

**Asymmetric effect of energy price on commodity price: new evidence from NARDL  
and time frequency wavelet approaches**

**ABSTRACT**

The growing literature on volatility spillover and shock transfer between energy and food prices largely ignored the nonlinearities in the volatility patterns. This study evaluates the nonlinear interaction and co-movement between world energy prices and world food prices, including their individual components. Using monthly data from 1992 to 2017, we used Nonlinear Autoregressive Distributed Lag (NARDL) to investigate the short-term and long-term dynamics of food prices concerning the positive and negative shocks in energy prices. The result indicates that the impact of energy prices on food prices is asymmetric. A positive change in energy prices has a higher and long-lasting effect on agriculture commodity than a negative change. The wavelet coherence analysis suggests that a statistically significant lead-lag relationship exists. Both wheat and corn prices lead by energy prices. The relationship is rather long-run than the short-run, as we find the most dominant frequency is the 16th month and remains positive until the 64th month. Interestingly, we also observe that in the long-run, rice price lead oil and coal price. For the robustness test, we consider fertilizer and diesel as the control variables and find a similar asymmetric relationship with food prices.