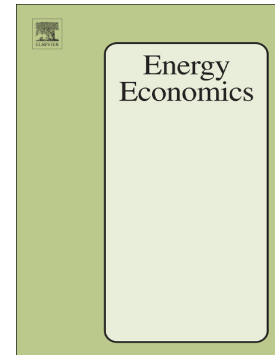


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What drives natural gas prices in the United States? – A directed acyclic graph approach

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Abstract: This study investigates the impacts of driving factors for natural gas prices during the period from 1999 to 2017. A data-driven approach, namely the directed acyclic graph (DAG), is first employed to disclose the contemporaneous relations among natural gas, crude oil and various factors. The main results indicate that there is a stable contemporaneous causal flow from crude oil to natural gas. Unlike most of the previous research, we found a long-term equilibrium relationship between crude oil and natural gas returns when additional factors were taken into account. However, the impact of oil price returns on natural gas price volatility has decreased after the 2008 global financial crisis. Finally, storage and seasonality factors can never be ignored when analysing natural gas prices, while the impact of speculative activity on natural gas volatility is relatively weak.

Keywords: Natural gas; driving factors; cointegration; causal relationship; directed acyclic graph

1. Introduction

In recent years, the development of natural gas has received increasing attention due to the dual challenges of energy security and climate change. Especially after the

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