

REVISITING THE BRENT-WTI SPREAD: A NOVEL APPROACH

Isabella Ruble, Ph.D., ORISE, +1571-594-0952
John Powell, Deputy Director for Energy Security,
Office of Policy, U.S. Department of Energy, +1202-586-1814

Overview

The market for crude oil is considered by many to be fairly integrated, global and liquid. Under this hypothesis the price of same quality crude oil in different markets should move in parallel fashion. A second view would be that the oil market is somewhat fragmented and regionalized. In this case prices in different regions would, to a great extent, be the result of local market conditions and one would not expect oil prices of similar crudes in those regions to move together.

Global crude trade is dominated by two benchmark prices, West Texas Intermediate (WTI) which is the primary benchmark in the U.S., and Brent against which most crudes in the rest of the world are quoted. The Brent-WTI spread is a closely watched metric because it has major implications on firms' competitiveness and refining margins. Between January 2000 and December 2010 Brent was selling at a discount to WTI for most of the time, and the average Brent-WTI spread was -1.4 USD per barrel, while monthly average values ranged from -6.88 to 4.2. USD per barrel. Starting in January 2011 until December of 2019 we observe a fundamental change in the Brent-WTI spread with WTI almost consistently selling at a discount to Brent.

There exists a substantial number of time series studies analyzing the Brent-WTI spread. Prior to 2011 many researchers find the spread to be stationary and the global market to be fairly integrated. Others note that the global link between regional crude oil prices can be interrupted during times of adjustments.

While many authors contend that the main driver for the fundamental change in the Brent-WTI relationship is the U.S. production shock driven by the shale oil revolution there is no general consensus on the underlying causes.

The paper is structured as follows. In section 2 we analyze recent developments in the U.S. crude oil sector. In section 3 we provide an overview of the world market for crude. In section 4 we outline the methodology used to estimate the spread. In section 5 we discuss our results. Section 6 presents some concluding remarks.

Methods

This paper adds to the existing literature by providing a novel approach aimed at further uncovering what drives the Brent-WTI spread. We use a time series modelling approach for analysing and forecasting the spread.

Results

Preliminary results show that the factors under consideration such as for example the U.S. shale revolution, transportation constraints, demand and supply developments as well as geopolitical events help explain a large part of Brent-WTI spread movements.

Conclusions

The Brent-WTI spread is very closely watched metric due to its importance to the competitiveness of firms around the world. Through the analysis of the drivers of the Brent-WTI spread this paper is contributing to the literature aimed at explaining the fundamental change in the Brent-WTI spread that was observed starting in January 2011.