An Assessment of Gazprom's Proposed Commitments Concerning Central and Eastern European Gas Markets

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Agenda

I.   Background & Analytical Framework

II. Results from the withholding analysis

III. Impact of proposed 'swap' operations
   I.   On Gazprom's dominant position in CEE
   II.   On Gas Interconnector Poland-Lithuania
   III. On LNG terminals in Poland and Lithuania
   IV.   On the Greece-Bulgaria interconnector

IV. Conclusions & Discussions

Background

- In April 2015, DG COMP began a formal investigation into Gazprom's suspected violations of EU antitrust rules by issuing its statement of objections:

  1. *Territorial restrictions* in Gazprom's contracts with Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia (CEE)

  2. *Unfair pricing policy* in five MS - Bulgaria, Estonia, Latvia, Lithuania and Poland (five MS)

  3. *Obtaining unrelated commitments* concerning gas transport infrastructure – Yamal-Europe pipeline (Poland) and the South Stream project (Bulgaria)

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- My objective was to analyse the economics of Gazprom's proposed 'swap' deals to address the competition concerns in point 1 (and to a lesser extent point 2) above

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- In particular, I was interested in
  1. Whether Gazprom can profitably raise prices in the five MS – withholding analysis
  2. If so, and assuming Gazprom exercises market power in the five MS, would the swap operations improve market efficiency (relative to a competitive benchmark)?
  3. How the proposed swap operations would impact 'strategic' gas infrastructure in CEE?

The Analytical Framework
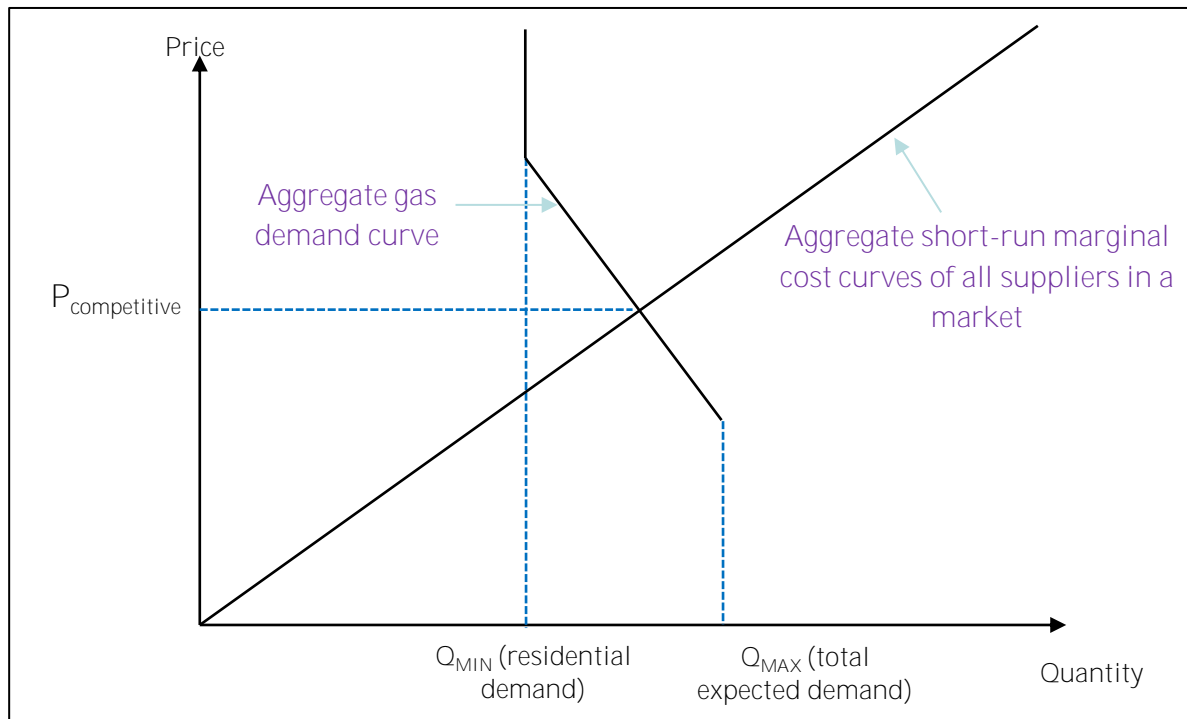
1. <u>Scenario A</u>: Define competitive benchmark

Figure 1: Stylised example of competitive price setting in a single zone market & only one day-ahead market

The Analytical Framework

1. <u>Scenario A</u>: Define competitive benchmark
2. <u>Scenario B1</u>: Simulate Gazprom's market power in the five MS without the proposed swap operations; Supplies to all other markets are perfectly competitive

The Analytical Framework

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3. <u>Scenario B2</u>: same as B1 but with the proposed swap operations between
   1. Slovakia (Velke Kapusany) to Bulgaria (Negru Voda) - €24.4/tcm
   2. Slovakia (Velke Kapusany) to Lithuania (Kotlovka) - €22.3/tcm
   3. Hungary (Beregovo) to Bulgaria (Negru Voda) - €16.0/tcm
   4. Poland (Kondratki) to Lithuania (Kotlovka) - €8.0/tcm

4. <u>Scenario B1.1</u>: same as in B1 but to allow swaps between GR-BG & BG-RO to simulate interconnection agreements with an assumed swap fee of $0.5/mmbtu

The Analytical Framework

Withholding analysis is to compare Gazprom's profit under A with the same under B1

Table 1: Main scenarios analysed

Competitive benchmark – Scenario A	Hypothetical Monopolistic Behaviour	
	Scenario B1: without swap deals	**Scenario B2:** with swap deals
	Scenario B1.1: as in B1 plus GR-BG & BG-RO Interconnection agreements	

The Analytical Framework

Impact of proposed swap deals on market outcomes

Table 1: Main scenarios analysed

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The Analytical Framework

Would a 'simple' solution – interconnection agreements between GR-BG & RO-BG – constrain Gazprom's market power in BG?

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The Analytical Framework
The scenarios were simulated using the global 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**
  - <u>**We run the model for 546 time periods (days) or 1.5 years (Jan-2020 until Jun-2021)**</u>
  - <u>Perfect foresight assumption</u>

- **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

The model 'stops' @ transmission level
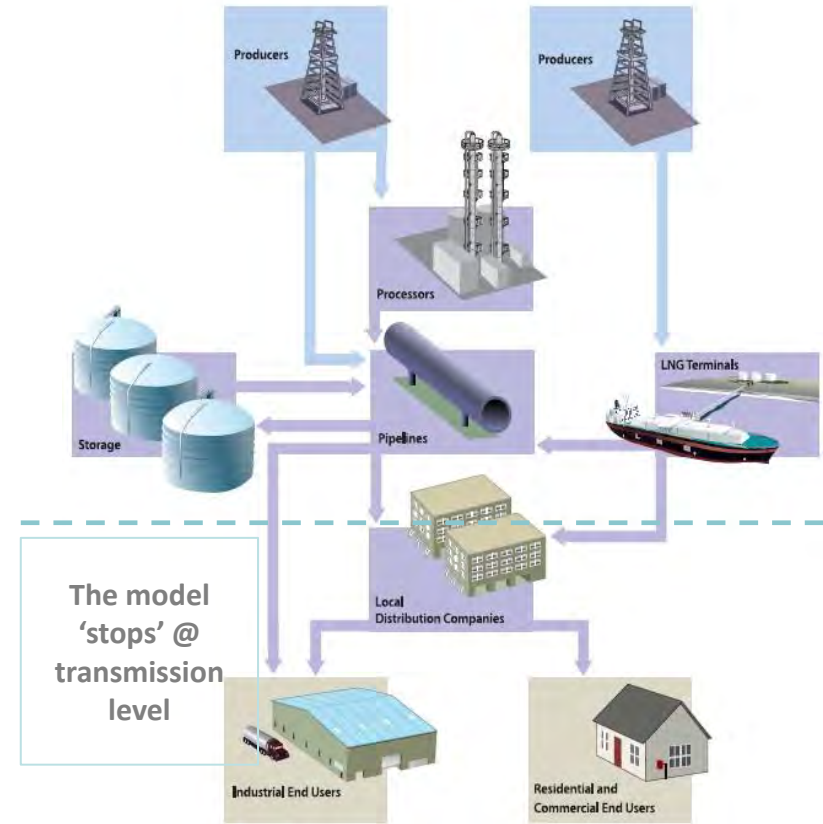
Representing the European transmission network in the model

- **EU cross-border transmission capacities & tariffs**
  - The model incorporates <u>ALL existing cross-border interconnector points (IP), as they are reported by ENTSO-G '2015 Capacity Map'</u>
  - 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 facilities 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

The Analytical Framework
Important assumptions

– 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)

– Global demand for gas in 2020-2021 consistent with IEA (2015) World Energy Outlook's 'New Policies Scenario'

– 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

– Entry-exit charges for European cross-border and to/from storage sites
  • These are annual tariffs for 2015 (latest available) hence flows should be viewed as based on annual shipping and storage capacity contracts (in reality there are different transport and storage products – daily, monthly etc. with corresponding multipliers)
– SoS-related measures
  • as applied to storage facilities in Europe are ignored, assuming that all capacities are available for booking at the beginning of a storage year (non-TPA related capacities are implicitly in the model)

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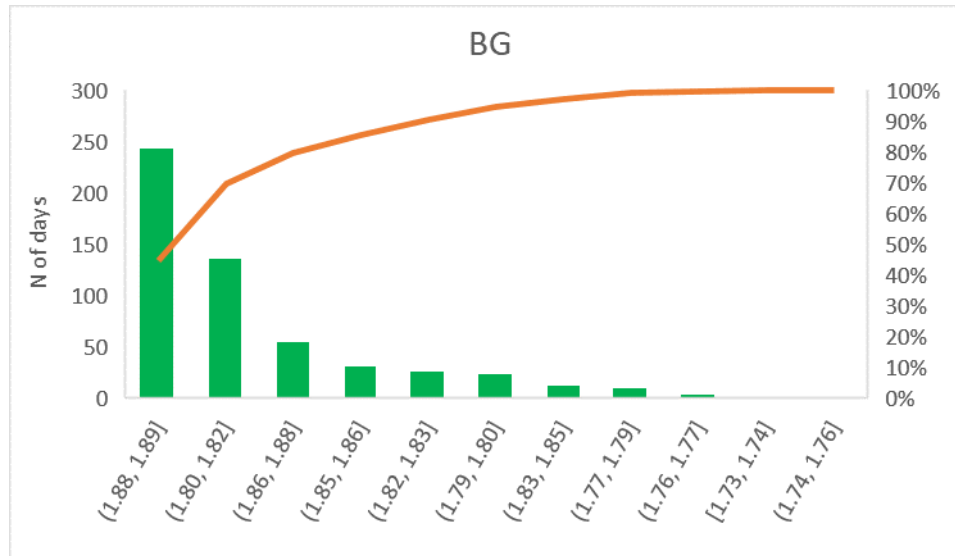 IV. On the Greece-Bulgaria interconnector

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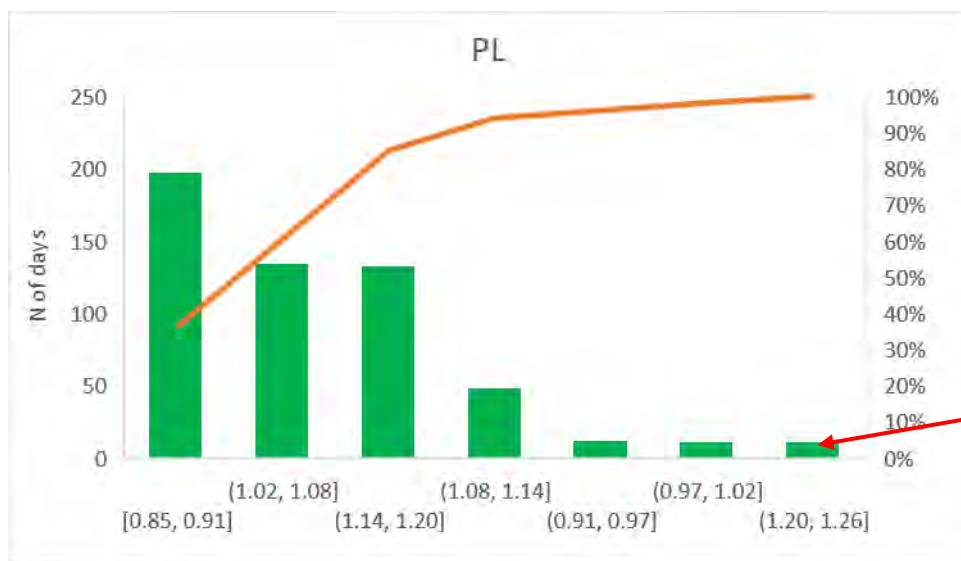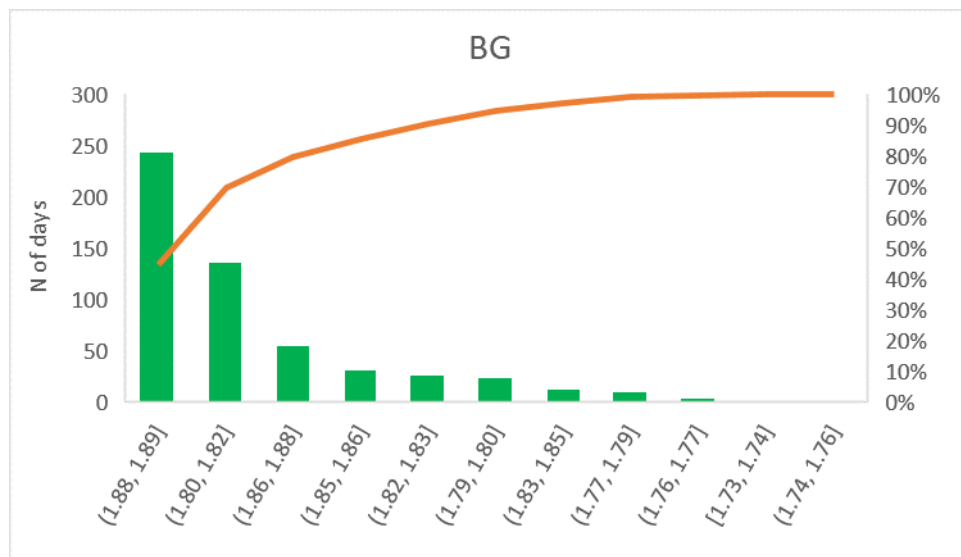
Gazprom can profitably raise prices in the five MS

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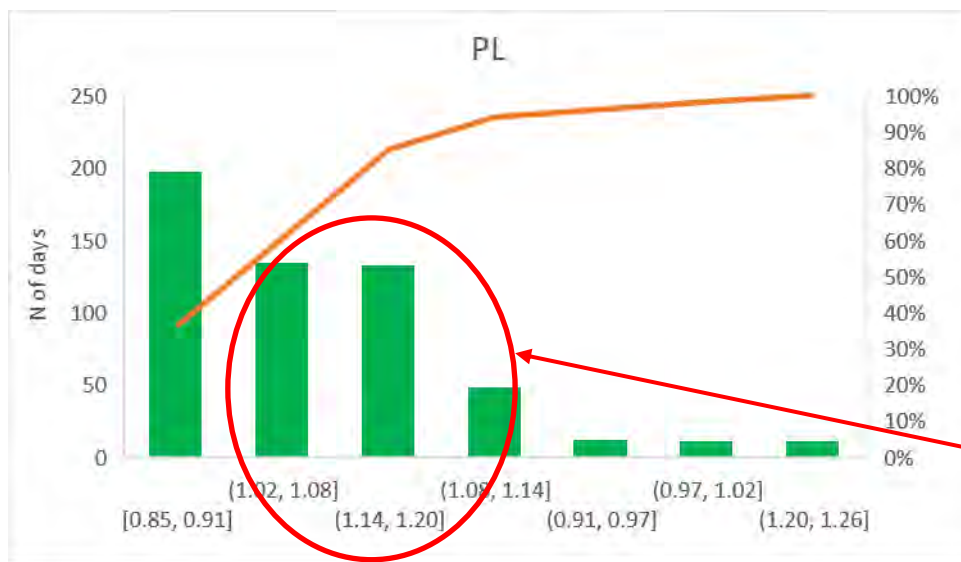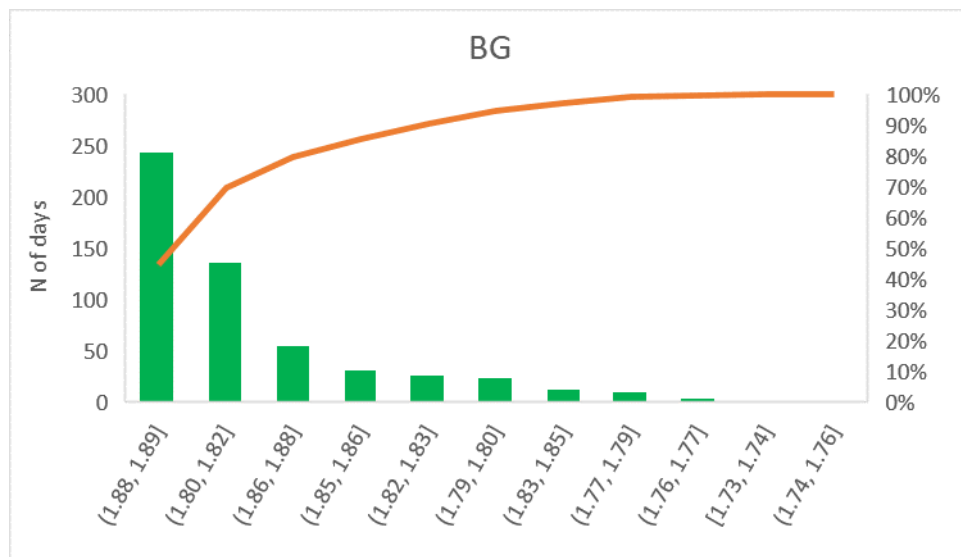
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4. E.g., in PL, because of the existence of **Świnoujście** LNG terminal, only in 11 days prices are 20-26% higher than prices in NWE & there are 315 days (58% of the sample) when prices in PL are 2-20% higher than those in the NWE region

# Gazprom can profitably raise prices in the five MS
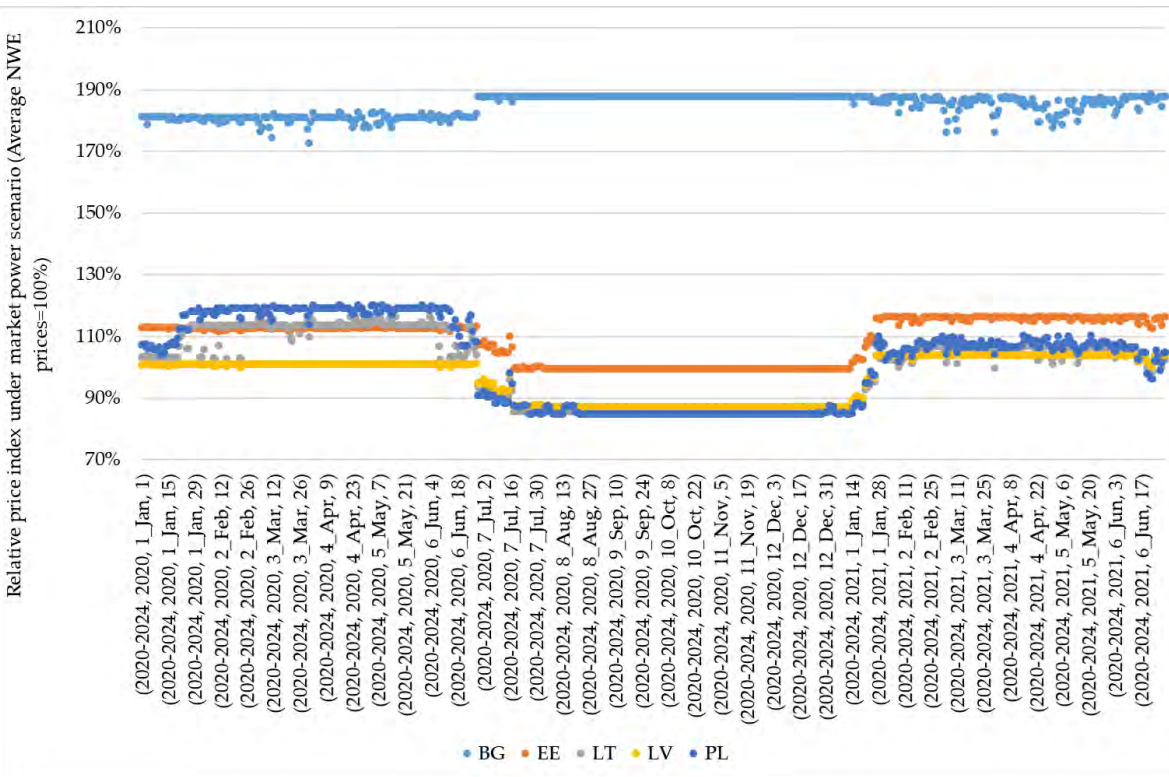
1. The pattern of price changes also suggests that under the market power scenario, prices **are more 'flat' relative to prices** under the competitive benchmark

2. **It seems that Gazprom's** hypothetical market power strategy, amongst other things, is to supply less during the storage injection period so that storage facilities are competing less during the winter period

3. **Thus, Gazprom's higher** profits are achieved when storage are less used so that winter prices are in general higher
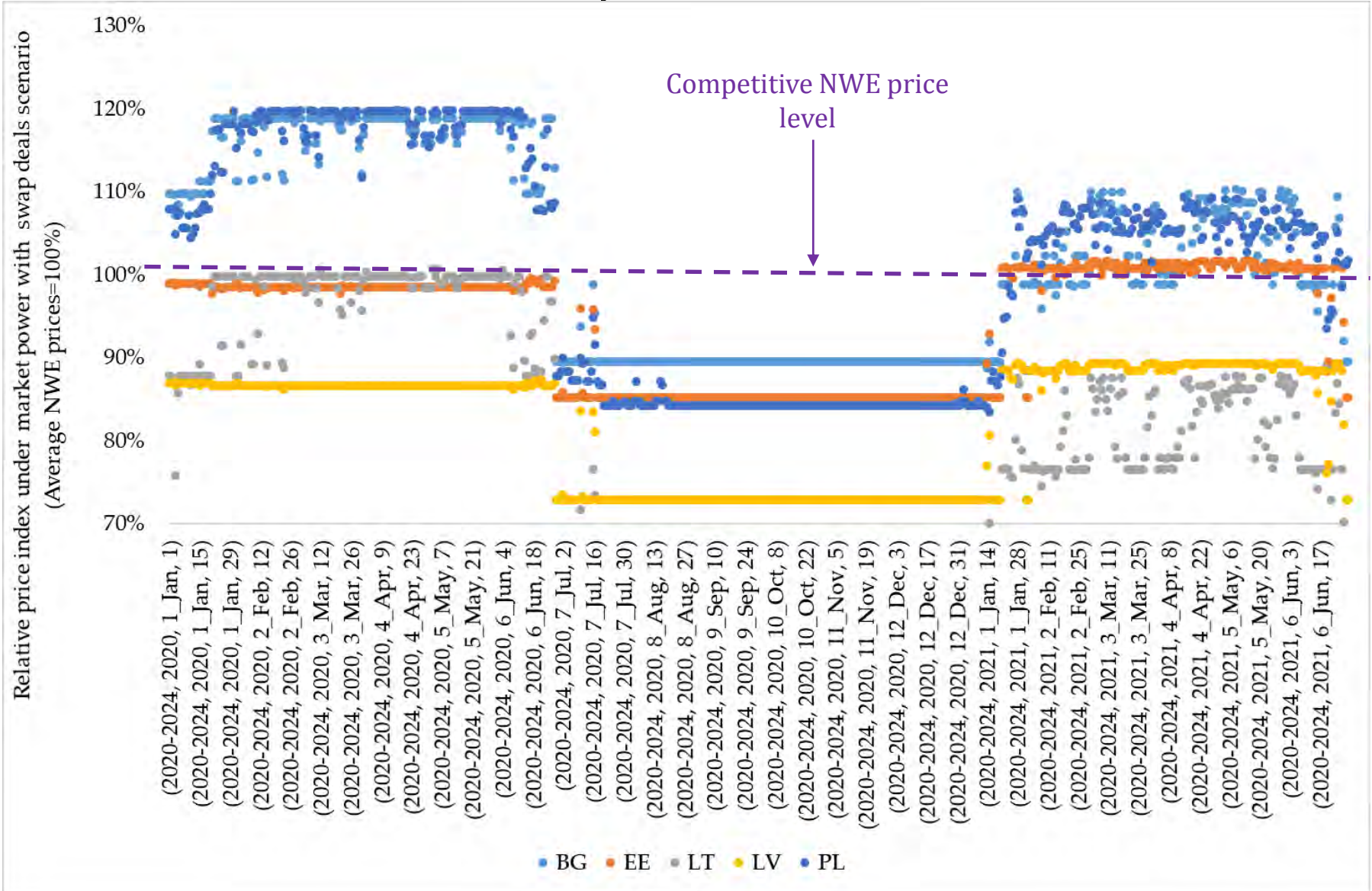
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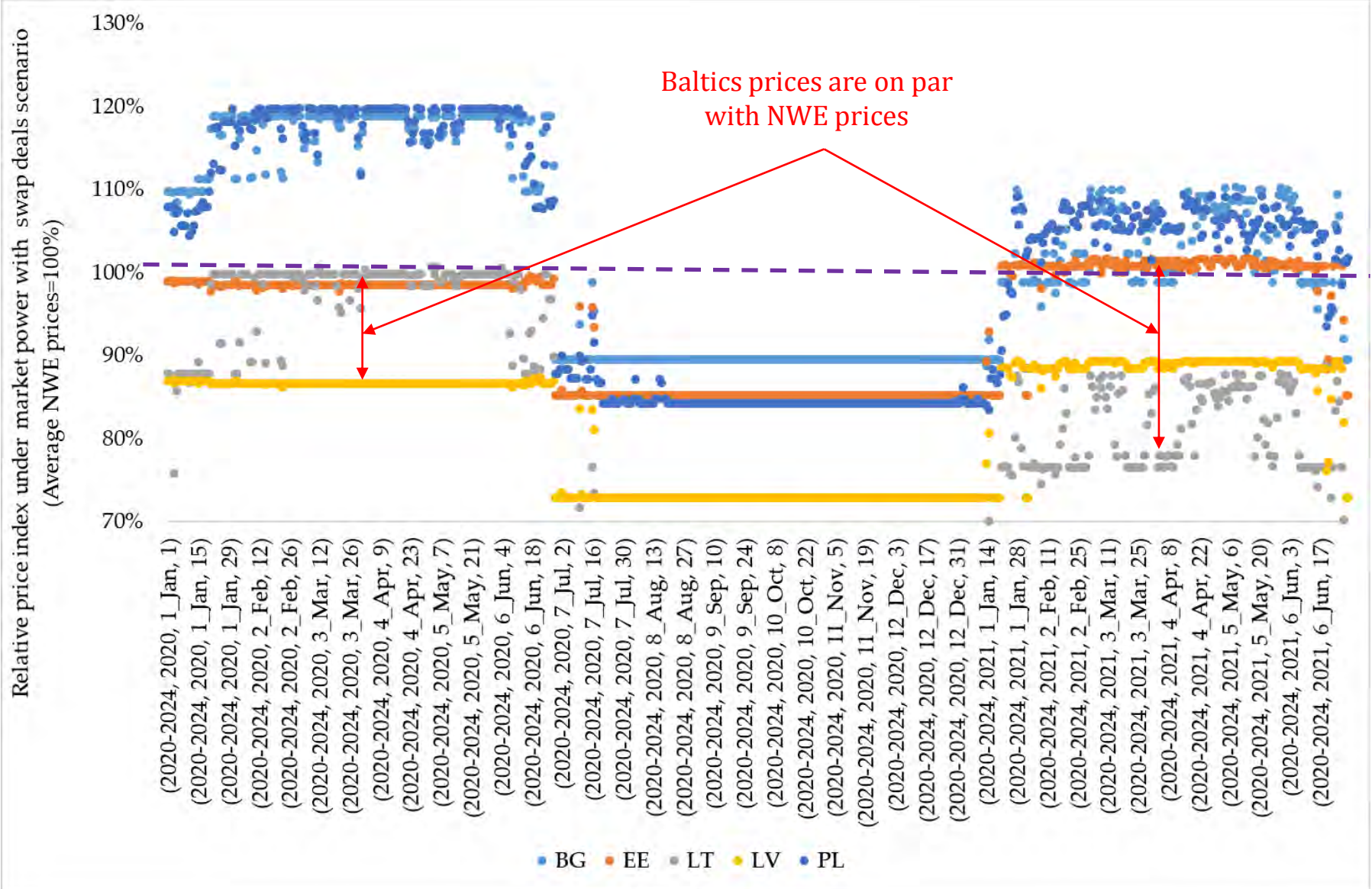
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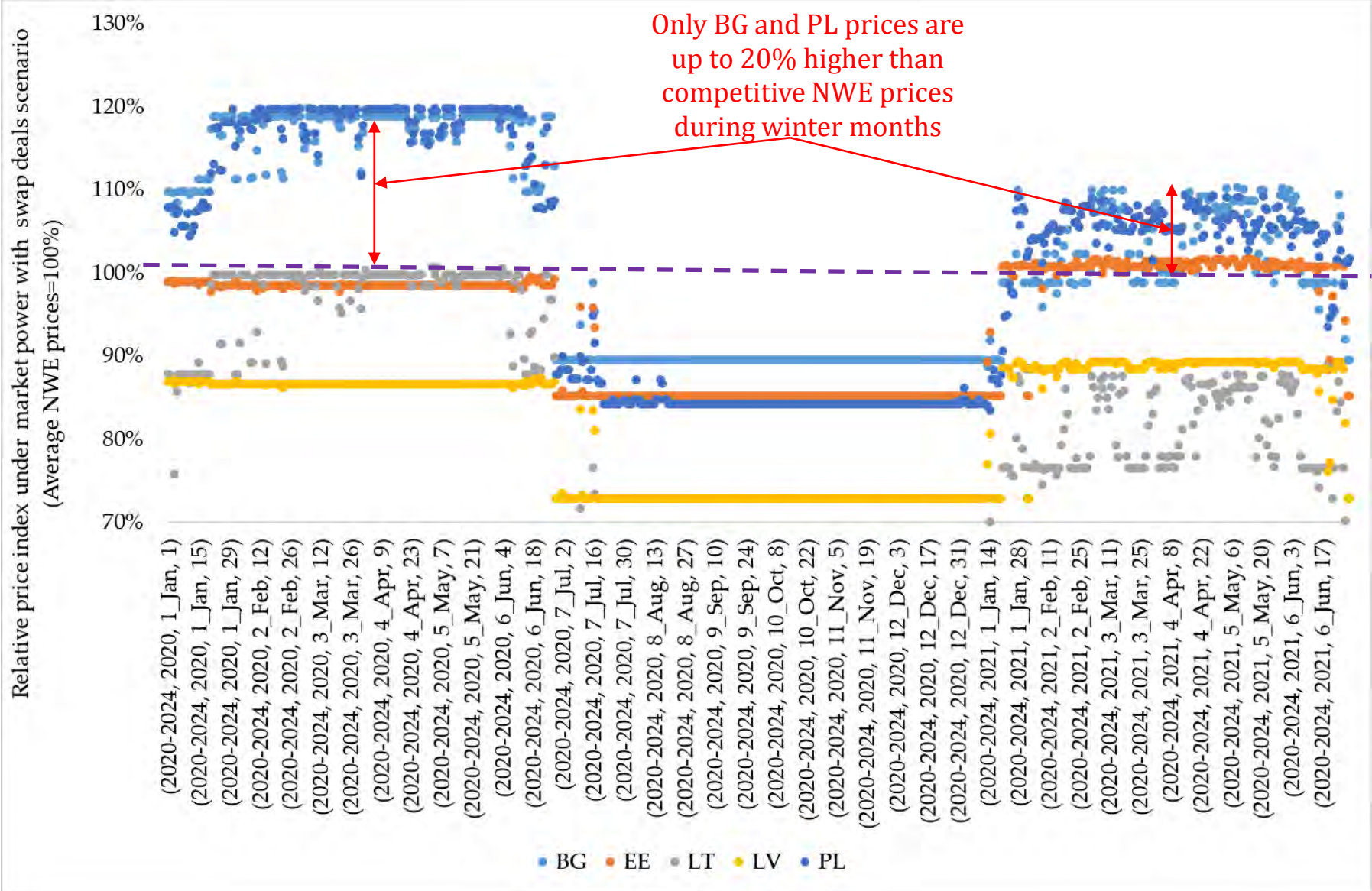# Can swap operations constrain Gazprom's potential market power in CEE?
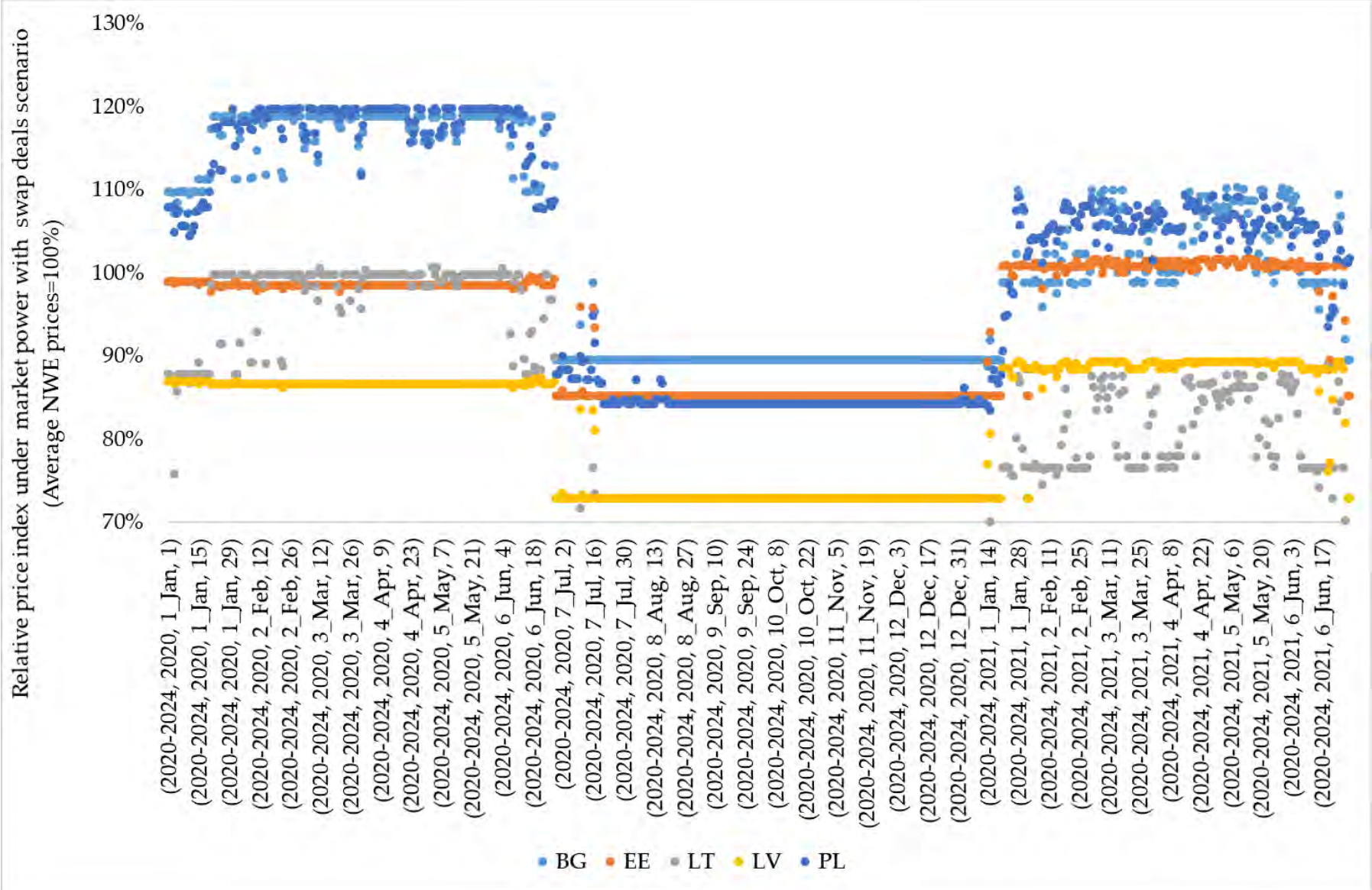
Can swap operations constrain Gazprom's potential market power in CEE?

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Only BG and PL prices are up to 20% higher than competitive NWE prices during winter months

When swaps are allowed – Baltics become a transit hub for Russian gas
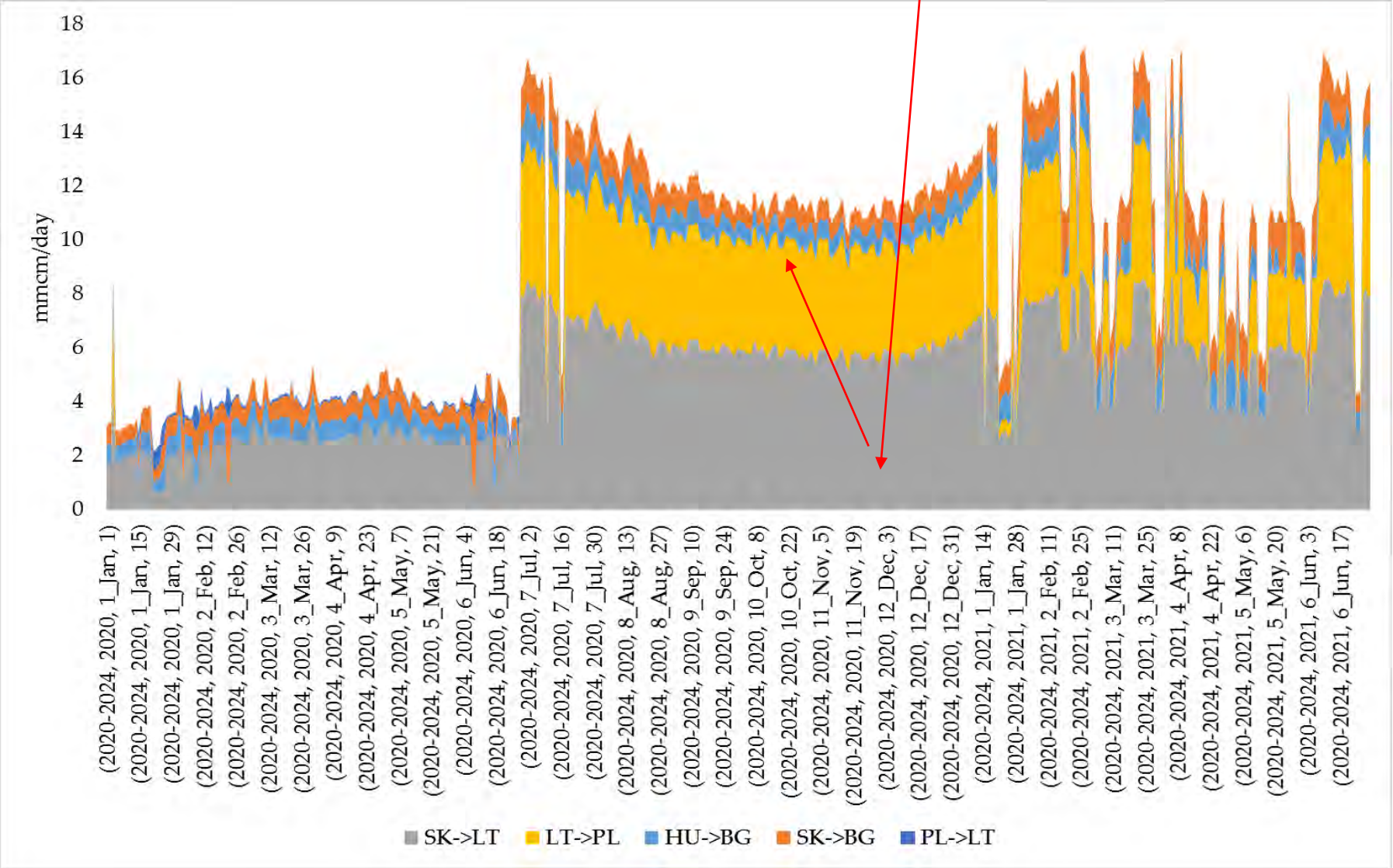
Will the swaps move NWE prices?

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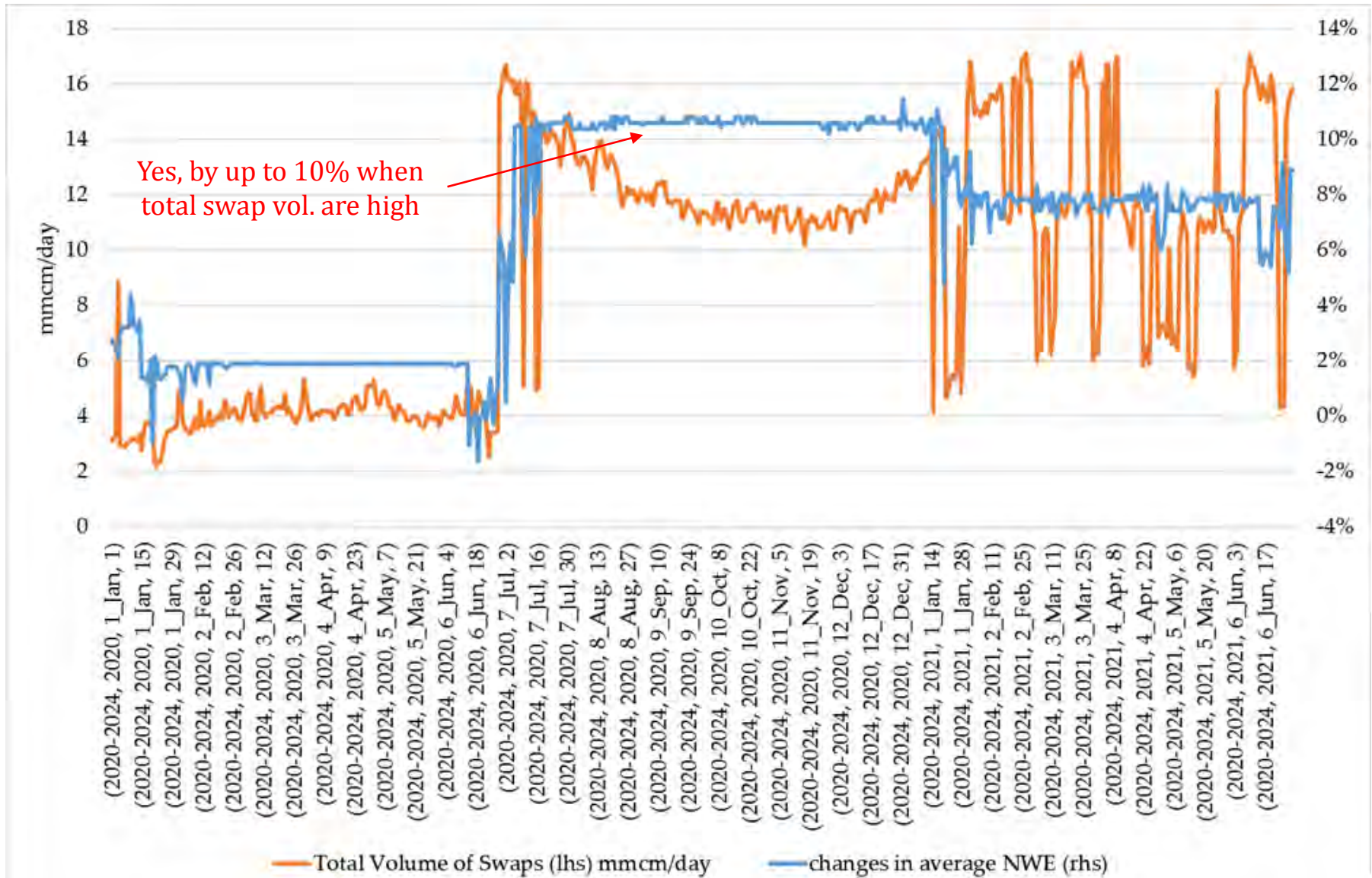
Yes, by up to 10% when total swap vol. are high

Legend: Total Volume of Swaps (lhs) mmcm/day — changes in average NWE (rhs)

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Impact of swaps on GIPL

total flows through GIPL

GIPL seems to be predominantly used to flow from LT->PL

Impact of swaps on GIPL

total flows through GIPL

When Gazprom exercises market power, flows from LT->PL are higher

Impact of swaps on GIPL

total flows through GIPL

When Gazprom exercises market power AND swaps are allowed: no flows from PL->LT at all

Legend: PL->LT, LT->PL

Categories: Competitive benchmark, Market power - No Swaps (Case B1), Market Power - With Swaps (Case B2)

Y-axis: bcm/1.5 years (0.00 to 1.60)

Impact of swaps on GIPL

total flows through GIPL

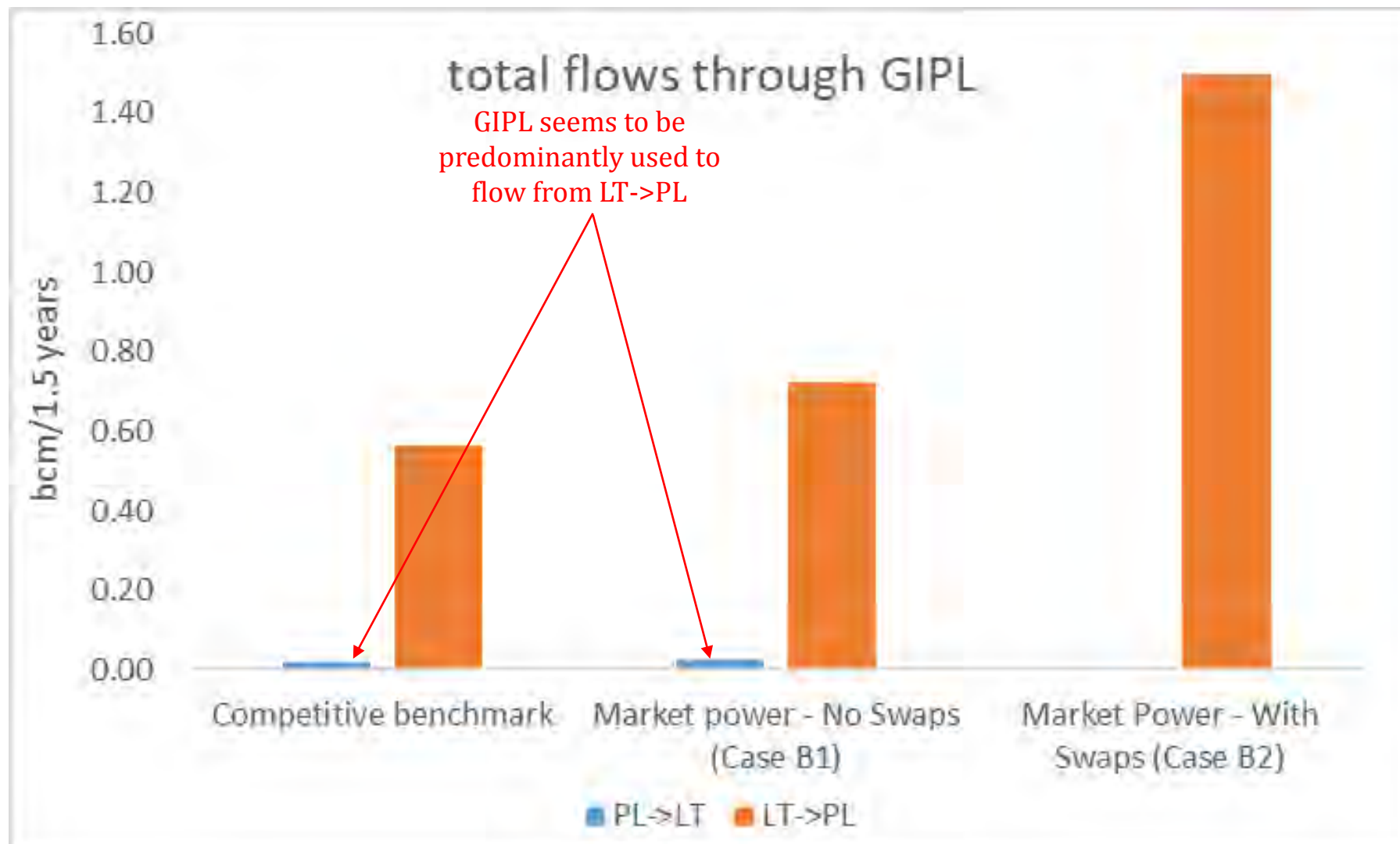When Gazprom exercises market power AND swaps are allowed: very high flows LT->PL

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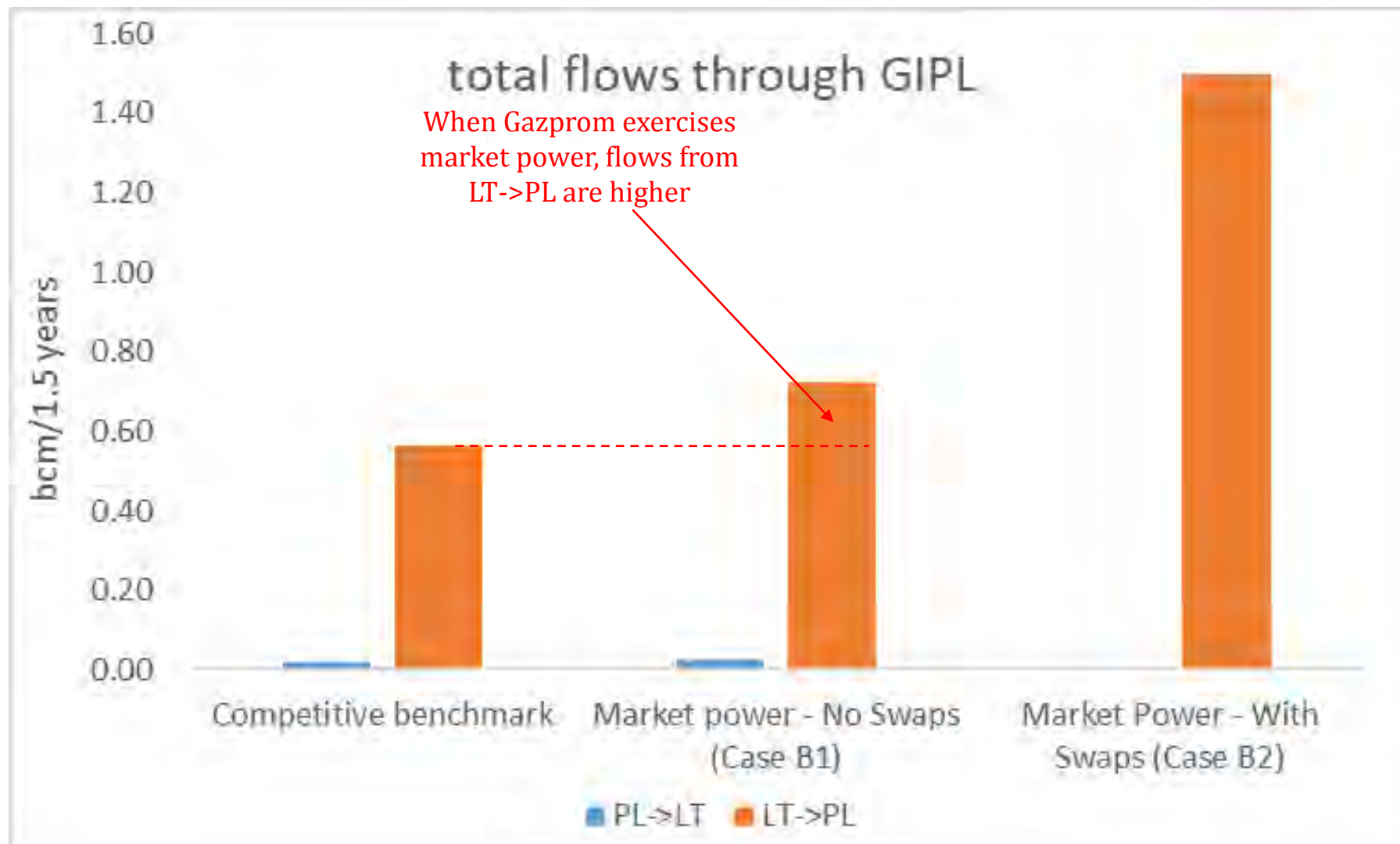
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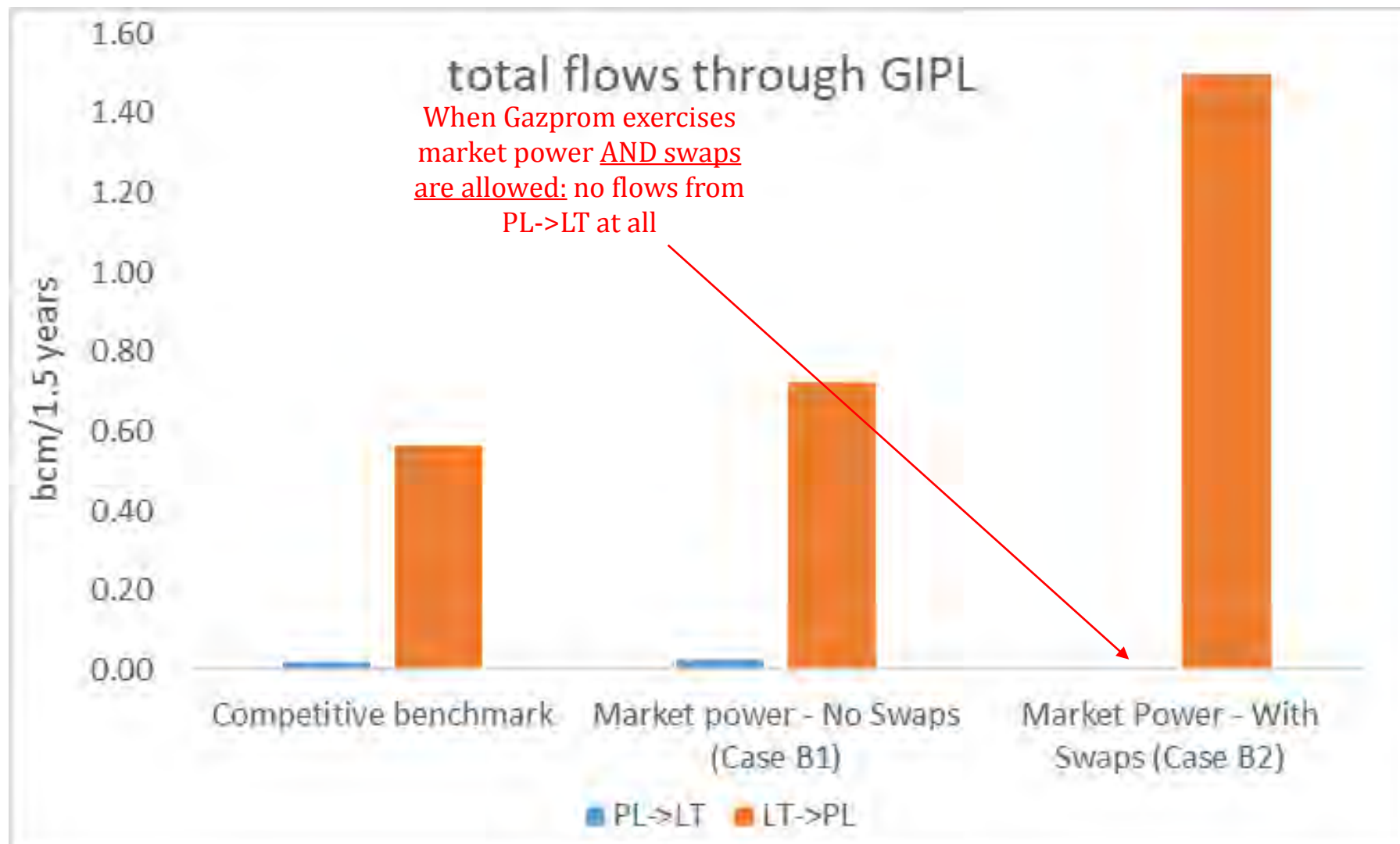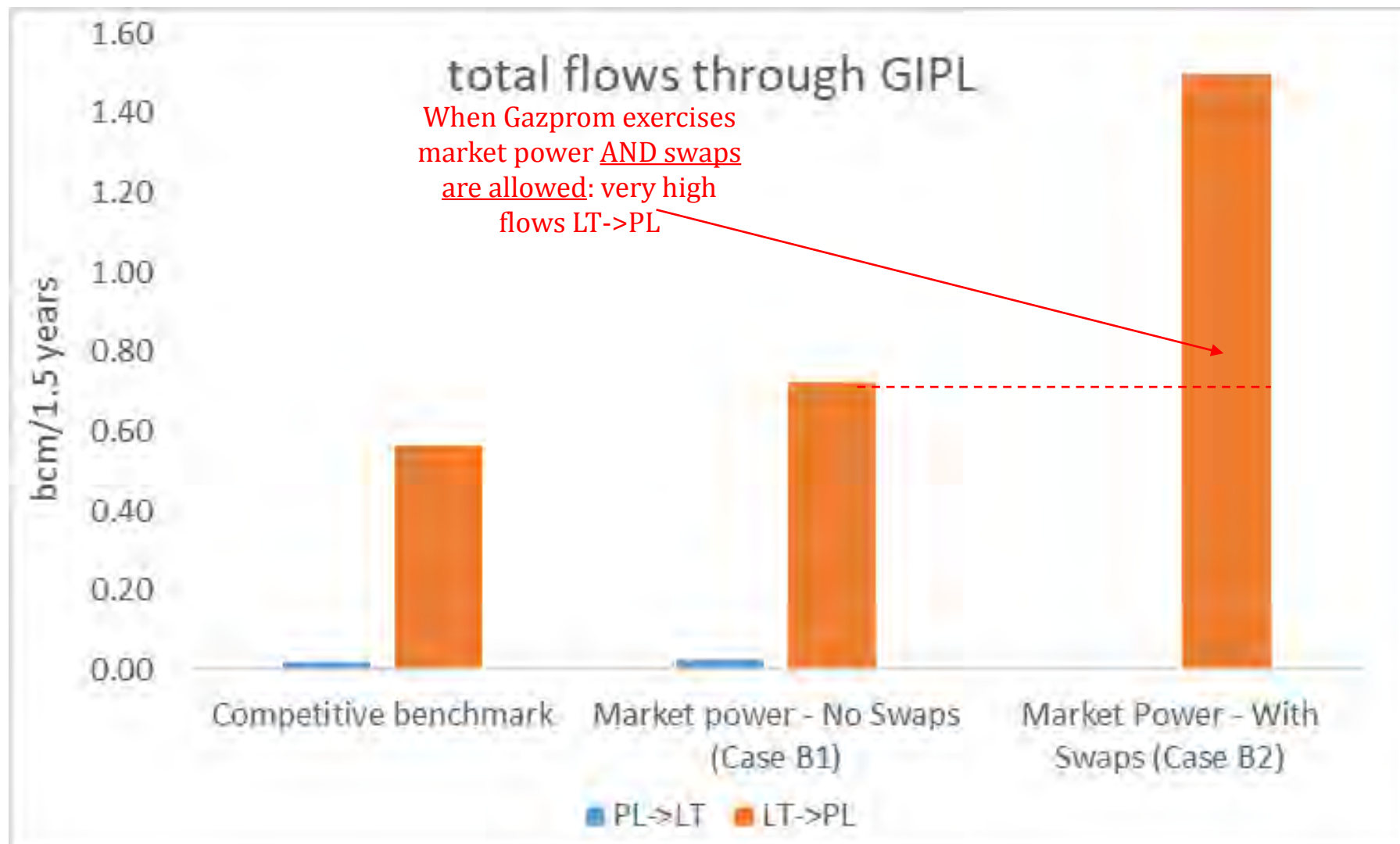# Impact of swaps on LNG terminals

Table A3: LNG send out rates and total imports (from Jan-2020 until Jun-2021) by Lithuania and Poland by various scenarios.

	Competitive benchmark (Case A)		Monopolistic behavior (Case B1)		Monopolistic behavior (Case B2)	
	Klaipeda	Świnoujście	Klaipeda	Świnoujście	Klaipeda	Świnoujście
Average daily send out rate, mmcm/day	3.97	5.09	3.57	18.07	2.52	17.36
Total imports (Jan-2020 until Jun-2021), bcm	0.41	1.02	1.87	9.67	0.21	9.29

LNG terminal in LT has a strategic value – safeguard against Gazprom's monopoly power

Impact of swaps on LNG terminals

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Similarly, LNG terminal in PL has a strategic value – safeguard against Gazprom's monopoly power

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PL LNG terminal has a stronger case for public support as a strategic asset against Gazprom's pricing power
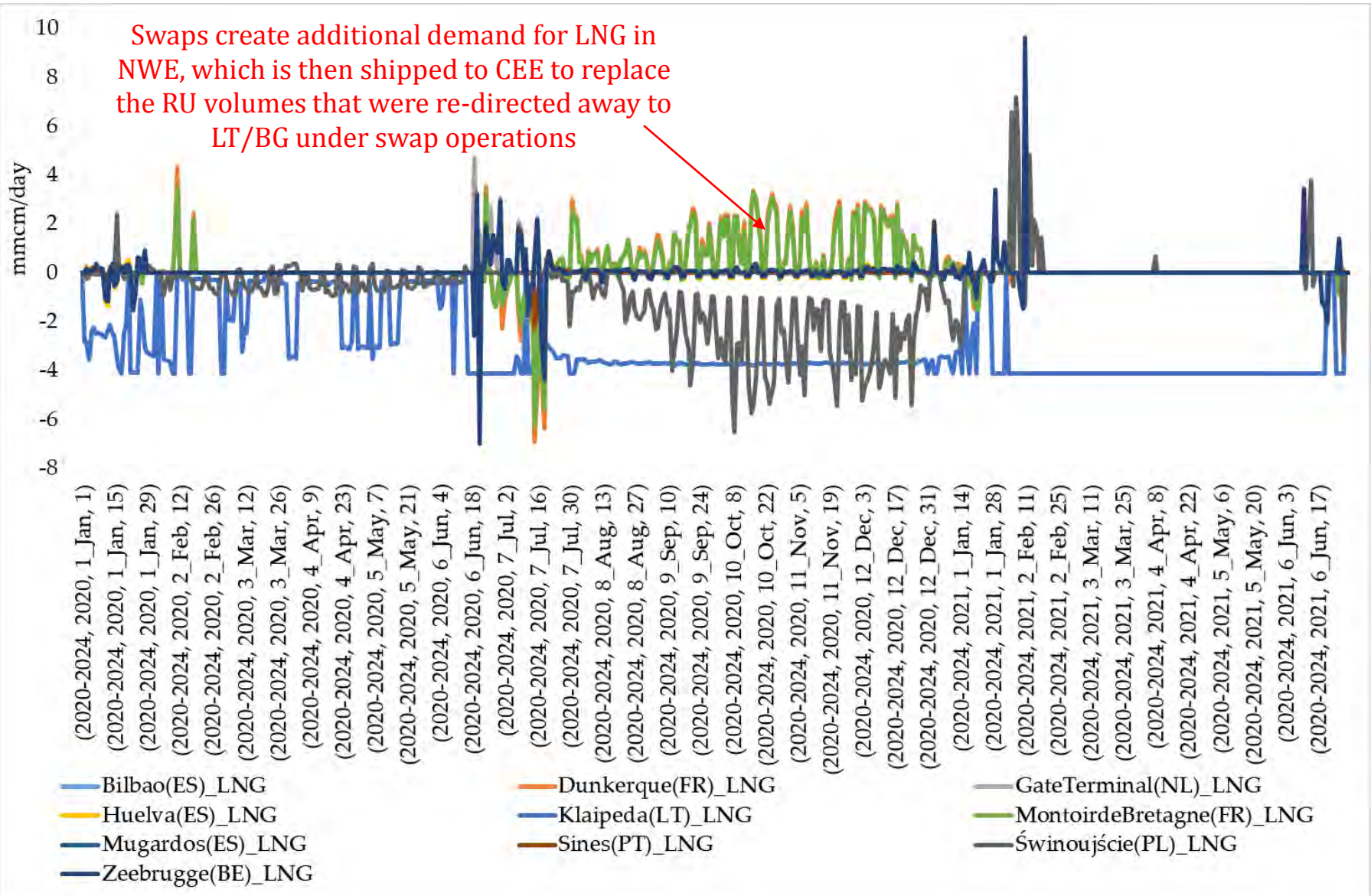
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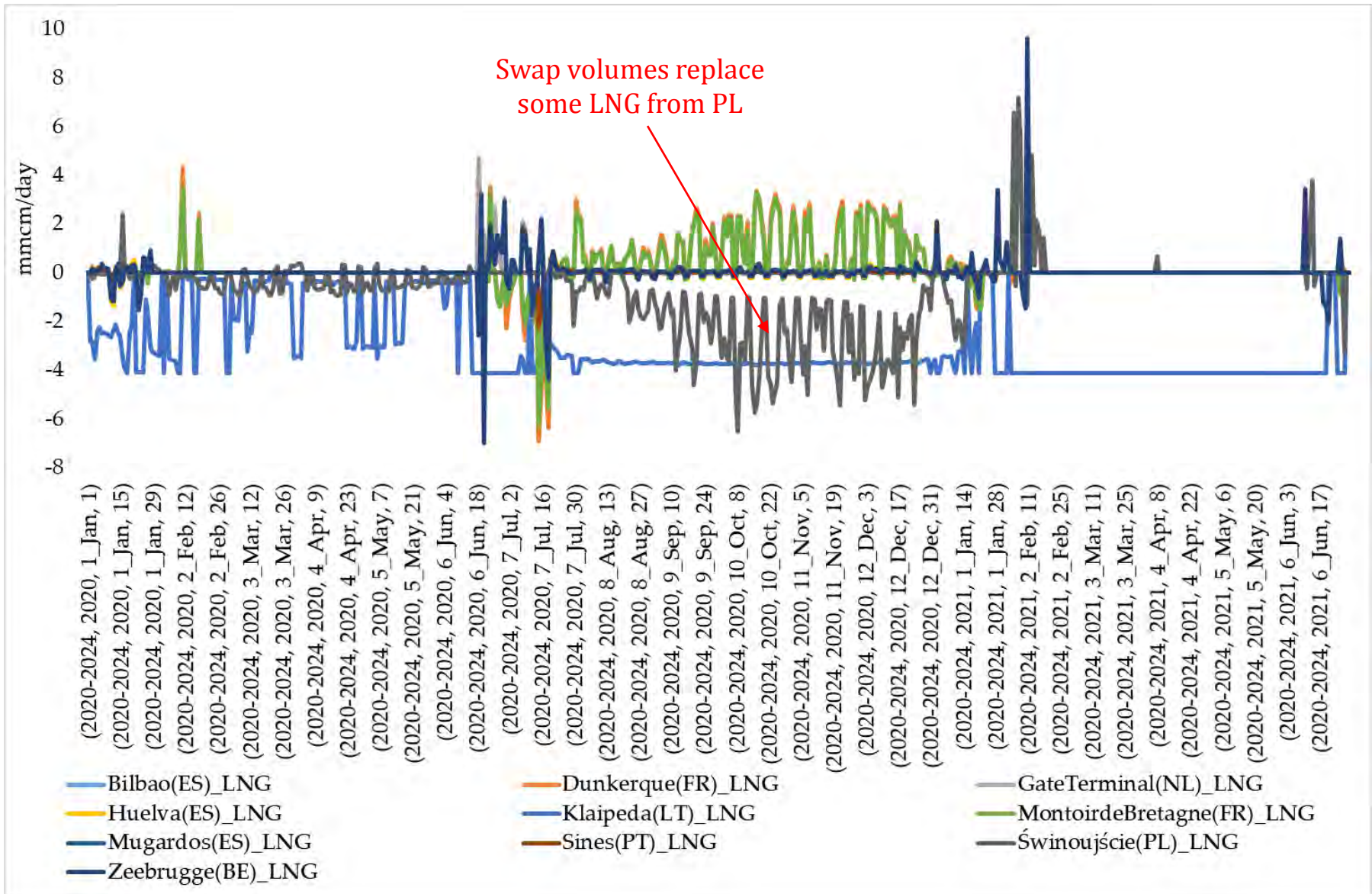|	Competitive benchmark (Case A)		Monopolistic behavior (Case B1)		Monopolistic behavior (Case B2)	
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PL LNG terminal has a stronger case for public support as a strategic asset against Gazprom's pricing power; **if Gazprom would allow swaps between SK<->PL this conclusion may, however, change**

Impact of swaps on LNG terminals

Swaps create additional demand for LNG in NWE, which is then shipped to CEE to replace the RU volumes that were re-directed away to LT/BG under swap operations
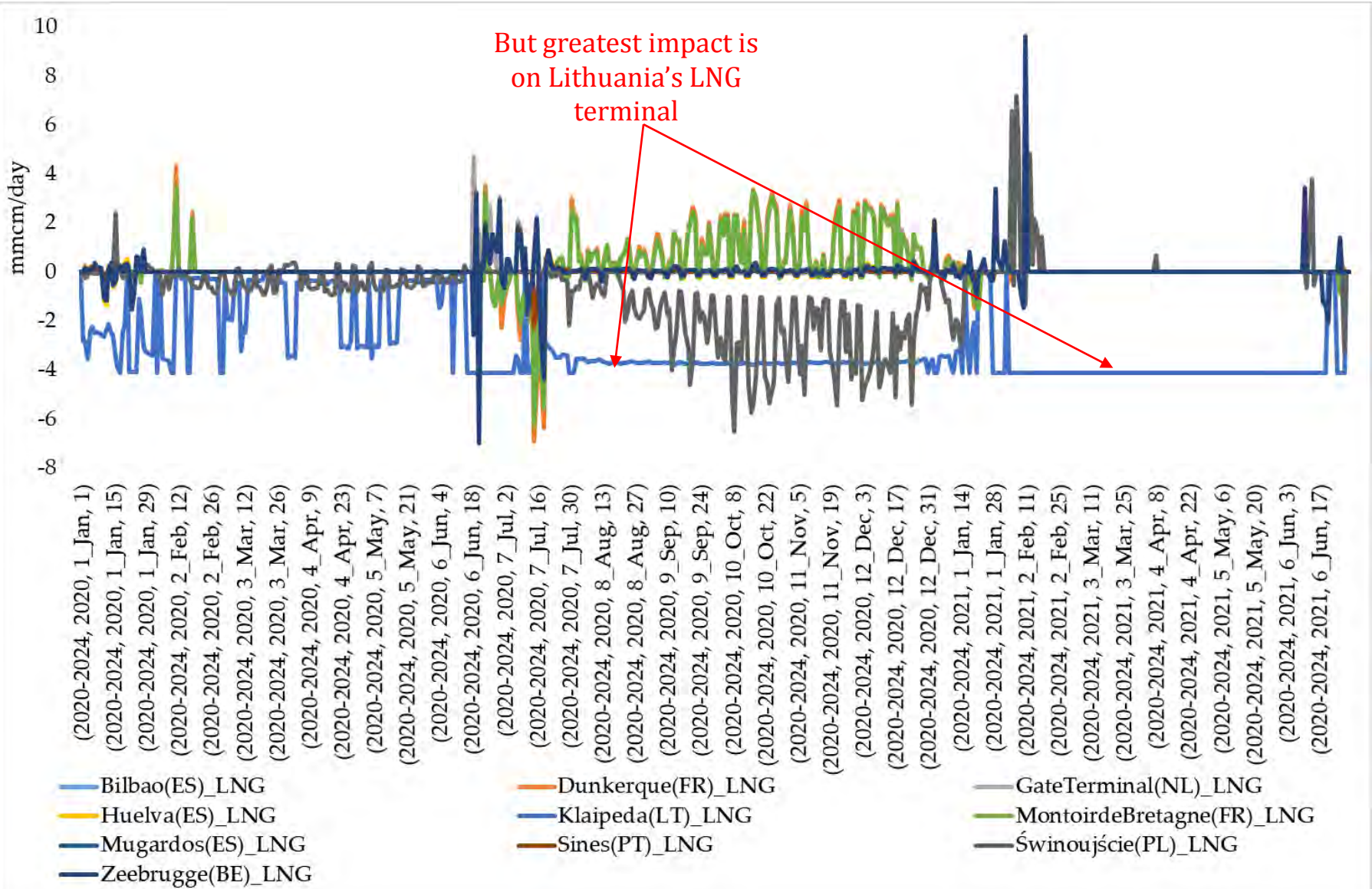
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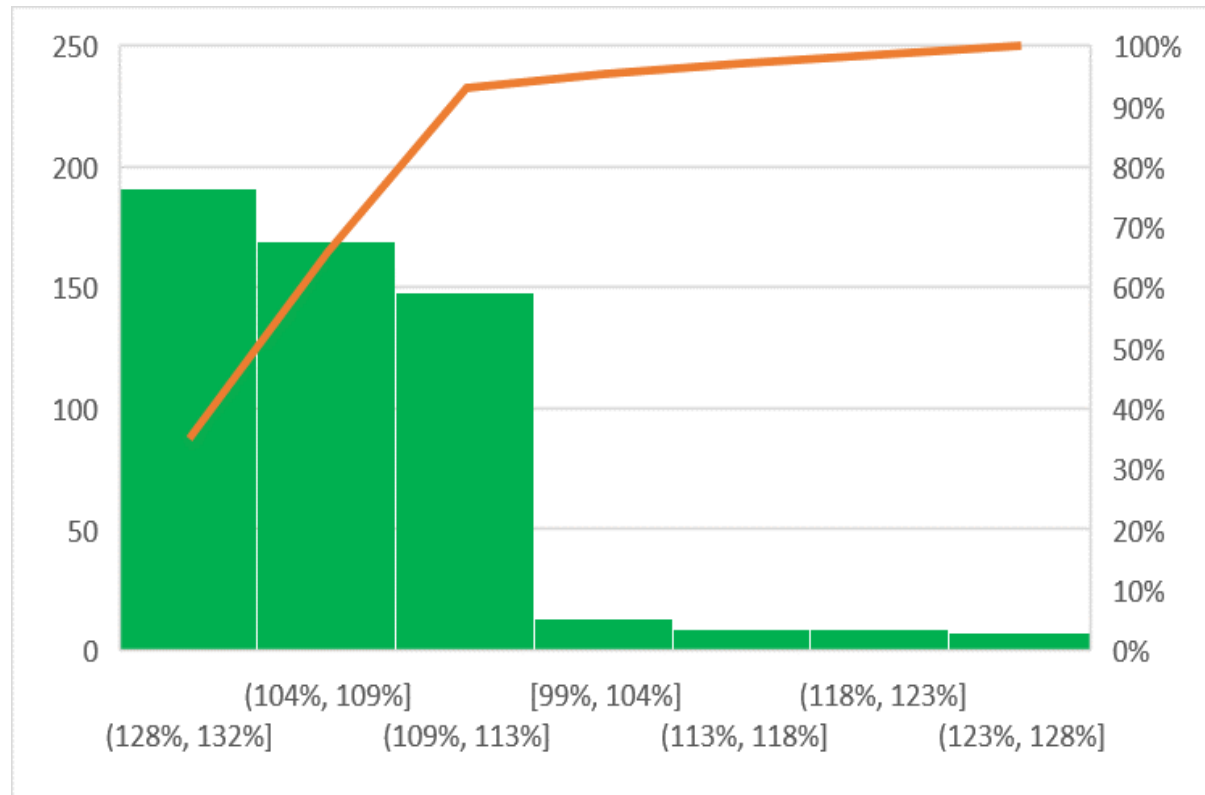   II.   On Gas Interconnector Poland-Lithuania
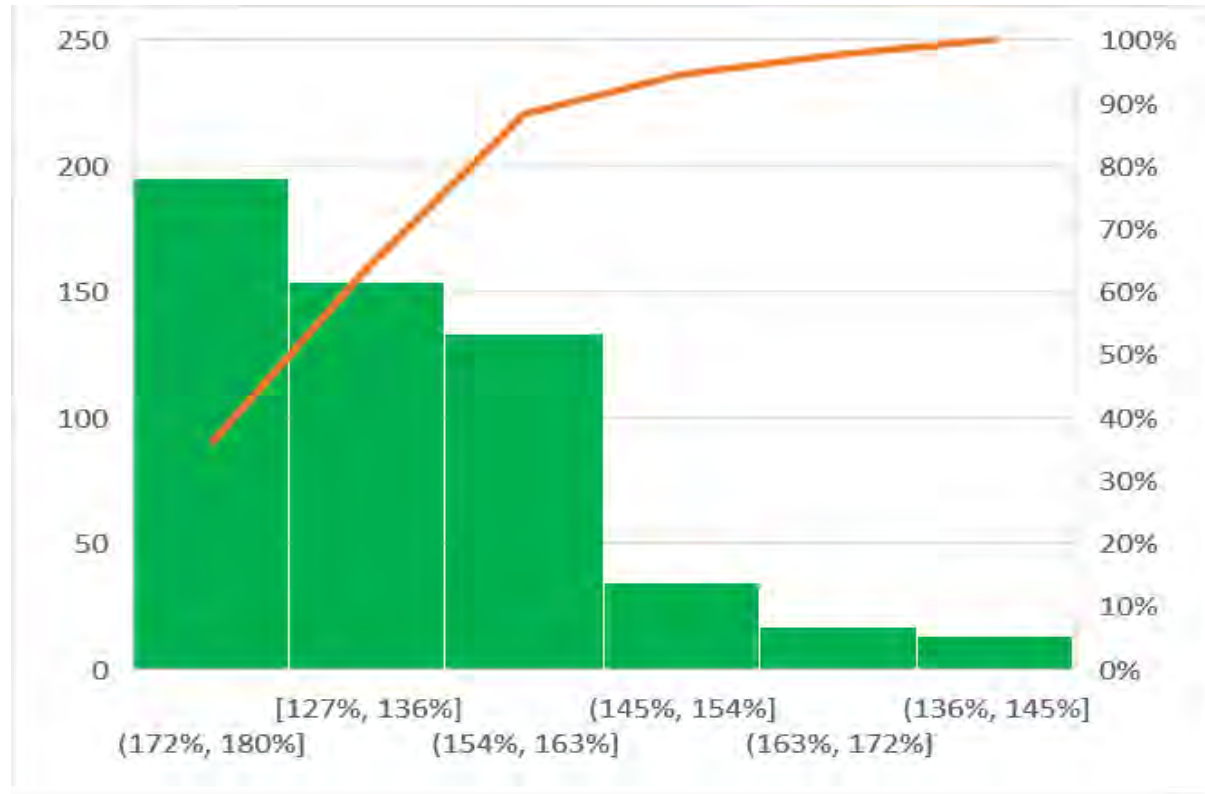   III. On LNG terminals in Poland and Lithuania
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IGB can considerably constrain Gazprom's pricing power in BG if Azeri gas is priced at SRMC

But if Azeri gas is priced at competitive NWE prices, IGB's 'strategic' role is greatly reduced

Impact of swaps on IGB

Azeri gas priced on par with NWE hub prices reduces utilization of IGB and hence its strategic value when Gazprom exercises pricing power in BG

Table A4: Total imports of gas through IGB under various scenarios

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Total imports through IGB (Jan 2020–Jun 2021), bcm	0.99	0.53	1.01	0.00
Average daily import rates, mmcm/day	1.83	2.18	1.86	0.00

Notes: Scenario 1– monopolistic behaviour without swaps (Scenario B1) with the IGB pipeline and Azeri gas for Bulgaria priced at SRMC; Scenario 2 – same as Scenario 1, but Azeri gas is priced at NWE competitive benchmarks; Scenario 3 – same as Scenario 1, but with proposed swap deals; Scenario 4 – same as Scenario 3, but Azeri gas is priced at NWE competitive benchmarks.

Impact of swaps on IGB

Swaps wouldn't affect IGB as long as
Azeri gas is priced at SRMC

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Impact of swaps on IGB

Swaps would price Azeri gas out of
BG completely (IGB flows are nil),
should Azeri gas = NWE competitive
benchmarks

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3. **May require 'stable' transit of** RU gas through BG to GR to allow backhauls

Would interconnection agreements between GR-BG have similar effects to Gazprom's swaps?
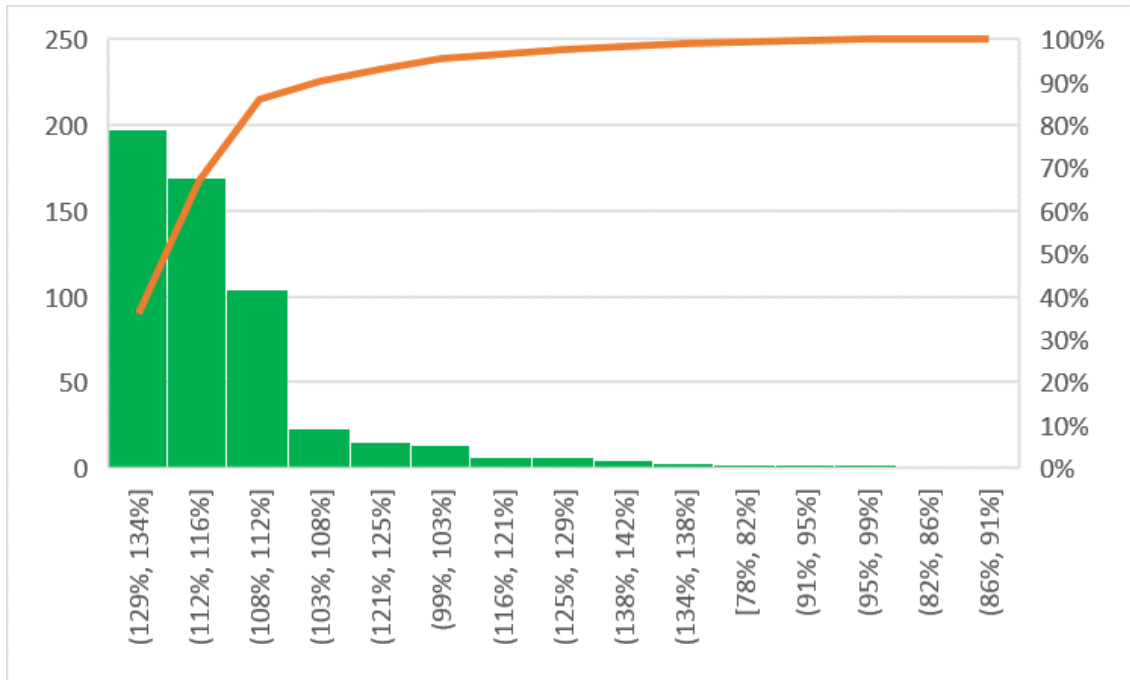
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4. Swaps GR->BG have similar pro-competitive effects to **Gazprom's swaps from SK**->BG and HU->BG

5. Swaps GR->BG potentially even more competitive than **Gazprom's swaps because they** allow direct competition between Caspian gas, LNG, backhaul & reverse flow from Italy (through TAP)

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Conclusions & Discussions

1. Which set of prices one should use as a basis for benchmarking CEE prices?

2. Is it liquid and competitive prices established at NWE hubs? if so, is it *netback* (less transport cost) or *netforward* (plus transport cost) approach?

3. Or is it potential competitive prices established by the 'intersection of aggregate demand and supply' in each of the five MS? The so-called *cost-plus* approach

4. CEE markets are closer to Russia so usage of competitive prices based on *cost-plus* approach (marginal cost of supplies from Russia to CEE) as the basis for benchmarking would result in substantially higher mark-ups when Gazprom exercises market power in CEE

5. Using *netback/netforward* from NWE hubs, which are further away from Russia, might result in lower mark-ups over NWE prices than the same under *cost-plus* basis

6. Usage of NWE hub prices seems to be the prevailing method in gas price arbitrations…

Conclusions & Discussions

1. However, in a perfectly competitive gas market world, in which Europe would have deep and liquid markets in NWE & CEE:

    –   netback and cost-plus prices should converge and price differentials between NWE & CEE would only reflect transport cost between the two regions
    –   CEE would in general be lower priced region so long as Russian gas is less costly than LNG and/or LNG is capacity-constrained

2. During the market test period, the Baltics argued that they should receive prices lower than those in NWE because they are closer to Russia….

3. Things are further complicated by the desire of major suppliers to price their gas against NWE benchmarks (e.g., Azeri gas and increasingly Russian gas)

4. Even more complicated if the entire Russian gas export volumes are delivered directly to NWE through Nord Stream 1&2, creating the *'end of the pipeline'* effect for CEE region – and hence rationale for using NWE _netfoward_ benchmark to price its gas for CEE

Conclusions & Discussions

1. Then, the *netforward* component would include *inter alia* European transport costs - > function of the effectiveness of the EU gas transport market regulation

2. And of course then there is no need to have liquid CEE market benchmarks

3. However, keeping 'stable' RU transit flows through CEE is,
   1. of course, a political objective of the EU
   2. but it also has economic rationale – supporting trade in CEE (reverse flow/backhaul) and possibly creation of another liquid hub closer to CEE; this is even more important when there could be huge price differentials created by Gazprom's price discrimination between CEE and NWE

4. All in all, the proposed swap operations may therefore potentially increase liquidity in CEE & constrain Gazprom's market power there

5. BUT, questions & challenges for Europe to have a single competitive price/market remain, especially with regard
   – The question of Nord Stream II & Gazprom's 'bypass' pipelines more generally
   – Artificially creating/supporting regional hubs or let trade and competitive forces define Europe's Louisiana/Henry Hub?

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Thank you for your attention

Questions & comments?

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