

Comments on “The Development of Gas Hubs in Europe”

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- I liked the paper, which is very nicely written and quite clear.
- It is also interesting for at least two reasons
 - the paper suggests an evolution that I think is essentially driven by the recent history of the European system, not necessarily by the superiority of a particular market design
 - It also suggests questions analogous to those raised by the restructuring of electricity that were badly taken care of.
- These questions are related to how far one can neglect the underlying physics of the system.
- These questions would equally apply to many current papers on the Gas Target Model, on indexations clauses and hubs developments.

A restatement of the evolution towards gas hubs

- The market after restructuring: mid streamers with their contracts and their clients. Supplying clients led to unbalances.
 - That was (i) a management of gas flows from gas contracts subject to different TOP and (ii) an economic problem of arbitrage between gas subject to different price clauses. Hubs could take care of the latter; hubs and/or TSO could take care of the former.
- The economic crisis induced a drastic decrease of demand that made TOP imbalanced. Then came the switch from gas to coal in power.
 - That is no longer a problem a management of gas flows. This is a question of finding the value today of gas in conditions that drastically differ from those where the long term contracts have been negotiated.
 - TSO cannot take care of the latter problem; a hub is necessary to find the short term value of the gas.
 - Based on other situations (US and UK) the idea then developed that the hub system is superior because it finds some "true" value of gas.
- The risk sharing offered by the old long term contracts disappeared in the process (and for other reasons); financial contracts then developed to offer the lost hedging possibilities.

This raises several questions

that we have seen in an abstract form for electricity before

- How far can one neglects the underlying physics?
 - EU discussions are almost entirely in terms of developing a liquid energy market.
 - Where physical constraints play almost no role except for saying that TSO will deal with them (improper pricing of constraints).
 - We did that before in electricity and it failed. Maybe one does not need to be as strict in gas, but one might at least raise the question.
- Is the emphasis on the sole market liquidity a correct interpretation of what I read in the paper? If yes how can one justify it? If not, where is my reading wrong?

Illustration 1: Physical flexibility tools and commercial flexibility

A statement of the paper and another view

- “It may happen that, although physical flexibility is available, because there is still free transmission capacity in the international pipelines, the contract in place do not allow to increase the supply of gas at will, preventing the usage of this source to rebalance the system”.
- TRUE but is the following wrong?
- “It may happen that although physical flexibility is available, because there is still free transmission capacity ... the entry exit system does not allow to increase the supply of gas at will, because the entry and exit capacities have been computed as a worst case in order to be guaranteed.” (Compare with zones in electricity)

Discussion

- An entry exit system restricts the set of feasible node-to-node transactions compared to those of the physical system.
- In other words: the entry exit system makes it easier to conclude transactions (see Lapuerta and Moselle's quote) but it restricts their scope. This is not important when capacities are ample with respect to demand; it is when capacities are scarce and investment are necessary.

Illustration 2: Balancing regimes

A statement of the paper and another view

- “Since any individual imbalances that are not cleared by the operators require the TSO to intervene, ..., these interventions are costly to the system”.
- TRUE but is the following wrong when the contracts are not in distress?
- “Since individual imbalances maybe numerous and relatively small, their clearing might involve comparatively (to the commodity price) high transaction costs. The set of these possible transactions may also be restricted by the entry exit system. Because the TSO can take advantage of the possibilities of the grid in a way that the entry exit system cannot, centralizing these operations at the level of the TSO will reduce the cost to the system”.

Discussion

- Traders also ask fees and hence “transactions cleared by operators” are also costly
- Trading by operators followed by residual trading by TSO is a two stage process that may just be more expensive than a single optimization. This is especially true of physical constraints are important.

Illustration 3: Fundamental data transparency

A statement of the paper and another view

- “Fundamental data transparency refers to the availability on an equal basis ... and other relevant physical information mainly before trading”.
- TRUE but check the move in terms of data transparency from the NTC to flow-based critical infrastructure in electricity. Ex ante promise for transparency and ex post realization are quite different things.

Discussion

- “Transparency” is a notion that has been too much abused in the history of the internal energy market for still being trusted.

Illustration 4: From physical Flexibility to market flexibility

A statement of the paper and a question

- “The TSO, burdened with residual obligations, adopts balancing actions by buying or selling short term standardized products on the wholesale gas market, giving priority to Title market Products, i.e. non physical products traded at a virtual trading point ...”
- The existence of those short-term standardized products might be a very strong enabling assumption. Would this include products such as “remaining compression capability” at some location, pressure flexibility at some valve?
- In other words: what are the short-term products that correspond to gas ancillary services?

Illustration 5: From physical Flexibility to market flexibility: next

A more extreme case

- In particular suppose a gas turbine that needs gas for ramping because of intermittent sources. How does one define the short-term ramping products of the gas network.
- gas TSO have been using flow models based on PDE to account for transients in gas pipes. How will one define ramping products for PDE.

Illustration 5: From balancing to second sourcing and price risk management

- The development of the necessary derivative products depends on the development of proper underlying. This development is thus conditional on the development of the other points (development of derivatives on transportation products?)

The conclusion

- I think one should check that the physics does not matter before assuming that it does not matter.