날씨와 주가 수익률 간의 의존성 분석*

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Analysis of dependency between stock price returns and weather

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Abstract

This study analyzed the dependence between stock price returns and weather by applying static and dynamic copula models. The analysis results are summarized as follows. First, The distribution between KOSPI and weather factors, between KOSDAQ and weather factors was set in various ways according to the characteristics of data.

Second, in the KOSPI yield−temperature and KOSPI yield−sunlight combination, independence did not appear, and in the KOSPI yield−wind combination, the Kendall'stau value was 0.01, indicating that it has a very weak dependency. The dependence between KOSDAQ yield and temperature, KOSDAQ yield and humidity was −0.02 and −0.01, respectively, showing very weak negative dependence, and between KOSDAQ yield and wind was 0.01, showing very weak positive dependence, but between KOSDAQ yield and sunlight was zero, indicating no dependence.

Third, by applying dynamic copula, the correlation between KOSPI yield and humidity and wind by period was not significantly changed around 0, indicating that the dependence between KOSPI yield and temperature and sunlight was not large, indicating a very low correlation with KOSPI yield. Since there is no significant change in the dependence by period between the KOSDAQ yield and temperature and sunlight, there is no dependence by period between the KOSDAQ yield and temperature. On the other hand, the KOSDAQ yield, humidity, and wind showed a rather large movement, indicating that the KOSDAQ yield was more sensitive to weather factors than the KOSPI yield.

Keywords: Stock price returns, Weather, Static copula, Time−varying copula

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