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Subject: Stanhope Lunch December 1st - Updated Note on Market Design
Attachments: Market design-22Nov.pdf

Follow Up Flag: Flag for follow up
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Dear all,

please find attached a reviewed, shortened and simplified version of our July paper on Electricity Market Design options. This new version incorporates the recent evolutions that took place in both Brussels as a whole and within the Stanhope. In particular, chapter 2 will provide the basis for our discussion on December 1st.

Let us remind you the venue has exceptionally changed, the lunch will be hosted in the private room of the restaurant Ecailler du Palais Royal, Rue Bodenbroek 18, 1000 Brussels.

A more detailed agenda will follow shortly.

Kind regards

[redacted] and [redacted]

The agenda for the long-term reform of the EU electricity market

[redacted] CEPS [redacted] & [redacted] FortyEight Brussels[1]

Introduction

Over the course of the last fifteen years, climate change-oriented policies have upheld a radical transformation in the energy sector. The 2007-08 climate and energy package introduced for the first time a 20% legally-binding renewable target. This triggered the deployment of very large volumes of renewable energy, mainly solar and wind. Through scale effects, the new installations have been instrumental in reducing costs associated with renewable technologies. This has led – temporarily – to unprecedently low electricity wholesale prices as subsequent required closure for example of coal plants were delayed.

At the same time, energy-climate policy has *de facto* dictated the electricity mix evolution by engineering a partial shift from competition *in*, to competition *for* the market. This was done on the back of Member State support for investments via different long-term mechanisms: support mechanisms for renewables energy, contracts for differences for low-carbon technologies (for example in the UK), capacity renumeration mechanisms and strategic reserves for new or existing capacity to ensure adequacy, or the like. DG Competition Guidelines on State Aid gradually adjusted to this situation and as a result provided an ever more granular framework for competition. Some have suggested that DG Competition is becoming the new EU energy regulator for wholesale markets[2], with national regulators focusing mainly on retail markets. Short-term energy markets have focused on optimising dispatching of essentially existing assets.

Ever bigger penetration of variable renewable generation in the electricity mix, coupled with a stable contribution of nuclear, has and will continue to transform the economics of the power sector. By 2030, a very high share, possibly around 80% of electricity output – renewables and nuclear combined – will have zero marginal costs. Renewables impact day-ahead as well as intraday markets while requiring an ever-increasing level of system flexibility, and a much more performing grid both at transmission and distribution level. It will also mean that capital costs will dictate volumes and rhythm of the new investments in new generation capacities with an intensity unknown to fossil-based assets.

There is a presumption that ultimately, the electricity sector will be transformed to such an extent that four of the constituent parts of the EU's electricity system are predominantly CAPEX driven: i) generation, ii) demand-side management, iii) storage, iv) grids. Should solar PV combined with battery technology become competitive with gas peakers, the remaining OPEX-dominated back-up generation is to be gradually disappearing.

Against this background, this analysis aims at identifying the main issues emerging from the ongoing EU debate over a new Long Term Market Design for electricity markets to respond to

[1] [redacted] CEPS, [redacted] FortyEight Brussels

[2] Georgiev, Atanas. (2019). 'DG Competition – The new European energy regulator?' Foreign Policy Research Paper No. 11, Diplomatic Institute, Ministry of Foreign Affairs, Bulgaria.

the EU priority: ensure an unprecedented level deployment of renewable generation at affordable prices for both households and industry, while ensuring security of supply. This report is meant to sets out the agenda for the ensuing debate. Further contributions and publications will progressively dive deeper into each specific question.

1. The constantly evolving challenges of the electricity markets

A collective reflection of the most effective design for the electricity markets did not arise with the post-Ukraine invasion. During the introduction of the first energy packages the focus was on economic efficiency in a cross-border perspective. The market design focused on mechanism that allow market participant to reveal their true short-term marginal cost, i.e. day-ahead market with system marginal costs.

Around the time of the 2007/8 Climate and Energy Package, the main challenge was to reduce, via volumes, the costs of renewable technologies. This has been attained thanks to feed-in tariffs initially, later to be – partly – substituted by feed-in premiums. The success of this policy entailed a very substantial increase of retail prices – as documented by successive European Commission Energy prices and costs studies[3]. Household customers predominantly weighted the cost of subsidising renewable generation, CRMs and grids, to the tune of around € 1 trillion a year[4]. They did so typically via a surcharge of the retail price. The policy debate on how to reduce electricity prices and who was to pay for the renewable subsidies started there.

Subsequently, the debate had moved towards the integration of renewables into the market by exposing them to price signals through, essentially, increasingly sophisticated contract for differences as well as long-term power purchasing agreements (PPAs). In parallel, the large volumes of capacity additions of renewable energy led to very low wholesale electricity prices, which risked challenging the economic viability of electricity generation. While the root causes have been the massive capacity increases of renewable energy not being matched by corresponding closures, the situation was aggravated by a very low CO_2 price under the EU ETS. The fear was that this undermines the long-term investment signal and thereby the stability of the electricity system. The corresponding policy question was how to ensure long-term investment incentives.

The resulting and largely foreseen challenges that ever-increasing levels of renewables pose for system stability was addressed in the 2018-9 Clean Energy Package. If focused largely on dispatching, deliberately not addressing long-term investment signals. The increase of CO_2 prices under EU ETS to almost € 100 t/CO_2 alleviated fears about the lack of long-term investment signals at least to an extent and temporarily.

Finally, and largely unexpectable, as a result of the recent massive increase of EU and global natural gas prices, the question on the contagion effect[5] imposed itself on the EU agenda, as a

[3] Successive European Commission energy prices and costs studies (in 2014, 2016 and 2018). The latest version: European Commission (2018), Composition and Drivers of Energy Prices and Costs: Case Studies in Selected Energy Intensive Industries – 2018. Written by CEPS and ECOFYS.

[4] Own estimate based on European Commission (2020), Energy costs, taxes and the impact of government interventions on investments. Final Report Summary. Written by Trinomics.

[5] The contagion effect is, in the words of the European Council itself, the effect induced on electricity prices by gas. the 24th and 25th March 2022 EUCO Conclusions recite: "the gas price and addressing its contagion effect on electricity markets"

combination of the global post-COVID shift in the worldwide supply markets and the Russian invasion of Ukraine. Behind the debate on the contagion effect is the larger issue which market design will allow EU citizens and industry alike to benefit from the principally low renewables generation costs, i.e. measured in levelized cost of electricity, while providing a stable robust investment and ensuring required flexibility of the system.

2. Long-term contracts in the new market design

The predominant sentiment in the EU at the present is that the most opportune approach towards reforming energy markets is to "complement, not to substitute". Hence, Focus on long-term contracts or even establishing a market for them has been at the core of the current debate. Most likely, the issue on how structure a parallel market for Long-Term contracts will be the core of the forthcoming legislative intervention on electricity market design, announced by the European Commission for the first quarter of 2023.

2.1. What target and how to define it?

It is generally understood that the focus on long-term contracts will require a mandatory target on minimum share of long-term contracts, which might grow over time. Given the heterogeneity of Member States, there might be a need for flexibility especially as far as the definition of Long-Term products and the design of the Long-Term market.

Questions:

1. How should that target be expressed? For example as a share of the total electricity generation or the total amount of exchanged electricity, or are there other options?
2. What kind of flexibility at Member States level, so to accommodate varying ambitions and local market specificities will be helpful and/or necessary?
   a) Should the target be expressed as "at least …"?
   b) How prescriptive should the definition of long-term" be?
   c) Should the EU prescribe what "baskets" of long-term solutions, PPAs, CFDs, hedging, Member States should or want to concentrate on?

A major question is also where the obligation should be put.

1. If it is on retailers, it most likely leads to decentralised solutions, which would also a) favours big, structure operators, b) create potentially competition among retailers, and could lead to a variety of auctions mechanisms, which might be conflict
2. If the onus is put on a central buyer, the outcome is a centralised solution:
   a. Will the central buyer act, at least temporary, as a planner aggregating demand, matching it with supply and tuning the auction,
   b. Leading to a situation, which might not be acceptable to a number of Member States
3. A hybrid solution could be:
   a. A central buyer acts as a complement, raising a lot of detailed questions on the relationship of the central buyer and more decentralised auctions etc.
   b. A central buyer could be a temporary solution before de-centralising the whole system

2.2. Auctions and instruments

Long-term solutions will be based on competitive bidding, most likely, technology-specific. It is expected that the bids in their entirety will lead to price converge – certainly within the same technology bundles – towards the specific technology's LCOE.

This is clearly a scenario where the Competition is for the market rather than in the market.

The design and use of the various instruments that will be deployed also raise a number of issues.

CFDs

a. How to incorporate the changes into the LCOEs into the underlying price dynamic of the contract?
b. How to adapt remuneration to the effective value of electricity?

PPAs

a. Is there an effective competition between CFDs and PPAs. Can they co-exist, and under which conditions?
b. Can PPAs be left to the negotiating ingenuities of the concerned parties or should, in order to benefit from some forms of centralises de-risking tool, be standardised?
c. Can a system with growing and persistent volumes of PPAs can effectively work without some form of centralised clearing house

Consequences

1. Progressive de-coupling of electricity from gas prices
2. Structural change in the DNA of the electricity market, away from the notion of scarcity and scarcity prices
3. Progressive marginalisation of day-ahead markets. Need to be transformed in valid ways fossil-based generation can retrieve variable prices
4. Re-definition of the place and role of CRMs, no longer as bugs but as features of electricity markets, where fossil-based generation can retrieve fixed costs
5. Who's in charge of planning? Especially networks?

Final questions

The above begs more fundamental questions, such as

1. Which State Aid policies changes would need to be introduced? Are they advisable and, above all, attainable?
2. Where's the competition in all this?
3. What's of flexibility in a system increasingly insulated from price variation? What could be a sustainable business-model to remunerate it?

The sooner answers are found, the bigger the chances that a formal decision can be found before the dissolution of the European Parliament in March/April 2024.