

THE ROLE OF OPEC, SHALE OUTPUT, AND CHINA IN INFLUENCING OIL PRICES

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Overview

Oil prices dropped by 55 percent between June 2014 and January 2015 (U.S. EIA, 2018). Today, spare production capacity among members of the Organization of the Petroleum Exporting Countries (OPEC) is noticeably lower; raising concerns about OPEC's ability to increase production to buffer the impact of supply and demand shocks on oil prices. This revived debates on whether OPEC still matters (Cherney 2016). The role of increased imports from China due to a growing economy have also fuelled a debate on its effect on global oil prices. This has heightened the need for a better understanding of oil market dynamics, as well as an appropriate framework and policies. We empirically examine the increasing importance of non-OPEC producers, including shale producers and non-shale producers, and China's role as a significant export market in influencing oil prices. We provide a better understanding of the effects of producers' decisions, global oil demand dynamics, and financialization on oil prices.

Although both the U.S. EIA (2018) and Behar and Ritz (2017) accounted for shale production and current changes in market fundamentals, the former performed graphical analysis and the latter used calibration. Kaufman et al. (2004) applied time series analyses; however, they performed their analyses prior to the shale revolution so their results do not account for recent changes in market dynamics. Ratti and Vespignani (2015) and Niklaus and Inchauspe (2013) employed vector autoregressive (VAR) models to investigate OPEC versus non-OPEC behavior by examining global oil demand and China's oil demand, respectively; both study periods ended in 2012. Moreover, Kaufman et al. (2004), Ratti and Vespignani (2015), and Niklaus and Inchauspe (2013) did not model the impacts of technological advances, expectations, or cyclical effects. Büyükşahin et al. (2016) utilized an asymmetric band pass filter to study the cyclical behaviour of commodity prices. Cuaresma et al. (2009) and Mu and Ye (2015) employed unobserved components models (UCM) to study cyclical movements and structural changes, and stochastic trends captured the impacts of expectations and technological improvements. However, Cuaresma et al. (2009), Mu and Ye (2015), and Büyükşahin et al. (2016) did not include economic fundamentals. Researchers did not examine the role of oil as a financial asset in any of the aforementioned studies. Although Caballero et al. (2008) and Fratzscher et al. (2014) examined the role of oil as a financial asset, they did not look at oil market dynamics.

Methods

Our analysis builds on that performed by the U.S. EIA (2018), Behar and Ritz (2017), Ratti and Vespignani (2015), and Kaufman et al. (2004). A VAR model accounting for cyclical effects is used to assess the role of OPEC and non-OPEC producers on oil prices using monthly data between 1997:01 and 2018:04. An advantage of the VAR model is that it allows for feedback effects between the variables. The variables we use in the analysis include: OPEC production and surplus production capacity; non-OPEC production; U.S. production capacity; China's crude oil and refined petroleum imports; global petroleum demand; U.S. real effective exchange rate (REER); the Toronto stock exchange composite share price index; and the S&P GSCI commodity Spot index.

Conclusions

Our results empirically reveal changes in oil market dynamics and that OPEC is still a vital player. Oil prices are influenced by world petroleum demand, non-OPEC producers' behaviour, and the demand for oil as a financial asset. The financialization of oil has significant impact on oil price movements. China's demand for crude oil affects oil prices; however, demand by other Asian countries is also an important driver. It is essential to account for cyclical movements.

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