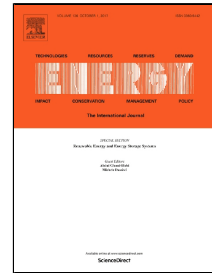


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U.S. SHALE OIL PRODUCTION AND WTI PRICES BEHAVIOUR

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The aim of this paper is to relate the shale oil revolution in the United States with WTI oil price behavior. Since the development of the combination of horizontal drilling techniques together with hydraulic fracturing in the 1970s, known as shale oil, oil markets have undergone a significant transformation with the unexpectedly strong rise in the United States production affecting oil prices. The goal of this paper is two-fold: first, we analyze the relationship of total United States crude oil production and WTI crude oil prices by studying its performance in the time-frequency domain applying wavelet tools for its resolution. Using wavelet methodologies, we observe a shift to higher frequencies of the wavelet coherency for the time period 2003-2009 and lower frequencies for the period 2009-2014. The results also indicate that during the period 2003-2009 the U.S. oil production and WTI oil prices time series are in phase; they move together, with total United States oil production leading. During the period 2009-2014 oil production and WTI oil prices time series are out of phase (negatively correlated), suggesting that oil production increases precede a decrease in WTI oil prices. In the second part of the paper and to give greater credibility to the results obtained through the wavelet transform, we analyze the behavior of WTI crude oil before and after the shale oil boom in the United States employing methodologies based on long run dependence. The results indicate that mean reversion takes place only for the data corresponding to the first subsample, ending at 2003. For the second subsample, as well as for the whole sample, lack of mean reversion is detected with orders of integration equal to or higher than 1 in all cases.

Keywords: Oil prices, oil production; wavelets; fractional integration

JEL Classification: C00, C22, E30, Q40, Q43

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