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Price spikes in wholesale power markets

The perspective from REMIT

Patrick Luickx

Team Leader - Market Surveillance and Conduct Department

Rafael Muruais Garcia

Team Leader - Electricity Department

3rd Energy Market integrity and Transparency Forum

Ljubljana, 5 September 2019

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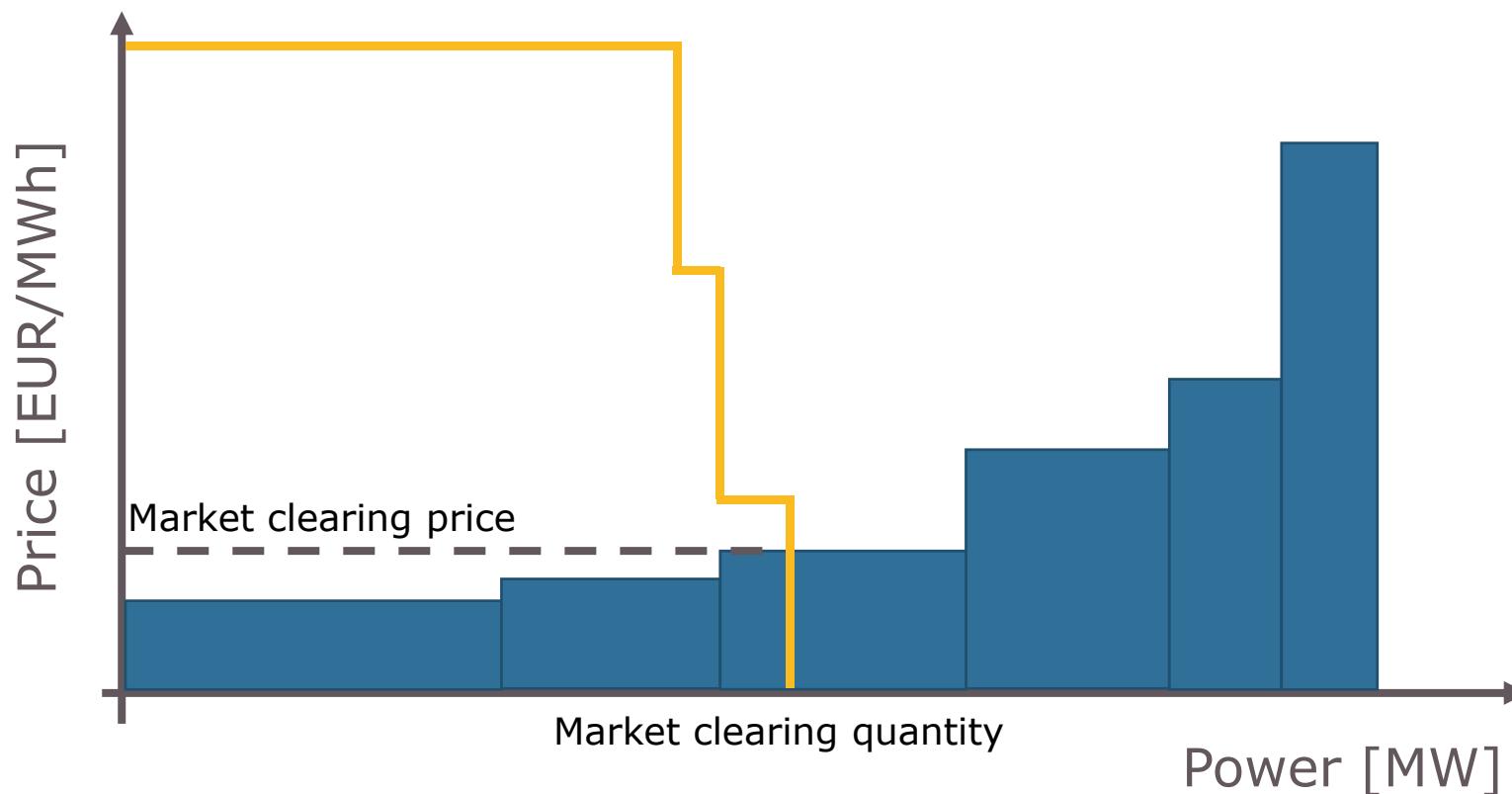
The role of price spikes : A market design perspective

- When do they occur?
- Why are they important?

Price formation in spot markets

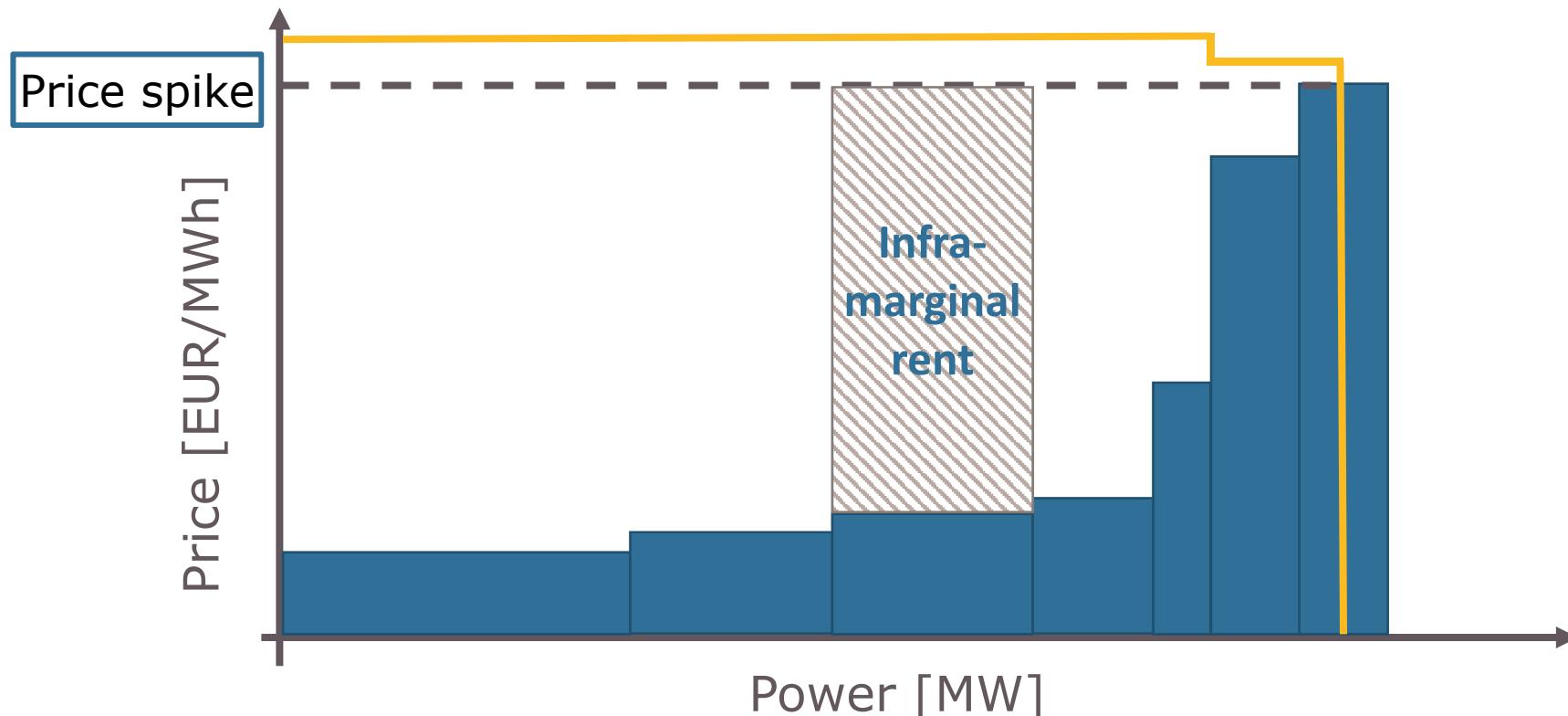
- Price formation in spot markets: *On 'perfectly competitive' short term (day ahead/spot) markets, and in absence of generation capacity constraints, economic theory suggests that prices would be set by the short run marginal cost ('SRMC') of the plant producing the last unit of electricity required to meet demand at that time of day.'**
- An integrated European electricity market helps reducing market concentration & electricity is exchanged from low to high price zones
 - » Increase overall economic welfare
 - » The efficiency (welfare) gains from market coupling are estimated at more than 1 billion EUR/year

Price formation under typical market conditions in European spot electricity markets



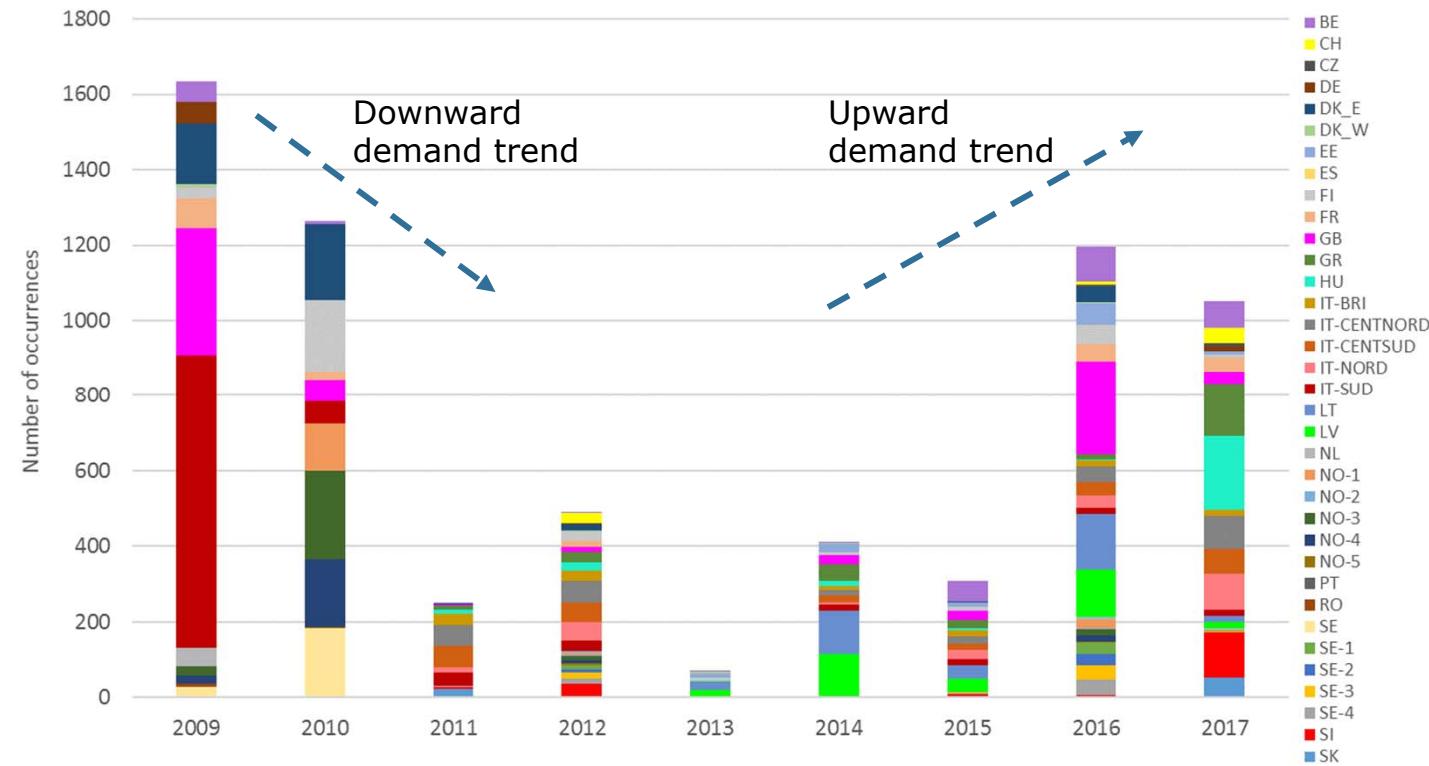
Price spike during a scarcity situation:

- Demand side: High consumption (e.g. cold spells, heat waves)
 - Supply side: Low RES injection and/or other generation outages
 - Network constraints: reduced cross-zonal capacity



Price spikes in Day Ahead

Frequency of price spikes in DA markets in Europe – 2009–2017



Price spikes are a “normal” feature of electricity markets, reflecting the tightness of demand and supply, e.g.:

- Less frequent in case of high reserve margins (e.g. when there is overcapacity)
- More frequent at times of higher demand (e.g. severe weather conditions)

Importance of price spikes

Why are price spikes (scarcity pricing) necessary?

- Generators with operating costs below the market price can obtain an 'infra-marginal rent', which can be used towards covering fixed costs
- Both demand and supply-side market participants see the full benefits of responding when the system needs them
- Attract investments in flexible resources, including DSR*

What are the critical conditions to ensure that prices reflect scarcity when it occurs?

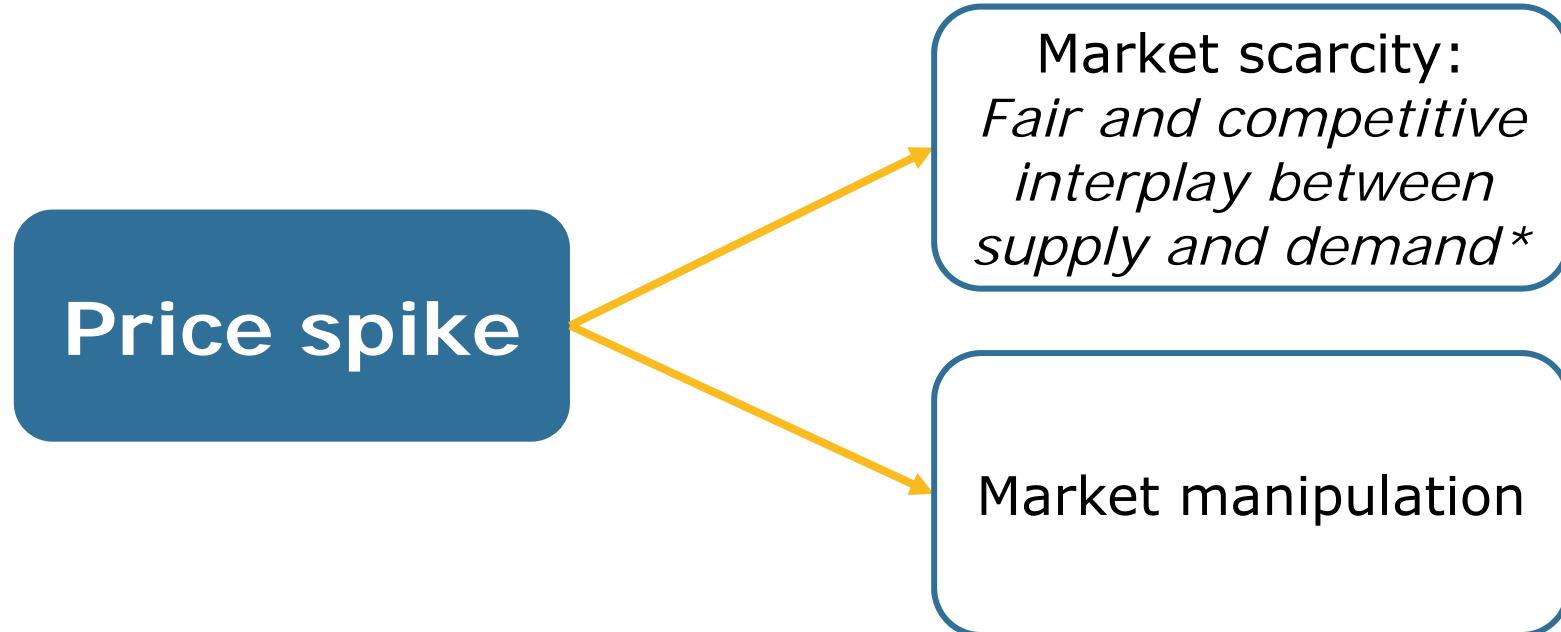
- Removal of administrative (and/or implicit) price caps
- Removal of any other market distortive measures
- Efficient scarcity pricing should reduce the need for potentially distortive capacity mechanisms, in order to ensure security of supply

Price spikes are necessary and (in the absence of market manipulation) reflect a normal price formation

Some noteworthy price spikes

- Day Ahead
 - » 2,999 EUR/MWh in Belgium (28 March 2011)
 - » 999 GBP/MWh in UK (15 September 2016)
- Balancing
 - » 3,774 EUR/MWh in Ireland (24 January 2019)
 - » 37,856 EUR/MWh in Germany (29 June 2019)

**Price spikes occur on spot markets,
specifically in auction markets**



REMIT applies to market manipulation

* Recital (1) of Regulation (EU) 1227/2011 on wholesale energy market integrity and transparency (REMIT).

- REMIT does not prohibit high prices
- REMIT's goal is to
 - » *foster open and fair competition in wholesale energy markets for the benefit of all consumers of energy**
 - » Take into account specific characteristics of wholesale energy markets
 - No perfect competition
 - Need to reflect market fundamentals
 - *Actual availability of production, storage, transmission capacity**
- Specificity of (Day Ahead) auction markets
 - » All market participants: same clearing price
 - » Reference market

- **Question:**

A supplier ensures the price is set at

- » 50 EUR/MWh
- » 700 EUR/MWh
- » 3,000 EUR/MWh

Is this a REMIT breach?

- **Answer:**

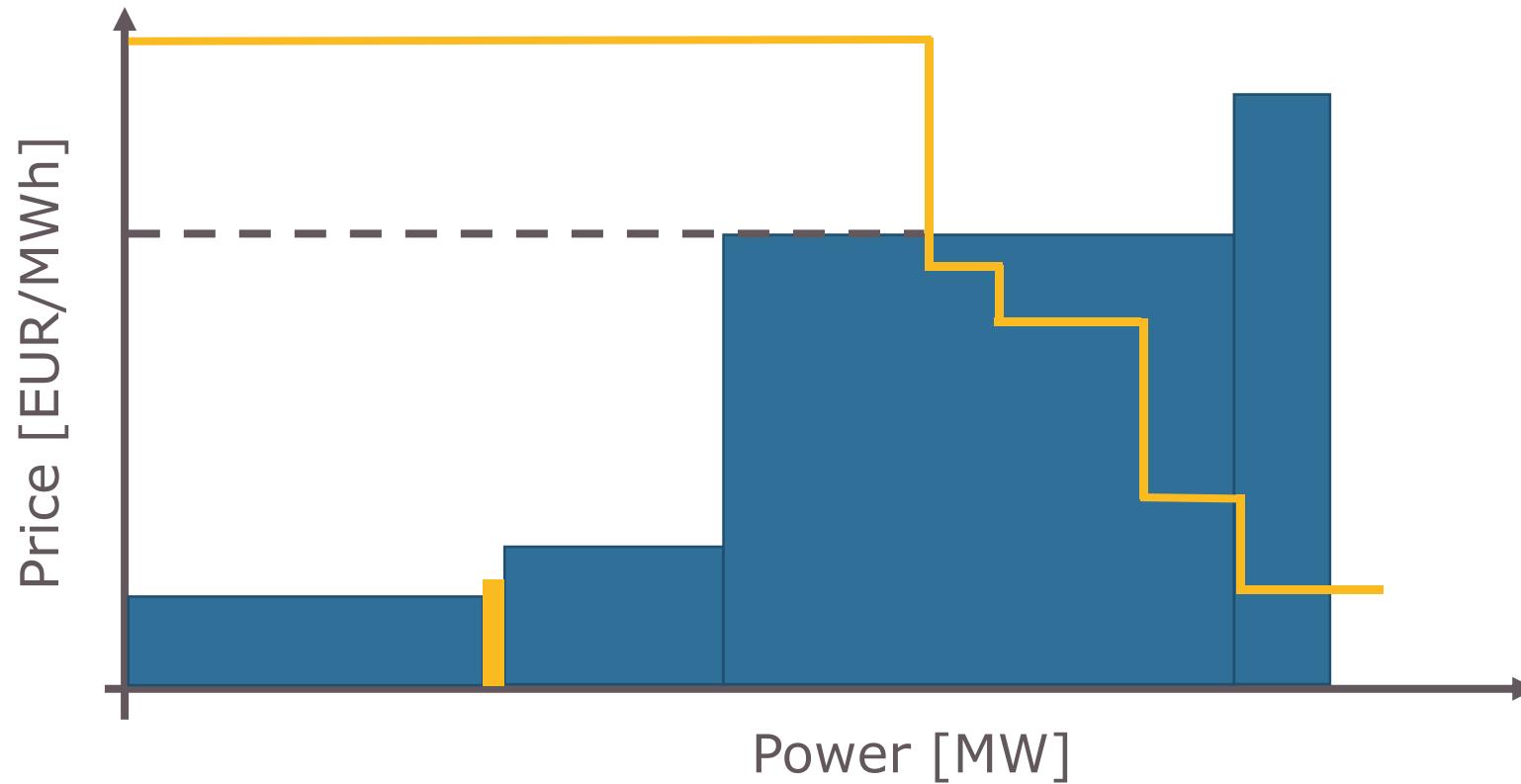
Case-by-case analysis is needed

- [In 2007] *Many market participants complain about price distortions linked to the degree of concentration in generation.*
[...]
According to market participants generators can influence prices in two main ways:
 - » either by **withdrawing capacity** (which may force recourse to more expensive sources of supply); or,
 - » by imposing high prices when they know that their production is indispensable to meet demand. *

- **Capacity withholding**

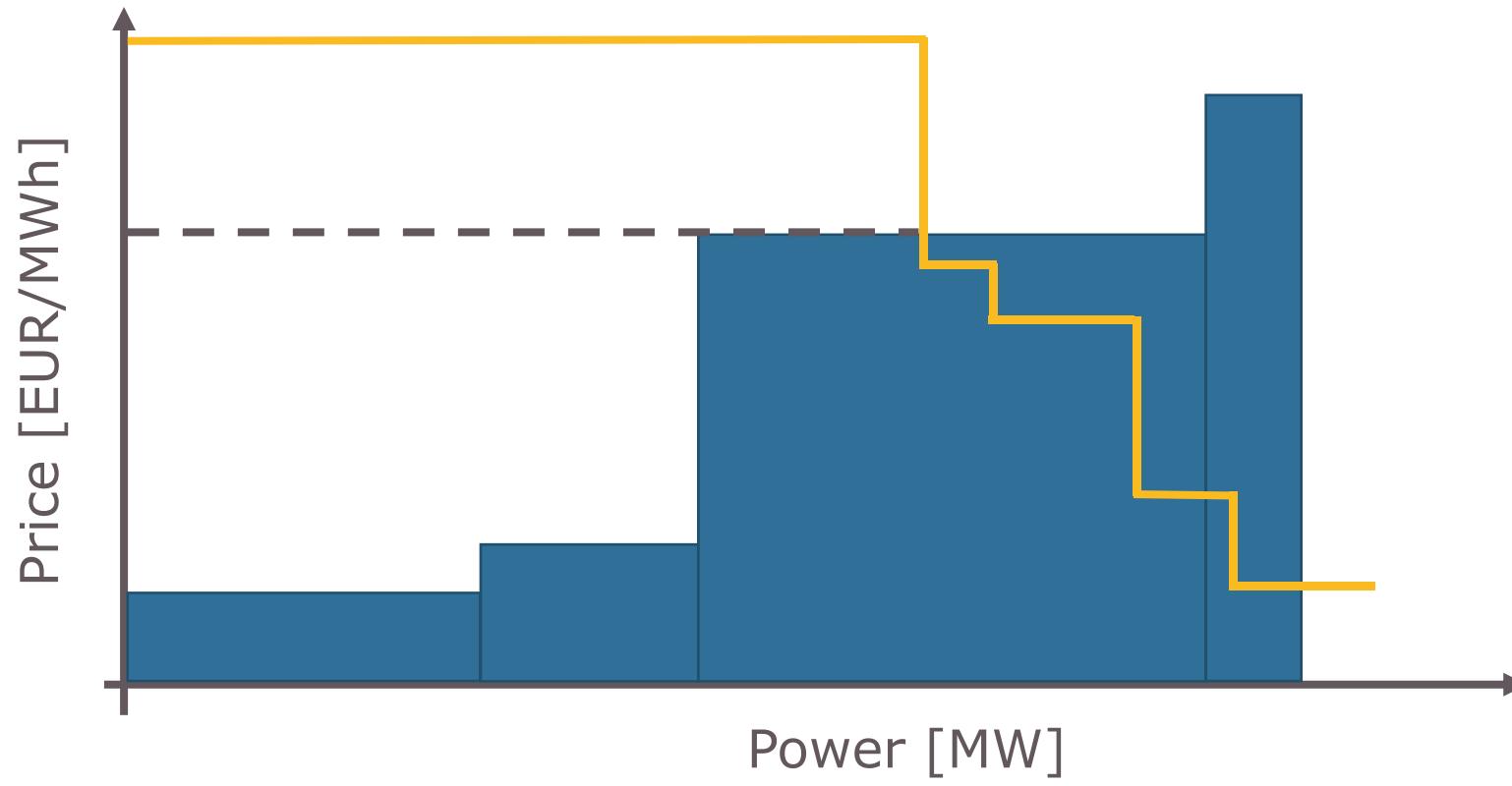
- » The practice of keeping available generation capacity from being competitively offered on the wholesale electricity market, even though offering it competitively would lead to profitable transactions at the prevailing market prices
 - Physical withholding - Economic withholding
- » Can (but does not need to) be manipulative
- » Benefit through
 - other generation units profiting from higher prices
 - artificially raised prices in another market
 - other connected financial positions

Example A: no influence on the market



Second block in the merit order not being offered

Example A: no influence on the market



Second block in the merit order not being offered

Example B: Fake outage

- A plant owner decides to physically withhold capacity by faking an outage of a 360 MW power plant. By doing so he intentionally pushes up the Day-Ahead Auction price, where he usually bids in this power plant.

- Suspicion: physical withholding being REMIT breach

Example C: Opportunity cost

- An owner of a Combined Cycle Gas Turbine power plant (50% efficiency) has sourced its gas for the power plant in a yearly contract at 15 EUR/MWh
She sells the gas on the gas Day Ahead market at 30 EUR/MWh;
The electricity Day Ahead market clears at 26 EUR/MWh;

- Selling the commodity on the gas market can be a good justification for not offering on the power market

Conclusion

- The integration of wholesale power markets has created benefits for EU consumers
- Wholesale power markets sometimes render price spikes: can be a signal of a well-functioning market
- REMIT does not prohibit prices to be high
 - » Case-by-case analysis needed
- Market oversight should ensure that manipulated prices are detected
- Wholesale power markets are prone to market manipulation by behaviours such as capacity withholding (physical & economic) due to its characteristics
 - » REMIT applies
 - » Justification needed for the behaviour (opportunity cost)

Thank you for your attention!



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Taxonomy of market manipulation

- Improper matched orders
- Layering
- Spoofing
- Other order-based behaviours
- Marking the close
- Abusive squeeze / market cornering
- Cross-market-manipulation
- Actions undertaken by persons that artificially cause prices to be at a level not justified by market forces of supply and demand, including actual availability of production, storage or transportation capacity, and demand
- Wash trades
- Transmission capacity hoarding:
- Dissemination of false or misleading market information through media, including the internet, or by any other means (in some jurisdictions this is known as "scalping"):
- Pump and dump
- Circular trading
- Pre-arranged trading
- Spreading false/misleading information through the media
- Other behaviour designed to spread false/misleading information