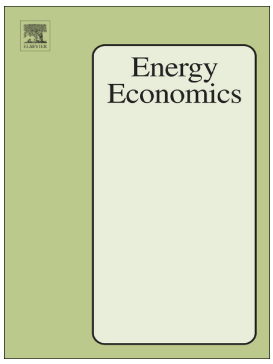

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Qiang Ji, Jiang-Bo Geng, Aviral Kumar Tiwari

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Information spillovers and connectedness networks in the oil and gas markets

Qiang Ji [a, b], Jiang-Bo Geng[c], Aviral Kumar Tiwari[d*]

[a] Business School, Shandong Normal University, Jinan, Shandong, 250014, China

[b] School of Public Policy and Management, University of Chinese Academy of Sciences, Beijing 100049, China

[c] School of Finance, Zhongnan University of Economics and Law, Wuhan 430073, China

[d] Montpellier Business School, Montpellier, France

Abstract: This paper investigates the oil–gas relationship from a multi-scale perspective by combining the connectedness network framework and the ensemble empirical mode decomposition (EEMD) method. The empirical results show that the direction and magnitude of the information flow between oil and gas returns behave differently across time scales. In general, WTI and its refinery products tend to act as net information transmitters, while the United States and United Kingdom natural gas markets act as net receivers. The total spillover connectedness for the oil and gas markets, as measured by a rolling-window approach, has dynamic, volatile characteristics. The robustness of the results is shown by substituting Brent for WTI.

Keywords: EEMD; generalised variance decomposition; connectedness; information flow; oil–gas relationship

1. Introduction

The integration and separation of oil and natural gas prices recently has become a hot topic in market research. Natural gas prices traditionally are priced by indexing to oil prices. Although the underlying mechanism of natural gas pricing in North America is shifting from the oil price index to gas-on-gas competition, European and Asian regional natural gas prices are still primarily based on the oil index. According to the most recent report from the International Gas Union (IGU, 2017), 20% of

* Corresponding author: Aviral Kumar Tiwari, 2300 avenue des moulins, 3400 Montpellier, France. Montpellier Business School, Montpellier, France, Email: aviral.eco@gmail.com