Gas Hub Development and Pricing Transition in Europe: Lessons for East Asia

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Transition from oil-indexed to gas-on-gas (GoG) competitive pricing is under way in Europe. In East Asia, some countries would like to see gas hub trading take off in the near future as well.

<table>
<thead>
<tr>
<th>Oil indexation is no longer justifiable</th>
<th>GoG competitive pricing emerged in Continental Europe in 2009</th>
<th>Role of gas trading hubs is increasing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil is not an alternative to gas</td>
<td>Price discrepancy</td>
<td>Transparent prices</td>
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<tr>
<td>Coal emerges as an alternative</td>
<td>Unsustainable financial losses</td>
<td>Local market fundamentals</td>
</tr>
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<td>Low correlation with US market</td>
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<td>Leading example for East Asia</td>
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Gas Pricing Mechanisms

**GoG vs. Oil-Linked Markets**

- **Asia** – oil-linked LNG market
- **Europe** – a hybrid market
- **North America** – a spot market

**% of Spot Trade in Total Imports**

- Share of spot trade is growing
- In Asia Pacific, growth is slower
- World average: ~31%
- Asia Pacific average: ~12%

Source: Poten & Partners

Source: IGU 2014
“Asia Premium”

Monthly Natural Gas Prices (in $/MMBtu)

- HH Spot
- Europe
- LNG, Japan cif
- Crude oil, Brent (Right)

Source: World Bank
East Asia’s Natural Gas Sector: Global View

World LNG Imports (2013)

- Japan: 61%
- South Korea: 12%
- China: 73%
- Other APAC: 12%

World LNG Imports (2035)

- Japan: 43%
- South Korea: 27%
- China: 70%
- Other APAC: 73%

Source: BP Statistical Review 2015
East Asia’s Quest for Gas Trading Hubs

Motivations

Asia Premium (IEA, 2014)

Pricing power (Tong et al., 2014)

Inter-hub competition (IEA, 2013)
Research questions

• From the EU experience, what learning points can be applied towards creating a gas hub in East Asia?
• Were there common regulatory mechanisms/key infrastructure put in place to facilitate the development of the markets?
• What role did Governments play in the development of the competitive markets?
• What the like scenario of hub development in East Asia based on the EU experienced?
Methodology

• Literature survey
• Interviews: Europe fieldwork; Singapore and in other professional meeting occasion
Definition of hubs

- Trading hub, hub, trading point
- Virtual vs. Physical: market area/Virtual trading point
  - Virtual: large market size, more liberty or trade, and larger number participants
- Physical and financial
- “Balancing” vs. financial hub (risk management)
- Benchmark hub / risk management hub / financial hub
Gas Hubs in Europe Today

- NBP
  - 22.02 €/MWh
- ZEE
  - 21.31 €/MWh
- PEG
  - 22.24 €/MWh
- TTF
  - 21.33 €/MWh
- NPTF
  - 21.58 €/MWh
- FGX
  - 24.35 €/MWh
- POLPX
  - 23.39 €/MWh
- GPL
  - 21.49 €/MWh
- NCG
  - Source: European Commission 2015

- Physical
- Virtual
- Combined Hub

Hub prices: 2015 (Q1)

Source: European Commission 2015
Liquidity (churn rate) of European hubs, 2004-2014

Source: Heather, 2015
Findings: European Experience (1)

Liberalization creates demand for trade

- Wholesale market and final prices
- Unbundling & third-party access
- Legislation favoring competition
- Hand free government

Pricing transition strength competition and increase liquidity

- Low spot prices
- Arbitration/renegotiation
- Unsustainable financial loss
- Illegalization of destination clauses
- Domestic production
- Multiple sources of supply
Findings: European Experience (2)

Cultural issues
- Trading nations: UK, NH
- Selecting ‘national champions: FR, IT
- Slow adapt to Change: German
- Cultural change: new players

Business practice and trust
- Erosion of dominance and loss
- Long term contract:
- Active change vs. renege/Arbitration

Political will and industry leadership
- Incumbents lose but powerful
- Challenge government administration
- Political will: Good vs poor
- Incumbents leadership: NH, NR

Legislation push: Germany
- TTF vs. NCG, GSL: lack of trust
- Gradual ‘hybrid price’ market model
Features of a successful trading hub (1)

<table>
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<th>Active physical markets</th>
<th>Sufficient network with storage capacity</th>
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<td>- Physical market is the common. Including spot markets</td>
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<td>- Fragmentation and multiple hubs</td>
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<td>- Contracts/products standardized</td>
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<td>- unbundled industry, TPA,</td>
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<td>- Independent TSOs</td>
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<th>Competitive wholesale market</th>
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<td>- Sufficient network for transport gas</td>
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<td>- Interconnectivity to be acceptable by others</td>
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<tr>
<td>- Storage for market balancing</td>
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## Features of a successful trading hub (2)

| Transparency                          | Key market data available               |
|                                      | Cooperation of EU regulators             |
|                                      | Hub Accessible and ownership non-discriminal |
|                                      | Exchange play a big role                |

| Futures market not universal needed  | Natural evolvement                      |
|                                      | **Benchmark hubs will be fewer**         |
|                                      | Liquid futures market Not feasible for non-bench |
|                                      | Liquidity in futures is more important than spot |
East Asian Difference from Europe

Market fragmentation w/o indigenous supply
- LNG dominance
- Insufficient liquidity
- Long term oil indexed contract

Long term oil indexed contracts
- No reflection of fundamental
- No diversification: difficult for transition

Lack of market liberalization
- Vertical integrated sector
- Interdependence of gas and electricity

Cultural factor
- Energy security: big company
- Whether the government want to liberalize?
## Creating a hub in East Asia(1)

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<th>Liberalization and infrastructure</th>
<th>Competitive wholesale, TPA, Relinquish of market share</th>
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<tr>
<td></td>
<td>Network development and storage</td>
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<tr>
<td>Define trading point</td>
<td>Virtual hub is recommended</td>
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<td></td>
<td>Gas hub, while not LNG hub</td>
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<tr>
<td>Specification of products</td>
<td>Standardization</td>
</tr>
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<td></td>
<td>Spot products and futures</td>
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Creating a hub in East Asia(2)

Market participants
- Competitive number of market participants
  - Minimum of ten active companies
- Financial participants
- Physical and financial parties interdependent

Futures market for benchmark
- manage price risks as well as boost liquidity
- Liquid futures market Not feasible for all
  - Number of futures? Liquidity vs current risks
- spot market and futures markets separated
Policy implication can be derived from European experience and adjusted to a new context.

**Liberalization**
- Gas and electricity market liberalization
- Political will and strong leadership
- A tough effort

**Price transition**
- Long term contract flexibility is a key
- But EU experience is not applicable
- Free destination for LNG
- Flexibility to new players

**Government**
- Supervision of competitive market vs pricing control
- Regulation of financial markets
- Hand free government
- Consumer-producer cooperation
Discussion and conclusion (1)

- market liberalization, unbundling and TPA, and transition of oil indexed long term contracts created demand of trade
- political will, changes of cultural factors and business practice further safeguard the environment needed for hub development.
- Enhancing flexibility in the international trading is also contribute to develop of liquidity.
Discussion and conclusion (2)

- Network infrastructure, competitive wholesale market, active physical market, and transparency, are key features of a liquid hub.
- Not all hubs are benchmark hubs.
- Liquid futures trading is a key requirement for a benchmark hub while interconnectivity is critical for a hub prices to be accepted by players in other markets.
Discussion and conclusion (3)

• The lack of connectivity and indigenous production, regulated industry structure, traditional preference of supply security, and unclear political will: more difficult than Europe.

• Other unique factors for the European transition cannot be replicated in East Asia as well.

• The vertical industry structure also prevent the justification of contract renegotiation based on financial sustainability.

• However, this growing markets offer East Asia, chances to apply new model for new contracts.
Discussion and conclusion (4)

• If some East Asian countries want to create a liquidity gas hub, it will have to go through tough and challenging market liberalization process and the governments’ own capability will be tested.

• Its traditional energy security culture will have to be challenged by the unbundling of incumbents.

• Transition of current contacts from oil indexation to hub indexation would also need to be done.
Discussion and conclusion (5)

- Even if some East Asian countries are determined to development their hub, there is little chance to have one by 2030. (Shanghai).
- LNG hub may be a shortcut but its success would be unprecedented.
- Avoid the process of domestic liberalization, but instead of focus on enhance flexibly and liquidity in the regional LNG market.
- Multiple benchmark hubs are possible but benchmark hubs will be fewer.
Thank you!

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