

Measuring and Assessing the Evolution of Liquidity in Forward Natural Gas Markets: The Case of the UK National Balancing Point

Lilian M. de Menezes¹ Marianna Russo²³, and Giovanni Urga⁴⁵

Executive Summary

Following the liberalization of the European natural gas market and a gradual transition from oil-indexed to hub prices, an increasing use of forward contracts has been observed. As a significant share of trade occurs over-the-counter (OTC), where inter-dealer brokers act as intermediaries and deals can be customized, there are concerns about market quality, of which liquidity is a main indicator. This study investigates how to measure and assess liquidity in forward natural gas markets and focuses on one-month-ahead transactions in the UK National Balancing Point. Using asynchronous high-frequency data from 2010 to 2014 and drawing from the financial market microstructure literature, measures of spread and price impact are constructed. A time-varying perspective is adopted, with the intent of identifying changes that might reflect the evolving nature of European gas markets. In summary, this study evaluates whether measures of liquidity that were developed in the financial literature are applicable to the physical natural gas

1Professor of Decision Sciences, Faculty of Management, Cass Business School – City, University of London. 106, Bunhill Row, London.

2Corresponding author. Postdoc Research Fellow, Economic and Social Research Institute and Trinity College, Department of Economics. Whitaker Square, Sir John Rogerson's Quay, Dublin 2. E-mail: marianna.russo@esri.ie.

3Faculty of Finance, Cass Business School - City, University of London. 106, Bunhill Row, London.

4Professor of Finance and Econometrics, Faculty of Finance; Director of Centre for Econometric Analysis (CEA@Cass), Cass Business School – City, University of London. 106, Bunhill Row, London.

5Professor of Econometrics, Department of Management, Economics and Quantitative Methods, Università di Bergamo, Italy.

market, and assesses the evolution of liquidity in the one-month-ahead NBP between 2010 and 2014.

Results confirm the expectation that the adopted measures of spread and price impact are applicable to natural gas markets. In particular, the modified time-varying measure of price impact proposed in this study enables the estimation of the correlation between trading activity and price returns, and inferences on market depth. This property of liquidity cannot be captured by the churn ratio, which is traditionally used to assess liquidity in energy markets. Overall, the measures highlight some similarities between energy and financial markets, and enable the quantification of the share of different sources of transaction costs.

|
|