코풀라 모형을 이용한 국제유가와 농작물 가격 간의 의존 구조 분석*

이윤정ᵃ
부산대학교
경제통상연구원
전임연구원

Analysis of the dependence structure between energy and agricultural commodities using the Copula method

Yun−Jung Lee

Department of International Trade, Pusan National University, South Korea

Abstract

In this paper, we analyzed the effect of global energy prices on the prices of the agricultural products using the copula method. Our analysis used eight time series which are the weekly price data from July 2006 to December 2019 for two energy commodities (crude oil and ethanol) and six crops (corn, soybean, rice, oats, coffee, and cotton). The main results of the study are as follows. The corelation between crude oil and corn was higher than that between other corps. Ethanol showed the highest correlation with corn (0.3539). In the tail dependence analysis between each time series, crude oil showed a lower tail dependence in the relationship between cotton (0.3470) and soybean (0.2138). It means that cotton and soybeans are more dependent on oil prices when oil prices are falling. The upper tail dependence between crude oil and food crops is not strong at 0.0896(rice) and 0.0083(oats), respectively, but it is higher than the lower tail dependence, indicating that the dependence is stronger when oil price rises. Ethanol had a very strong lower tail dependence with corn at 0.4732, meaning that corn had a stronger dependence when ethanol price fell. The upper tail dependence between ethanol and food crops, was 0.0937(rice) and 0.1698(oats), respectively, which were higher than the lower tail dependence, suggesting that the dependence of food crops on ethanol price increases was stronger.

a First author, Corresponding author (주저자, 교신저자) E−mail: leeyj01@pusan.ac.kr