The global effect of LNG growth on European gas markets

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## Gas markets work

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Market Results</th>
<th>State intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Fukushima: 7% of global LNG rerouted to Japan</td>
<td>Higher prices in Asia and Europe with demand destruction</td>
<td>No</td>
</tr>
<tr>
<td>2014</td>
<td>US Polar Vortex</td>
<td>Short-lived higher HH prices with fuel substitution in power generation</td>
<td>No</td>
</tr>
<tr>
<td>2015</td>
<td>Groningen cap: loss of 9% of European supply</td>
<td>Lower prices</td>
<td>No</td>
</tr>
<tr>
<td>Winter 2016/2017</td>
<td>Cold weather &amp; nuclear shortages in France</td>
<td>Short-lived higher prices in Southern Europe</td>
<td>Greece and Italy declare alert</td>
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<td>12 Dec. 2017</td>
<td>Baumgarten blast</td>
<td>Very short-lived spike mainly in Italy</td>
<td>Italy declares emergency</td>
</tr>
<tr>
<td>Jan 2018</td>
<td>US cold bomb cyclone</td>
<td>Short-lived spike in New York (First Yamal LNG cargo to Boston)</td>
<td>No</td>
</tr>
<tr>
<td>Feb 2018</td>
<td>Siberian weather in EU</td>
<td>Short-lived spike in EU</td>
<td>No</td>
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</table>
EU sentiment changes vis-à-vis gas...

- Gas demand growing since 2014
- Gas infrastructure is the batteries of the new energy system
- Complete electrification will not work
- Gas is not just a bridge fuel for renewables, but it has its own future in Europe
- EU hasn’t stopped already all public funding for new interconnections

Source: Florence School of Regulation
... But Europe’s schizophrenia remains

<table>
<thead>
<tr>
<th>Policy makers</th>
<th>Energy managers</th>
</tr>
</thead>
<tbody>
<tr>
<td>On a foreign policy side, Russia is not an EU friend...</td>
<td>...but on the energy side Gazprom is the cheapest gas supplier than can, on top, provide any additional gas we may need.</td>
</tr>
<tr>
<td>EU Commission focus on consumers benefits (unbundling or roaming charges in telecoms)</td>
<td>Traditional energy managers focus on today’s P&amp;L (integration, etc.)</td>
</tr>
</tbody>
</table>

With increased interdependency, how is Europe’s schizophrenia going to evolve?

Who’s going to decide?
#FactCheck

<table>
<thead>
<tr>
<th>Facts</th>
<th>Fake News</th>
</tr>
</thead>
<tbody>
<tr>
<td>If global gas markets were to tighten, Russia could quickly ramp up pipeline gas exports to Europe and displace some LNG there that could then be re-routed to alleviate shortages elsewhere.</td>
<td>⬗️</td>
</tr>
<tr>
<td>Thanks to several comparative advantages, primarily the size of its reserves, the proximity of its current markets, its spare capacity (...) Gazprom is in a position to deploy strategy designed to create uncertainty about the price of gas.</td>
<td>⬗️</td>
</tr>
</tbody>
</table>
Gazprom doesn’t flood EU

Source: Gazprom, Entsoe, thierrybros.com
3 options for Russia to manage prices

High
7.5$/Mbtu min
• Tightening supply - Increasing producers’ rent
• Demand destruction but no impact on exports
• 2012-2013
  • Prompted new FIDs

Med.
c.6$/Mbtu
• Swinging supply
• Since 2014
  • Most profitable in the long term

Low
4.5$/Mbtu max
• Use of spare capacity
• Price war to shut in US LNG
• Lower revenues
  • Can be done sporadically
Month-Ahead Gas Prices

All contracts roll on 16th - month 1 (1-15) month 2 (16-31)

Source: Argus Media, thierrybros.com
Preservation of competition

- US Sherman Antitrust Act 1890
  - “An act to protect trade and commerce against unlawful restraints and monopolies”

- ACER 2017 Report on the Results of Monitoring the Internal Markets
  - “Markets in NWE tend to score better on metrics related to diversity of supply and upstream concentration. This results in better performing hubs”
  - 2016 gross welfare losses: €3.5bn

- EU DG Competition
  - “Competition policy in Europe is a vital part of the internal market. Its aim is to provide everyone in Europe with better quality goods and services at lower prices. Competition policy is about applying rules to make sure companies compete fairly with each other. These are the reasons why the EU fights anticompetitive behaviour and encourages liberalisation.”

Source: ACER 2017 Report on the Results of Monitoring the Internal Markets
LNG supply growth

- Customers are always better off
- Suppliers have to select low cost projects to be profitable

- Even if more expensive than pipe, a low cost LNG project can thrive

- More buyers & sellers
- Increases global liquidity

- 32% of trade and growing
- Impacts also storage

Competition
Optionality
Diversification
Security of Supply
Major projects to come on-line (on a FID basis)

- **Source**: thierrybros.com

**LNG capacity**
- Russia: 18%
- Australia: 23%
- US: 52%
- Others: 7%

**Pipe gas capacity**
- Russia: 30%
- Egypt: 24%
- Oman: 5%
- Israel: 6%
- Iran: 10%
- Azerbaijan: 9%
- Others: 16%

**LNG only for North America & Australia**
No upstream project in Trinidad and Tobago & Peru (LNG producers)
Assuming transit via Ukraine unaffected, Groningen cap at 12 bcm/y & no major unconventional gas production in China

Source: thierrybros.com
Quo Vadis

- Is the EU gas sector framework the most effective in order to maximize overall EU welfare?
- Following Naftogaz-Gazprom arbitration, same price in Ukraine and Germany
- Following EU Gazprom antitrust settlement, companies have the ability to switch Gazprom delivery point

Konoplyanik design

- Proposal to establish a new Ljubljana-based Soviet-style GOSPLAN... with an anti-Russian flavor
- Move delivery points of Russian gas to EU external border with higher entry tariffs to create entry barriers
- Great idea to be looked into!

Solution: one enlarged EU single zone with a single wholesale price, an entry fee and 2 exit fees to differentiate customers needing SoS and others

Validity of regulated transport tariffs (Norwegian Court of Appeal, June 2017)
Thank you

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