Economics of Gazprom’s gas export strategies to Europe

Chi Kong CHYONG
Energy Policy Research Group,
Cambridge Judge Business School,
University of Cambridge

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Key takeaways

• The ‘defending prices’ strategy is more profitable for Gazprom to pursue then the ‘defending market share’ strategy

• Gazprom can profitably raise prices in Europe by removing ‘excess’ gas volumes from the market

• But US LNG will respond and constrain Gazprom’s potential pricing power in Europe

• And there are organizational, financial and political challenges for Gazprom to implement the ‘defending prices’ strategy
Agenda

- The context
- The analytical framework
- Results
- Discussions & Conclusions
Gas Glut Reverses Lucrative 2016 Trade

Natural-gas futures have fallen 25% in the oversupplied market, hurting plans to grow U.S. exports.
Tanker's U-Turn Shows How Shale Is Changing World Gas Trade

by Naureen Malik
2017 M03 8 00:00 GMT  Updated on 2017 M03 8 20:53 GMT

→ In new world order, China and Mexico vie for a tanker of gas
→ LNG market more fragmented with a spot market akin to oil
Sharp Turn
A tanker carrying U.S. LNG from Asia to Mexico in January suddenly changed course.

Source: Data compiled by Bloomberg via IHS and Genscape data
Tanker's U-Turn Shows How Shale Is Changing World Gas Trade

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Gazprom Not Planning Price War Against U.S. Liquefied Natural Gas Exports

Gazprom ‘very relaxed about U.S. LNG,’ says Gazprom’s deputy chairman Alexander Medvedev
Gazprom and LNG markets

Global gas market braced for price war

February 2, 2016 by Jack Farchy
Gazprom and LNG markets

Global gas market braced for price war

Gazprom has the lowest production costs

* Assumes US spot Henry Hub prices of $2.50/mmbtu

Source: The Oxford Institute for Energy Studies
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The gas market model

- **Geographic scope - Global**
  - Main producing countries, such as Russia and Qatar are explicitly represented in the model as separate supply ‘nodes’
  - Other producers are aggregated into regions, e.g., North America (USA, Canada and Mexico) etc.
  - Europe (EU27+GB) disaggregated into national MS markets (wholesale level)
  - Other demand centers are aggregated to regional level, such as Middle East, or JKT (Japan, S. Korea & Taiwan)

- **Time Resolution – Day-ahead market**
  - We run the model for 546 time periods (days) or 1.5 years (Jan-2020 until Jun-2021)

- **Supply chain**
  - Covers entire supply chain down to the transmission level, i.e., distribution is not taken into account
  - Represents production, transit, demand, LNG and gas storage facilities
Representing the European transmission network in the model

• **EU cross-border transmission capacities & tariffs**
  – The model incorporates **ALL existing cross-border interconnector points (IP), as they are reported by ENTSO-G ‘2015 Capacity Map’**
  – New cross-border capacities and LNG regas capacities in EU were added in the model based on their FID status - those projects which took FID as outlined in ENTSOG's 2015 TYNDP report were added in the model with start time & capacities as reported by these projects.
  – For the transmission cost structure we assume existing tariffs as reported in ACER's latest Market Monitoring Report (2015)

• **Storage capacities & costs**
  – All existing storage sites were aggregated to country level (i.e., each country/market area has one storage ‘node’ and hence no differentiation between types of storage; further disaggregation down to individual storage site is possible)
  – New storage facilities will also be taken into account according to their FID status (as reported in ENTSOG’s 2015 TYNDP)
  – Marginal cost of different types of storage is based on public information
Gazprom’s different export strategies were analysed using the model

1. ‘Defending market share’ export strategy
   - Export to Europe until:
     1. price covers Gazprom’s short-run marginal cost,
     2. and/or until gas fully prices coal out of European electricity generation mix
   The strategy is consistent with the idea of ‘flooding’ the market with cheap Russian gas to lock US LNG out of Europe & deter future investments in global LNG export capacity
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2. ‘Defending prices’ export strategy
   - Gazprom, ‘if needed’, can lower contractual volumes to Europe → causing its buyers to procure more gas at hubs and hence push up hub-based market prices
   - Gazprom’s profit and contract prices are related to hub-based market prices
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• These two strategies were analysed for years of 2020-21, given:
  - expected global LNG export capacity in 2020-21 (e.g., ca. 80 bcm/year of US Gulf Coast LNG and ca. 120 bcm/year of Australia’s LNG export capacity)
  - Existing fleet of gas-fired generation plants in Europe and ARA coal price of ca. $60/tonne & EU ETS of ca. €15/tCO₂ and UK carbon price of ca. €35/tCO₂
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Should Gazprom defend its market share in Europe?
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Gazprom can profitably raise prices in Europe (ca. 34% higher than ‘defending market share’ scenario)
Should Gazprom defend its market share in Europe?

Gazprom’s profit could be significantly higher if its contractual obligations (ACQ level) were 25% lower relative to the 2015 level.
Should Gazprom defend its market share in Europe?

However, with lower forward sales (<75% of the 2015 level), Gazprom’s profit falls.
Should Gazprom defend its market share in Europe?

1. Gazprom can profitably raise prices in Europe

2. A mix of fixed price long-term contracts and free (strategic) trading volumes will ensure higher profits for the company

3. With lower forward selling coverage (anything less than 75% of the 2015 ACQ level) Gazprom’s profit begins to fall
Will US LNG respond?

Short-term perspective
Will US LNG respond?

*Short-term perspective*

![Graph showing LNG flows into EU for North Africa, US Gulf Coast, and Other regions.](image-url)
Gazprom can indeed lock US LNG out of Europe, if it wants to do so (under ‘defending market share’ scenario US LNG delivery to Europe is ca. 2 bcm)
Will US LNG respond?

*Short-term perspective*

US LNG is indeed very *‘price elastic’*, helping Europe to shield against Gazprom’s potential market power.
Will US LNG respond?

Short-term perspective

Prices under ‘defending market share’ scenario
Will US LNG respond?

Short-term perspective

Prices under ‘defending market share’ scenario

Price increase under ‘defending prices (ACQ75%)’ scenario relative to prices under ‘defending market share’ scenario
Will US LNG respond?

Short-term perspective

Price effect (+ca. $1-1.4/mmbtu) of Gazprom’s pricing power is rather limited thanks to flexible US LNG.

Price increase under ‘defending prices (ACQ75%)’ scenario relative to prices under ‘defending market share’ scenario.
Will US LNG respond?

Short-term perspective

JKT price increase means US LNG is directed to Europe
Will US LNG respond?

Short-term perspective

Feedgas to US Gulf Coast LNG – ‘defending market share’ scenario
Will US LNG respond?

Short-term perspective

Feedgas to US Gulf Coast LNG – ‘defending market share’ scenario

71.5 bcm for 1.5 years, or 54% utilization
Will US LNG respond?

Short-term perspective

Feedgas to US Gulf Coast LNG – ‘defending prices (ACQ75%)’ scenario
Will US LNG respond?
Short-term perspective

Feedgas to US Gulf Coast LNG – ‘defending prices (ACQ75%)’ scenario

84 bcm for 1.5 years, or 64% utilization
Will US LNG respond?

Long-term perspective

Export Price
@Liquefaction site =

Henry Hub (HH)
+
15% of HH to cover var. cost

+ Congestion rent (if LNG export capacity is saturated)
Will US LNG respond?

Long-term perspective

Composition of US Gulf Coast Export Price under ‘defending prices (ACQ75%)’ scenario

- Variable liquefaction cost (15% of HH)
- Congestion rent
- NorthAmerica_HenryHub
Will US LNG respond?

Long-term perspective

- Investment signal for new LNG export capacity
- ‘congestion rent’ ca. $1/mmbtu
- Capacity price for Cheniere LNG export is ca. $2.25-3.5/mmbtu
- Thus, NO new investment in US LNG export facilities even if Gazprom ‘aggressively’ defends prices in Europe
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Evolution of Gazprom’s export strategy

Phase I
LTCs based on oil-linked prices

Phase II
Renegotiations of LTCs to adjust $P_0$ & hub-based indexation

Phase III
LTCs with ‘hybrid’ pricing & Gas Auctions
Evolution of Gazprom’s export strategy

Phase I: LTCs based on oil-linked prices
Phase II: Renegotiations of LTCs to adjust $P_0$ & hub-based indexation
Phase III: LTCs with ‘hybrid’ pricing & Gas Auctions

‘Statoil’ Model: >90% spot indexation with 50/50 split between spot trading, direct sales AND long-term contracts
Evolution of Gazprom’s export strategy

- **Phase I**: LTCs based on oil-linked prices.
- **Phase II**: Renegotiations of LTCs to adjust $P_0$ and hub-based indexation.
- **Phase III**: LTCs with ‘hybrid’ pricing & Gas Auctions.

‘Statoil’ Model: >90% spot indexation with 50/50 split between spot trading, direct sales AND long-term contracts.

No new LTCs & only gas auctions?
Evolution of Gazprom’s export strategy

LTCs based on oil-linked prices

*Phase I*

Renegotiations of LTCs to adjust $P_0$ & hub-based indexation

*Phase II*

LTCs with ‘hybrid’ pricing & Gas Auctions

*Phase III*

‘Statoil’ Model?

No new LTCs & only gas auctions?

Renewal of LTCs with hybrid pricing & marginal volumes of gas auctions?

‘Statoil’ Model: >90% spot indexation with 50/50 split between spot trading, direct sales AND long-term contracts
Gazprom’s ‘Defending prices’ strategy – 2014 example

142 mmcm/day reduction since the winter 2013 peak

• Since mid-2014 until early 2015, Gazprom’s deliveries to Slovakia, Austria, Hungary and Poland have been gradually reduced

• In some instances it was reported that Gazprom refused to deliver nominations from its CEE buyers even though those nominations were made within the contractual range & in line with available capacities

• It was an attempt by Gazprom to:
  – reduce gas availability in Europe & pushing up hub prices,
  – and hence an attempt to stop re-export of gas to Ukraine while defending its monopoly power in Ukraine

Conclusions

- Should Gazprom raise prices? – Yes
Conclusions

- Should Gazprom raise prices? – Yes
- Will Gazprom do so? – No
Conclusions

- Should Gazprom raise prices? – Yes
- Will Gazprom do so? – No
- If it does, will US respond? – Yes
Dr. Chyong is a Research Associate at the Judge Business School and the Director of Energy Policy Forum, University of Cambridge. He is an expert in energy modelling with particular focus on natural gas & electricity market modelling and energy infrastructure and networks. His research interests include policy and economics of international gas and electricity markets, implications of decarbonisation agenda on gas and electricity, Russian natural gas export strategy, and Russo-Ukrainian energy relations. He has experience in advising corporations and governments on important energy issues primarily based on energy modelling and analytical tools that he has developed as well as deep knowledge of the energy industry and policy issues.

Kong holds a PhD in Energy Economics and Policy from Cambridge Judge Business School and an MPhil in Technology Policy from Cambridge.

Thank you for your attention

Questions & comments are welcomed

Email: k.chyong@jbs.cam.ac.uk
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