Market Reforms for Stressed Conditions: The Case of Europe

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An Overview of European Market Design
Major Differences Between US and Europe

- European market design resembles, most closely, the pre-2001 California design
- Separation of *power exchange* (PX) and *transmission system operator* (TSO)
- Simplified representation of transmission network via *zonal pricing*
- Diminished role of real-time market:
  - *Balancing responsible parties* (BRPs) encouraged to maintain balance in real time
  - *Balancing service providers* (BSPs) balance the system by activating reserve
- No real-time market for reserve capacity
The Day-Ahead Market

- **Price Coupling of Regions (PCR)**: project of European power exchanges to create a single day-ahead price coupling solution

- **EUPHEMIA**: the algorithm developed by *N-SIDE* (UCLouvain spin-off) for computing day-ahead price

- Zonal pricing results in various challenges
  
  - Operational efficiency (congestion management cost)
  
  - Discretionary provision of available capacity by TSOs
  
  - Surprisingly, investment signals and gaming are discussed less currently among stakeholders

- Nodal pricing no longer tabu in European market design discussions (for example, Polish TSO is investigating a nodal design)
Real-Time Operations

• Transmission system operators (TSOs) manage real-time operations
• TSOs procure reserve capacity from individual generators in month/day-ahead auctions from balancing service providers (BSP)
• **Nominations**: day-ahead production schedules submitted to TSOs for individual generators, according to
  • day-ahead cleared trades
  • reserve commitments
• In real time, the TSO uses (i) stand-by units (called *free bids*), (ii) BSP capacity, and (iii) topological corrections in order to de-congest and balance the system
• Activated reserves are only paid for activated energy in real time, not real-time reserve capacity
• There are two major ongoing projects attempting to coordinate activation of reserves across Europe: **PICASSO** (secondary reserve) and **MARI** (tertiary reserve)
ORDC Developments in Europe
Balkanization of European Electricity Market

- Diverse approaches towards remuneration of (flexible) capacity in Europe
- Some of these measures draw scrutiny as possibly constituting anti-competitive state aid
- European Commission not in favor of balkanization of member-state market rules
- Two legal documents of the European Commission indicate favorable view towards ORDC:
  - Electricity balancing guideline
  - Clean energy package

Source: Eurelectric
Each TSO may develop a proposal for an additional settlement mechanism separate from the imbalance settlement, to settle the procurement costs of balancing capacity pursuant to Chapter 5 of this Title, administrative costs and other costs related to balancing. The additional settlement mechanism shall apply to balance responsible parties. This should be preferably achieved with the introduction of a shortage pricing function. If TSOs choose another mechanism, they should justify this in the proposal. Such a proposal shall be subject to approval by the relevant regulatory authority.
Member States with identified resource adequacy concerns shall develop and publish an implementation plan with a timeline for adopting measures to eliminate any identified regulatory distortions or market failures as a part of the State aid process. When addressing resource adequacy concerns, the Member States shall in particular take into account the principles set out in Article 3 and shall consider:

... (c) introducing a shortage pricing function for balancing energy as referred to in Article 44(3) of Regulation 2017/2195; ...
The Belgian ORDC Studies

• **First study (2015)** [1]: How would electricity prices change if we introduce ORDC in the Belgian market?
  • **Finding**: it could enable the majority of combined cycle gas turbines, which are currently operating at a loss, to *recover their investment costs*

• **Second study (2016)** [2]: How does scarcity pricing depend on
  • strategic reserve
  • value of lost load
  • restoration of nuclear capacity
  • day-ahead (instead of month-ahead) clearing of reserves

• **Third study (2017)** [3]: can we take a US-inspired design and plug it into the existing European market?
  • **Finding**: the energy adder in itself will not suffice, the first step is to put in place a *real-time market for reserve capacity*
ORDC Developments in Belgium

• **ELIA ex-post simulation (2018) [4]**: ELIA (Belgian TSO) releases report on the simulation of scarcity prices in the Belgian market for 2017
  - **Finding**: comfortable year, infrequent occurrence of adders

• **ELIA parallel run (2019)**: By October 2019, ELIA will be posting adders publicly

• **New question(s)**: could Belgium implement ORDC unilaterally? How do the adders interact with the MARI and PICASSO platforms?

ORDC adder on November 29, 2017
Source: ELIA [4]
Thank You

For more information

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References


