NC preliminary position on ACER welfare study on expected benefits of co-optimisation in the day-ahead electricity market

10/06/2024

ACER webinar on expected benefits of co-optimisation in the day-ahead electricity market

Market design implications

"ACER study makes quantification of welfare gain between status-quo, market-based approach and co-optimization. The study is considered a proof of concept which develops a modelling framework for quantifying such benefits based on costs saving and more efficient scheduling of balancing resources"

BUT, for delivering the actual benefit/impact of co-optimisation

"Any welfare quantification should be accompanied with an assessment and possible quantification in terms of cost of the implications for the overall Market Design"

- **The impact on the following systemic market topics should be also considered <u>for such a profound market re-design</u>:**
  - **<u>price formation</u>**: The model and analysis neglects the price formation rule and impacts of co-optimisation and concentrates on efficient scheduling of balancing resources. But, the energy price signals are not incidental for the integrated European market. They are the heart of an efficient short-term (and long term..) market design.
  - **<u>barriers to entry for market participants</u>**: the difficulty from MPs to understand how the prices are determined could result in a difficulty in their ability to enter the market.
  - **<u>bidding model for DA market participants</u>**: the EMD ruled out the possibility of making unit-based bidding mandatory, but the model seems to follow-up on this assumption. Additionally, the proposed model already considers the integrated bid design, omitting the ability of MPs, besides any technical difficulties, to set reasonable competitive prices for the Standard Balancing Capacity Products.

*The consultation should have **first addressed the foundational elements of market design** and follow-up on any estimates of the welfare that would result from its implementation at the EU markets*

Main findings

- By construction a co-optimization mechanism is expected to give some improvements, but the results of ACER study show that:

The study cost savings (1.28 b€/y) are negligible compared to actual welfare figures of SDAC (4000 b€/y as of 2023)

Achieved gains are not comparable to the underlying assumptions

Vice versa the proposed change has huge impacts on the market which are difficult to estimate, but have a higher order of magnitude

Relevance of the outcomes

the study estimates that "co-optimisation can deliver 678 million € per year of savings in operational costs relative to the status quo of sequential clearing of balancing capacity followed by energy. The market-based allocation of Article 41 of EBGL achieves 84 million € per year relative to the status quo. Extrapolating these figures to EU level based on energy production/consumption indicates a potential cost saving of 1281 million € per year from co-optimisation relative to the status quo and a potential cost saving of 159 million € per year from market-based relative to the status quo"

- **The results are based on inaccurate assumptions: Europe is not a Core multiplier**
  - The study has been performed in the Core region. The extension to the European scope based on consumption risks to be inaccurate and misleading, since the generation set of the additional part of Europe is not related to the amount of consumption.
- **The benefits estimated by the study have limited size relative to the size of the SDAC, similar gains could be achieved with minimal changes to the SDAC;**
  - **SDAC welfare in 2023 amounts up to 10.9 billions € in avg per session:** equal to almost **4000 billions € per year**.
  - Compared in terms of SDAC welfare the numbers of the potential cost savings of 1.281 billion € per year is almost irrelevant, can be embedded into statistical fluctuations or even be overindulged by regular SDAC welfare variations due to SDAC RfCs.
- **The impact of the radical changes included in the study assumptions could lead to drastic welfare reductions**
  - The central idea of SCUC modeling for optimizing the allocation of energy and balancing capacity is the centralized approach of market operation, under a unit-based model with simple biding and technical constraints. But, the current DAM EU model, as a design concept and technical solution, is far away of being considered comparable to such a SCUC approach and any side effects in markets operating under self-balancing/self-dispatching models is not even considered or measured in terms of costs by the study.

Limited scope of the study

"The sequential clearing models rely heavily on intraday corrections. If such intraday corrections fail to materialize, […] the study estimates an increase in the efficiency gains of co-optimisation relative to status quo"

- **The study is based on many simplifying assumptions that do not capture the complexity of the market that, if taken into account, could nullify the obtained results.**
  - The study disregards portfolio bidding, on which European market operations are typically based. The portfolio bidding for intraday markets offers additional flexibility for market participants to correct and adjust unfavorable outcomes of earlier market phases. Unit-based biding considerations are not easily to be extended for portfolio bidding.
  - The study doesn't properly take into account Intra-Day Markets . In particular the role of renewable volatility makes it poorly relevant to optimize any detail in the Day-Ahead stage. EU has heavily invested in Intra-day market, precisely to handle the supply and demand volatility problem. Further investing in new market solution to replace the benefits expected from ID Market should be motivated in light of the analysis on market design, pricing and biding behavior (as highlighted in the first slide of this presentation).
  - While modelling of generating units is explained in the document, little is said about cross zonal capacity. The modelling seems very focused on generation, but does not mention in any way bids from e.g. demand response and storage/batteries. This, once more, is quite relevant especially when dealing with renewable energy integration in the market.

"the cumulative effect of the all assumptions may be quite unpredictable and could render its results invalid"

Caveats: extendable to a real world scenario?

- **The methodological choice of simulation on SCUC, unit-based bidding and cost introduces a bias in the outcome of the study in several respects:**
  - moving from offered costs to offered prices, the welfare can change drastically since the markets are not operating in "a perfect competition environment".
  - the main benefit stated by ACER: the better scheduling of balancing resources. Is actually related to the unit-based bidding modelling assumptions. If we switch to portfolio bidding or use different bidding formats (like bid-linking) we are no longer guaranteed to have same scheduling efficiency nor the same pricing signals. So, exactly these real word considerations are currently under evaluation by the NEMOs and the TSOs.
  - when moving from integrated bids to bids linking, the bidding strategy of market participants based on today's products is extremely unpredictable and complex for market participants.

The following should be considered as the major caveats vs a real-world scenario for EU

- **Not only the estimated welfare might be wrong, but not all MPs might be able to handle the complexity of the market mechanism (only large operators may be able to deal with such complexity and the outcome may not be as expected).**
- **The mechanism addressed in the study is not extendable to portfolio bidding and complex products.**
- **Appetite from MPs and usage from TSOs is challenged and not confirmed for such a modelling approach. Is this a finally a mandatory new target-model ?**

Unfair comparison between models

"In addition to allowing for the trading of balancing capacity, […] the study introduces a constraint that requires no more than 10% of the remaining available margin of each critical network element and contingency to be allocated for the trade of balancing capacity. This constraint corresponds to an actual operational limit that is imposed by European regulation"

- **The restrictive assumptions made only for the market-based model could have an impact on conclusions of the study, giving an advantage to the co-opt model.**
  - Benefits would be expected also from marked based approach, with the difference compared to co-optimization of not having to drastically change the market design. The study compared the two approaches but with some bias.
  - The assumptions adhere to existing legislation, however, when market-based exchange is limited to 10% while co-optimization has no limit, the assumptions favors co-optimization. The co-optimization approach could thus turn out to have a higher social welfare only because of this assumption.

" In order to estimate these forecast errors based on historically available data, […] the study computes the difference in prices between a given day and the preceding day of the same day type for the entire range of our dataset"

- **The choice of the price forecast errors is a very important assumption for the quality of the market-based approach, the selected one could exaggerate the forecast errors and thus negatively impact the market-based approach for the procurement of balancing capacity**
  - The same day approach is thus "a simplified approach" in the present system and would often significantly overstate the errors of realistic price forecasts, as those used by sophisticated stakeholders in the present system (especially in a system overtaken by highly RES penetration with minimal existing storage).


ALL
NEMO
COMMITTEE
DANKE#PALDIES#GRAZIE#KIITOS#DANK JE#OBRIGADO#KÖSZÖNÖM#TACK#THANK YOU#DAKUJEM#TÄNAN#TEID DZIĘKUJĘ#GRACIAS#MERCI#MULȚUMESC#БЛАГОДАРЯ ВИ#HVALA#GO RAIBH MAITH AGAT#AČIŪ#DĚKUJI VÁM#TÄNAN TEID#TAK#ΕΥΧΑΡΙΣΤΩ#