Big Data Meets the Turbulent Oil Market

by: Charles W. Calomiris, Nida Çakır Melek and Harry Mamaysky

December 22, 2020

Forecasting oil market outcomes remains a challenge even with novel text-based analysis.

RWP 20-20, December 2020; updated November 2022

This paper introduces novel news-based measures for tracking global energy markets. These measures compress thousands of news articles into a parsimonious set of real-time indicators and are successful in-sample forecasters of oil spot, futures, and energy company stock returns, and of changes in oil volatility, production, and inventories, complementing and extending traditional (non-text) predictors. In out-of-sample tests, text-based measures predict oil futures returns and changes in oil spot prices better than traditional predictors, although the latter are more useful for forecasting changes in oil volatility.

JEL Classification: C52, G10, G14, G17, Q47

Appendix

Article Citation


Note: A previous version of this RWP from September 2021 was titled "Predicting the Oil Market"
Nida Çakır Melek
Senior Economist

Nida Çakır Melek is a senior economist in the Economic Research Department of the Federal Reserve Bank of Kansas City. She joined the Bank in August 2013 after receiving her Ph.D. from UCLA. She holds a B.S. degree in Mathematics from Middle East Technical University, Ankara, Turkey and an M.A. degree in Economics from Bilkent University, Ankara, Turkey. Her primary areas of research are macroeconomics, international economics, and energy economics.