

DEVELOPMENT OF GAS TRADING HUBS AND HUB-BASED PRICES IN EUROPE: LESSONS FOR EAST ASIA

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Overview

Oil indexation gas pricing mechanism is arguably no longer relevant in the European markets. Oil-indexation gas pricing mechanism was a reasonable in the history, in particularly when there were no functional market-based natural gas pricing mechanisms and when oil products were are main substitution of natural gas. The rational for such linkage is that end users can switch between gas and oil products and would do so if there is a sufficient price incentive. Such rational was justifiable when the netback market pricing mechanism was introduced in 1970s.

However, the foundation of the oil indexation, the netback pricing mechanism, is not justifiable anymore for the following reasons: oil products have been eliminated from many stationary energy sectors; maintaining oil-burning equipment and substantial oil storage is costly and inconvenient; using oil in many modern gas-burning equipment will loss efficiency; and oil burning would not be able to meet tighten environmental (emissions) standards (Stern and Rogers, 2011) .

Since 2009, the continental Europe started to the transition from oil indexation to sport prices. The transition was motivated by a few factors. The most notable factor is the significant price discrepancy between the oil indexed long term contract prices and the spot prices, which was depressed by the over supplied markets due to global financial crisis and unexpected availability of new LNG on the markets in particular due to reduced demand from the United States (IEA, 2012). The consequently re-negotiation of some long-term contracts by introducing spot indexation and more flexibility on the take-or-pay quantities from 2010 onwards (IEA, 2012), materializes the transition.

As a pioneer, the European experience should be useful by East Asia. Many East Asian countries have been working on creating its own regional gas pricing mechanisms with Singapore, Japan and China leading the ways. In June, EMC, together with its shareholder Singapore Exchange (SGX), have created an Asian spot LNG index named FOB Singapore SGX LNG Index Group ("FOB Singapore SLInG") (Energy Market Company, 2015). The Japanese METI minister announced in November 2014 that Japan is moving towards establishing an LNG hub in Asia (Rowley, 2014). In July 2015, China has unveiled the Chinese "Henry Hub" in Shanghai (China Securities Newspaper, 2015; SHPGX, 2015). This nascent markets need to learn from Europe.

This presentation will address the following issues:

- Review the development of gas trading hubs and hub based pricing in Europe.
- Draw lesions for East Asia by comparative studies and interviews
- Simulate the potential impact of such hub based pricing in East Asia on the regional and global gas trade.

Methods

The study examines the experience and development about the European gas trading hubs and hub based gas pricing. The experience and arguments in the literature were survey and comparative studies between the Europe and East Asia are conducted. Further discussion and debates were collected through field interviews conducted in June 2015 and other interviews conducted in Singapore. The impact of such competitive pricing in East Asia will be simulated by the ESI global gas model. The model minimizes global gas supply costs based on contract and market clearance prices at each gas producing and consuming countries (big countries such as China, Russia and US are further divided into country regions) in the world. For the current study, a baseline scenario is developed to study how the international gas market may evolve to 2035 as a reference case. Policy changes were simulated in policy scenarios, in which either Shanghai hub price, or Tokyo hub prices, become the benchmark for both pipeline gas and LNG trading in Northeast Asia (China, South Korea, Japan and Chinese Taipei). The difference between the baseline scenario and the policy scenarios on regional trade patterns, prices, production and consumption are then analysed in detail to understand the effects of liberalization, from which we draw our conclusions.

Results

The transition in Europe also has a few unique characteristics, including the over supplied markets due to global financial crisis and unexpected availability of new LNG due to shale gas booming, and the consequently re-negotiation of some long-term contracts by introducing spot indexation and more flexibility on the take-or-pay quantities from 2010 onwards. The transition, however, is painful. The change of long term contracts are completed through arbitration, which is the last thing to be seen by business partners. However, since the financial loss in European gas companies is too heavy to be sustained, arbitration is the only change to survive. Such arbitration is not a feasible option for East Asian market players. Less pain ways is to let new players to have more free choice. A Growing market allows less pain to incumbents.

For the hub development in East Asia, it implies that: Hub does not creates markets, but market create hubs. Therefore, liberalization is a prerequisite and political will and strong leadership are needed to flight with the power of incumbents. Domestic production is an important factor for the transition. Transport independence, as a results of separation from other business, is a common and minimal requirement for a functional competitive market that can generate the needed hub pricing.

The preliminary simulation results support the view that trading based on regional supply demand dynamics leads to lower prices and lower importing costs for the consumers. First, an East Asian pricing benchmark pricing see that overall production and consumption is only marginally impacted. Similarly interregional trade pattern is also marginally affected. But hub based pricing generally leads to lower spot prices for the East Asian importers. China hub prices are lower on an average of \$0.7/mmbtu while Japanese prices are lower on an average by \$1.36/mmbtu. Second, the global procurement costs for natural gas will be reduced by about 3% during the forecast period when compared to the base case scenario. Third, there is no difference between two different benchmark prices: we observe that the Shanghai hub pricing and the Tokyo hub prices lead to similar production, supply, trade and price patterns in the region.

Conclusions

An East Asian benchmark prices of gas trade not only is good for the region but also for the world as a total. This is consistent with economic theories that predicts an improvement in pricing mechanism can improve the efficiency of gas utilization and thus further improve the economic contribution of natural gas. The transition towards such hub pricing, however, are not easy and often painful as shown in the European experience. Market liberalization is a prerequisite for a successful transition but the East Asian countries are still in their early stage of such liberalization. The European experience in hubs development and the transition has offered many lessons for the East Asia countries.

References

- China Securities Newspaper, 2015. Xinhua Newagency is Leading the Efforts to Set up the Shanghai Oil and Gas Trading Center (in Chinese), China Securities Newspaper.
- Energy Market Company, 2015. About SLInG.
- IEA, 2012. Gas Pricing and Regulation: China's Challenges and IEA Experience. IEA, Paris.
- Rowley, A., 2014. Japan builds energy hub to tap US shale gas revolution, The Business Times. Singapore Press Holdings, Singapore.
- SHPGX, 2015. Shanghai Petroleum and Natural Gas Exchange.
- Stern, J., Rogers, H., 2011. The transition to hub-based gas pricing in Continental Europe. OIES, Oxford.