

## **Dependence structure between Chinese Shanghai and Shenzhen stock market based on copulas and cluster analysis**

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A copula can fully characterize the dependence of multiple variables through the structure and the corresponding dependence measure. Hierarchical cluster method could show the dependence of multiple variables through the dendrogram and the corresponding height as well. The aim is to present a general approach to study the dependence structure of a high-dimensional financial market based on copulas and hierarchical cluster. The idea is to use vine-copula and pair-copula to show the whole dependence structure of the high-dimensional stock market and to use hierarchical cluster to group the assets listed in the stock market for portfolio construction. With this idea, it could study whether there is dependence between the dependence of the two Chinese stock: Shanghai and Shenzhen. Firstly, the copulas and the hierarchical cluster via tail dependence and non-linear correlation measure would be fitted for each market. Then, a graphical method and a measure would be calculated to show how much difference is between the two Chinese markets.