

Bibliographic entry

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Abstract

This thesis studies the relationship between the first generation biofuels and selected commodities and assets in the USA, Europe, and Brazil. It is the first attempt to combine the taxonomy and wavelet analyses in a single research application. Our unique dataset comprises 32 weekly price series covering the 2003–2015 time period. First, we employ a method of minimum spanning trees and hierarchical trees to model a biofuel-related price network. We demonstrate a development phase shift between Brazilian and the US/EU biofuel industries. We reveal a strong and stable connection between Brazilian ethanol and its main production factor, local sugarcane. We further find that US ethanol is closely linked to corn. In the contrary, European biodiesel exhibits only moderate ties to its production factors. Subsequent wavelet analysis scrutinizes the identified price connections both in time and frequency domains. Both Brazilian and US ethanols are found to be positively related to their respective feedstock commodities. In particular, feedstock proves to lead the price of the biofuel and not vice versa. Moreover, the dynamics remains qualitatively unchanged when controlled for the influence of crude oil.

JEL Classification C22, C38, Q16, Q42

Keywords biofuels, ethanol, biodiesel, taxonomy, minimum spanning tree, hierarchical tree, wavelet coherence

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