil related stocks are strongly correlated, they are selected as basic ingredients to complement the multi spread convergence trading strategy using machine learning technique so called AdaBoost algorithm. The performance of this strategy for non-myopic investors, who can endure the short term loss, can be enhanced significantly under risk measurement basis.

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