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Interdependence between crude oil and world food prices: A detrended cross correlation analysis

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This article explores the changing interdependence between crude oil and world food prices at varying time scales using detrended cross correlation analysis that would answer whether the interdependence (if any) differed significantly between pre and post-crisis period. Unlike the previous studies that exogenously imposed break dates for dividing the time series into sub-samples, we tested whether the mean of the crude oil price changed over time to find evidence for structural changes in the crude oil price series and endogenously determine three break dates with minimum Bayesian information criterion scores. Accordingly, we divided the entire study period in four sample periods – January 1990 to October 1999, November 1999 to February 2005, March 2005 to September 2010, and October 2010 to July 2016, where the third sample period coincided with the period of food crisis and enabled us to compare the fuel-food interdependence across pre-crisis, during the crisis, and post-crisis periods. The results of the detrended cross correlation analysis extended corroborative evidence for increasing positive interdependence between the crude oil price and world food price index along with its sub-categories, namely dairy, cereals, vegetable oil, and sugar. The article ends with the implications of these results in the domain of food policy and the financial sector.

Key words: Interdependence, food price, crude oil price, cross correlation, contagion effect

JEL Code: C31, C63, Q18, Q41

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