Identifying the Structure of Group Correlation in the Korean Financial Market

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We investigate the structure of the cross-correlation in the Korean stock market. We analyze daily cross-correlations between price fluctuations of 586 different Korean stock entities for the 6-year time period from 2003 to 2008. The main purpose is to investigate the structure of group correlation and its stability by undressing the market-wide effect using Markowitz multi-factor model and the network-based approach. We find the explicit list of significant firms in several largest eigenvectors form the undressed correlation matrix. We also observe that each contributor is involved in same business sectors. The structure of group correlation can not remain constantly during each 1-year time period with different starting points, whereas only two largest eigenvectors are stable for 6 years whereas 8 ~ 9 eigenvectors remain stable for half-year. The structure of group correlation in Korean financial market is disturbed during the sufficiently short time period even though the group correlation exists as an ensemble for the 6-year time period in the evolution of the system. We verify the structure of group correlation by applying the network-based approach. In addition, We examine relations between market capitalization and businesses. The Korean stock market shows a different behavior compared to mature markets implying that the KOSPI is the target for short-positioned investors.

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