



CPS Paper

Study on the Dynamic Interdependent Structure and Risk Spillover Effect between Sino-US Stock Markets

Author: PROF. DR. Menggen Chen

Coauthors: Menggen Chen, Yuanren Zhou

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Brief Description

This paper intends to explore the dynamic interdependence structure and risk spillover effect between Chinese and the US stock markets, using the multivariate R-vine copula-complex network analysis and R-Vine copula-CoVaR model, with a sample of CSI 300, S&P 500, and sub-sector indices from January 3, 2006 to July 3, 2019.

The empirical results find that the Energy, Materials, and Financials sectors play leading roles in the interdependent structure of the Chinese and US stock markets, while the Utilities and Real Estate sectors are in the least important positions. The comprehensive influence of the Chinese stock market is close to that of the US stock market, but the differences in the influence of different sectors of the US stock market in the overall interdependent structure system are smaller.

Over time, the interdependent structure of both stock markets changed, the sector status gradually became equal, the contribution of the same sector in different countries to the interdependent structure converged, and the degree of interaction between the two stock markets is positively correlated with the degree of market volatility.

A further research shows that the lower tail interdependence coefficient between the Sino-US stock markets is larger than the upper tail interdependence coefficient and both display the volatility agglomeration effect.

In contrast, the spillover risk of the US stock market to the Chinese stock market is higher than that of the Chinese stock market to the US stock market, and the US stock market play a more important role as the extreme risk sender in the interdependent structure.

Abstract

This paper intends to explore the dynamic interdependence structure and risk spillover effect between Chinese and the US stock markets, using the multivariate R-vine copula-complex network analysis and R-Vine copula-CoVaR model, with a sample of CSI 300, S&P 500, and sub-sector indices from January 3, 2006 to July 3, 2019. The empirical results find that the Energy, Materials, and Financials sectors play leading roles in the interdependent structure of the Chinese and US stock markets, while the Utilities and Real Estate sectors are in the least important positions. The comprehensive influence of the Chinese stock market is close to that of the US stock market, but the differences in the influence of different sectors of the US stock market in the overall interdependent structure system are smaller. Over time, the interdependent structure of both stock markets changed, the sector status gradually became equal, the contribution of the same sector in different countries to the interdependent structure converged, and the degree of interaction between the two stock markets is positively correlated with the degree of market volatility. A further research shows that the lower tail interdependence coefficient between the Sino-US stock markets is larger than the upper tail interdependence coefficient and both display the volatility agglomeration effect. In contrast, the spillover risk of the US stock market to the Chinese stock market is higher than that of the Chinese stock market to the US stock market, and the US stock market play a more important role as the extreme risk sender in the interdependent structure.