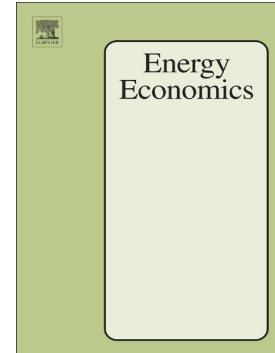


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Time and frequency dynamics of connectedness between renewable energy stocks and crude oil prices

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Abstract

This paper examines the time and frequency dynamics of connectedness among stock prices of U.S. clean energy companies, crude oil prices and a number of key financial variables using the methodology developed by Barunik and Krehlik (2018). This approach allows measuring the dynamics of return and volatility connectedness over time and across frequencies simultaneously. The empirical results show that most of return and volatility connectedness is generated in the very short-term, i.e. movements up to five days, while the long-term plays a minor role. Our analysis further reveals a greater degree of interconnectedness across crude oil and financial markets since the onset of the U.S. subprime mortgage crisis in summer of 2007, consistent with the view of a global re-pricing of risk triggered by the recent worldwide financial crisis. Crude oil prices do not appear as a key driver of the stock market performance of renewable energy companies in the short-term or the long-term, which suggests a decoupling of the alternative energy industry from the traditional energy market. Moreover, crude oil prices are a net receiver of financial shocks, supporting the financialization of the commodity markets since the early 2000s. In addition, a significant pairwise connectedness is found, mainly in the short-term, between clean energy and technology stock prices, indicating that these two types of stocks are perceived by investors as similar assets. These results can have important practical implications for investors and policy makers with different time horizons.

Keywords: connectedness, renewable energy stocks, crude oil price, information transmission, time-frequency space

1. Introduction

Renewable energy has gained considerable ground worldwide as a viable energy alternative due to a combination of factors, such as growing international concern about climate change, fossil fuel depletion, energy security issues, technology innovation, and

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