

Characteristics of Real Futures Trading Networks

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Futures trading is the core of futures business, and is considered as a typical complex system. To investigate the complexity of futures trading, we employ the analytical method of complex networks. First, we use real trading records from Shanghai Futures Exchange to construct futures trading networks, in which vertices are trading participants, and two vertices have a common edge if the two corresponding investors simultaneously appear in at least one trading record as a purchaser and a seller respectively. Then, we conduct a comprehensive statistical analysis on the constructed futures trading networks, and empirical results show that the futures trading networks exhibit such features as scale-free structure with interesting odd-even-degree divergence in low degree region, small-world effect, hierarchical organization, power-law betweenness distribution, and shrinkage of both average path length and diameter as network size increases. To the best of our knowledge, this is the first work that uses real data to study futures trading networks, and we argue that the research results can shed light on the nature of real futures business.

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