CONVERGENCE AND INTEGRATION OF REGIONAL GAS MARKETS. THE ROLE OF LIQUID NATURAL GAS (LNG)

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Overview

In contrast with crude oil, which has developed into a global commodity market, natural gas still has a regional character. In North America and in the UK, gas is traded as a liquid commodity, whereas in Continental Europe and Asia the industry is based on long-term import contracts and oil-linked pricing formulae. The purpose of the article is to assess whether, and to what extent, recent developments in international LNG trade will modify this situation and lead to a truly global natural gas market. The article explores the key features of current LNG trade and analyses its role as an inter-regional market balancer and price-transmitter. The article concludes by outlining some plausible market evolution scenarios.

Methods

In order to assess whether, and to what extent, the development of the international LNG market is actually leading to a global commodity market (Jensen, 2009; Rogers, 2010), two indicators are considered:

1) The degree of convergence of gas prices between the two sides of the Atlantic Basin (North America and Europe), and between it and the Pacific, due to the balancing mechanism guaranteed by the increasing flows of spot LNG;

2) The degree of liquidity prevailing in the LNG market, measured as the percentage of spot and short term trades and compared to the total volume of trades, taking into account (i.e. deducting) the quota of shiort term deals which are carried out under a "self-contracting" scheme (since these deals do not have the same level of flexibility as true spot deals).

To investigate the first issue we use an econometric analysis. More specifically, to examine the convergence of price series - in our case LNG prices in North America, Europe and East Asia - involves investigating the extent to which non-stationary data move in the same direction at about the same rate. To this end, we apply the methodology of "maximum likelihood cointegration" proposed by Johansen (1995), capable of detecting the existence of long-term correlation (cointegration) between variables.

To analyze the second issue we adopt an empirical approach. We collect data on spot and short-term LNG transactions (volume, origin and destination) recorded worldwide from 2003 to 2010. These data are provided by annual reports of the International Group of LNG Importers (GIIGNL). To identify the quota which are not "self-contracted", we use multiple trustworthy sources: e.g. IEA, Gas Information and Gas Matters publications.

Results

Contrary to scholars and observers who maintain that a rapid and irreversible transformation of the LNG market into a commodity market is underway, the empirical evidence provided in this paper shows that some key indicators point in a different direction.

On the one hand, econometric analysis suggests that LNG prices in different regions have made little progress towards a genuine convergence in recent years, and in some cases rather an opposite trend is found, with larger price differentials. On the other hand, the liquidity of the LNG market, if measured appropriately (i.e. deducting the quota of self-contecting deals), seems to still be modest.

Conclusions

The results of this analysis tend to rule out the thesis that the most likely outcome of the recent changes in the LNG market is its transformation into a market commodity, similar to that of oil.

The results of this work suggest a more open and complex scenario, where "portfolio strategies" of integrated companies play a keyrole. If, as many elements indicate, natural gas is destined to enter a new golden age, to be the bridge fuel to a renewable energy future (IEA, 2011), the investigation of this scenario should be of clear interest to scholars of energy and international economics.

References

IEA (2011a): *Natural Gas Information 2011*, International Energy Agency, OCDE, Paris.

— (2011b): *Are We Entering a Golden Age of Gas*, Special Report, International Energy Agency, OCDE, Paris.

JENSEN, J. T. (2007): *International Pricing Mechanisms For Oil and Gas. Putting a Price on Energy*, Energy Charter Secretariat, Brussels.

— (2009): *Fostering LNG Trade: Developments in LNG Trade and Pricing*, Energy Charter Secretariat, Brussels.

JOHANSEN, S. (1995): *Likelihood-Based Inference in Cointegrated Vector Autoregressive Models*, Oxford University Press, Oxford.

NEUMANN, A. (2009): "Linking Natural Gas Markets – Is LNG Doing its Job?", *Energy Journal*, vol. 30, Special Issue, pp. 187-200.

ROGERS, H. (2010): "LNG Trade Flows in the Atlantic Basin: Trends and Discontinuities", Working Paper Series NG 41, Oxford Institute for Energy Studies, Oxford, disponible en: http://www.oxfordenergy.org/pdfs/NG41.pdf, [accessed on 24 November 2011].

RUESTER, S. (2010): "Recent Dynamics in the Global Liquefied Natural Gas Industry, Resource Markets, Working Paper RM-19, Dresden University, disponible en: http://www.sophia-ruester.de/files/paper_TCE.pdf, [accessed 24 Novemebr 2011].

STERN, J. (2009): "Continental European Long-Term Gas Contracts: is a transition away from oil product-linked pricing inevitable and imminent?", Working Paper Series NG 34, Oxford Institute for Energy Studies, Oxford.

STERN, J and ROGERS, H. (2011): "The Transition to Hub-Based Gas Pricing in Continental Europe", Working Paper Series NG 49, Oxford Institute for Energy Studies, Oxford.