Market coupling – important issues

⇨ **This PowerPoint presentation presents important issues, which shift a lot of money between players and between countries.**

⇨ **The point is to illustrate, we need a governing for the market coupling providing a transparent decision process**

  ✓ **With representatives for nations, market players and TSOs making the decisions**

    • **As _it's their money, which is at stake_.**

⇨ **In the appendix, you'll find a list of the terms and acronyms used in this PowerPoint presentation.**

⇨ **Concerning documents referred to in this presentation:**

  ✓ **At _houmollerconsulting.dk_, you can download the documents from the sub-page _Facts and findings_.**

⇨ **This PowerPoint presentation is animated**

  ✓ **It's recommended to run the animation when viewing the presentation.**

⇨ **On most computers, you can start the animation by pressing _F5_.**

  ✓ **Now the presentation moves one step forward, when you press _Page Down_. It moves one step backward, when you press _Page Up_.**

Issue no. 1

Regulating spot exchanges
Controlling societies' and captive customers' costs

⇨ **Market coupling (and market splitting) grants the spot exchanges a monopoly**

  ✓ **Please refer to the PowerPoint presentation "Market coupling makes real competition betw. spot exchanges unfeasible".**

⇨ **However, we are in a legal limbo (ie, a legal vacuum)**

  ✓ **If the rule of law is to prevail, monopolies must be regulated**

    • **Unfortunately, in the EU, the legal foundation for a regulation corresponding to the spot monopoly has not yet been established**

      – **The following six slides presents cases of how this has inflicted heavy losses on societies and market players.**

Issue no. 1
Regulating spot exchanges
Redundant re-calculations

⇨ **The spot exchanges have exploited the lacking regulation by failing to reduce trading fees.**

⇨ **For the market coupling in CWE and the Baltic-Nordic area, the spot exchanges have insisted on having redundant re-calculations of the spot prices**

  ✓ **Although the EMCC calculations have consistently produced reliable spot prices**

  • **Also on days when the spot exchanges' re-calculations have failed spectacularly.**

  ✓ **Due to the re-calculations, the quality of the spot prices have been corrupted**

  • **In return for the reduced quality of the spot prices, the players have paid too high trading fees**

    – **Because they have financed redundant trading floors, computers and software systems.**

Issue no. 1

Regulating spot exchanges
Redundant re-calculations – example 1 of losses inflicted

⇨ **The CWE re-calculation of the spot prices crashed for the delivery day 28 March 2011**

  ✓ **The so-called shadow auction system was activated.**

  ✓ **However, this fall-back system failed to fix the problem**

    • **Leaving the buyers paying up to 2999 EUR/MWh, although the market situation did not justify such prices.**

⇨ **If the EMCC prices had been used in the spot settlement, the market players would have had settlement at reliable prices.**

Issue no. 1
Regulating spot exchanges
Redundant re-calculations – example 2 of losses inflicted

⇨ **September 29th, 2008, the EMCC market coupling was first launched as a coupling between Germany and Denmark**

⇨ **After only 10 days, the volume coupling had to be stopped due to repeated, severe mismatch between the published spot prices and the market coupling flows.**

⇨ **However, the EMCC's market coupling software performed as planned!**

⇨ **The problem: Nord Pool Spot's re-calculations went awry again and again**

   ✓ **Failing to reproduce the centrally calculated EMCC prices.**

⇨ **Unfortunately, Nord Pool Spot insisted on having a redundant re-calculation of the Baltic-Nordic spot prices.**

Regulating spot exchanges
Redundant re-calculations – example 2 of losses inflicted

⇨ **It took more than a year, before the so-called "Iceberg" amendment was installed in the Nord Pool Spot re-calculation software**

  ✓ **Therefore, the German-Danish market coupling was not re-launched before November 2009.**

⇨ **Hence, on their links, Germany and Denmark had explicit auctions for more than a year <u>extra</u>**

  ✓ **However, this inflicts losses on societies and market players, because explicit auctions often fail to use the cross-border capacity correctly.**

  ✓ **For the link between Germany and Western Denmark, the socio-economic loss – because explicit auctions often used the capacity wrongly – was about EUR 24 mill./year.**

Issue no. 1

Regulating spot exchanges

Redundant re-calculations – example 2 of losses inflicted

⇨ **Therefore, on their western link, an extra year with explicit auctions has cost Germany and Denmark about EUR 24 mill.**

  ✓ **On top of this you have the losses on the eastern link between Germany and Denmark.**

⇨ **This is a heavy price for a redundant re-calculation...**

⇨ **In addition, also after the re-launch of the market coupling, the Nord Pool Spot re-calculation has repeatedly failed to re-produce the EMCC prices**

  ✓ **Thereby inflicting losses on societies and market players.**

  ✓ **For example, the Nord Pool Spot re-calculation failed spectacularly for the days 1 December 2009, 12 October 2011 and 13 August 2012.**

Issue no. 1

Regulating spot exchanges
Redundant calculations – example 3 of losses inflicted

⇨ **The spot exchanges have proposed PCR as the model for the future, European price coupling.**

⇨ **Magically, according to this proposal, the markets and the captive customers would be best served by having a number of computers, software installations & trading floors corresponding to the number of spot exchanges**

  ✓ **Hence, the captive customers are supposed to pay for a lot of extra staff, computers and software installations.**

⇨ **As for security: no sane IT manager would ever propose a set-up as complex and risky as the PCR model**

  ✓ **For example, some of the inherent risks in such a configuration were illustrated, when the calculation of the spot prices for 11 November 2009 went astray, because EPEX Spot started their local re-calculation without waiting the agreed time for the EMCC market coupling calculation**

    • **Thereby leaving the market with unreliable spot prices.**

price-setting in neighbouring price zones
The consequence of block bids

⇨ **With the current specifications for the spot software, the software will insist two neighbouring price zones must have the same price during a given hour, if their interconnector is uncongested during this hour**

   ✓ **However, this is nonsense. Because of the block bids, the economic optimal solution will normally have lots of hours, where neighbouring price zones have different prices even though their interconnector is uncongested**

      • **Please refer to the PowerPoint presentation "Market Coupling – technical issues".**

      • **Therefore, the requirement *equal-prices-if-link-is-uncongested* is flat-earth thinking**

         – **Intuition suggests there should be equal prices if the link is uncongested**

            • **Also, intuition suggests the earth is flat...**

Issue no. 2

price-setting in neighbouring price zones
The consequence of block bids

⇨ **It's never been investigated systematically, but perhaps this flat-earth thinking could reduce the value of the spot trading with 20%!**

⇨ **For the flow-base market coupling, a proposal for *Intuitive-Flow-Based* has been put forward**

   ✓ **In a way similar to the block bid issue, this proposal would suggest losing welfare in favour of surrendering to flat-earth thinking...**

Issue no. 3

price-setting in neighbouring countries
Politics and the electricity market

⇨ **We now assume, the effect of the block bids is taken properly into account**

    ✓ **With reference to the definitions in the appendix: the welfare criterion is <u>not</u> ignored in favour of an application of *equal-prices-if-link-is-uncongested*.**

⇨ **However, even for hours, where the block bids do not create different prices, it's not self-evident there should be equal prices for two neighbouring countries, just because their interconnector is uncongested.**
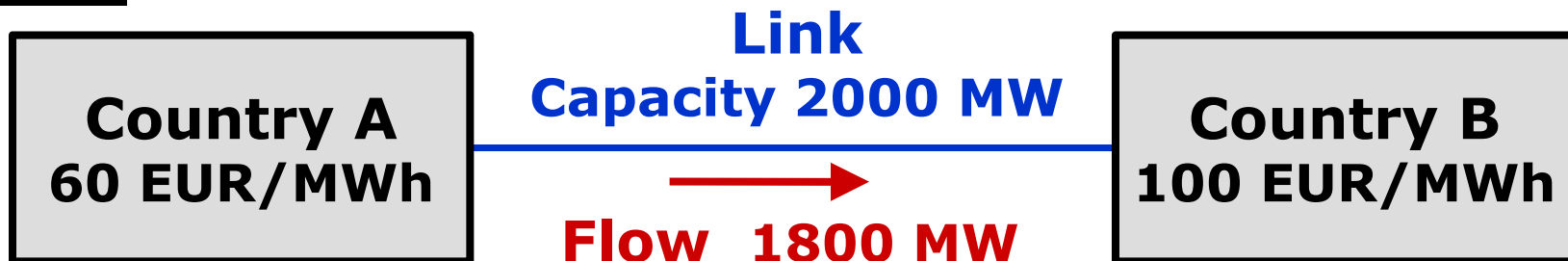
Issue no. 3
price-setting in neighbouring countries
Politics and the electricity market

⇨ **Assume country A is exporting to country B**

    ✓ **Assume the production capacity surplus in country A is not big enough to congest their link.**

⇨ **For country A and country B, assume the marginal production costs of the most expensive running production units is 60 EUR/MWh and 100 EUR/MWh, respectively.**

Link
Capacity 2000 MW

Country A		Country B
60 EUR/MWh		**100 EUR/MWh**

Flow 1800 MW

Issue no. 3

price-setting in neighbouring countries
Politics and the electricity market

⇨ **Country A – in order to create maximum export:**

  ✓ **If the most expensive production unit available has production costs of 60 EUR/MWh, you need only set A's zonal price to 60 EUR/MWh.**

⇨ **However, the spot software may choose any price in the interval between 60 EUR/MWh and 100 EUR/MWh**

  ✓ **As any choice in this interval will create maximum export from A.**

⇨ **Therefore, we are left with the question:**

  ✓ **For the exporting country A – which price should you <u>choose?</u>**

Country A 60 EUR/MWh	**Link** **Capacity 2000 MW** → **Flow 1800 MW**	Country B 100 EUR/MWh

Issue no. 3

price-setting in neighbouring countries
Politics and the electricity market

⇨ **For the exporting country A – which price should you <u>choose</u>?**

⇨ **Argument for choosing the common price 100 EUR/MWh:**

  ✓ *"This is how market economy works. For example, for other commodities such as apples or pens, if the price is very high in a country, this high price will establish itself in the neighbouring countries, if the transport links are uncongested".*

⇨ **In line with this: in the calculation of the spot prices, an unconstrained application of the welfare criterion will give the price 100 EUR/MWh in country A.**

Issue no. 3
price-setting in neighbouring countries
Politics and the electricity market

⇨ **For the exporting zone A – which price should you <u>choose</u>?**

⇨ **Argument for choosing the price 60 EUR/MWh (the lowest possible price):**

   ✓ *"The electricity market does not work as the market for pens or apples*

      • *Among other things, this is caused by the fact that we have strictly national CO_2 quotas and national schemes for subsidizing producers of 'green' electricity."*

Issue no. 3

price-setting in neighbouring countries
Politics and the electricity market

⇨ **For the exporting zone A – which price should you <u>choose</u>?**

⇨ **Argument for choosing the price 60 EUR/MWh (the lowest possible price):**

   ✓ *"The electricity market does not work as the market for pens or apples. You can not freely establish new production facilities. On the contrary, plans for building new production facilities always trigger a contentious and highly political process*

   - *Causing some countries 'not to do their homework'*

     – *ie, winding up with too few reasonably priced production facilities.*

   - *By choosing price 100 EUR/MWh in the exporting country, the high prices from countries 'not doing their homework' is artificially imposed on end users in neighbouring countries*

     – *And the end users in neighbouring countries have no influence on the political processes blocking the building of new facilities in the high-price country".*

Issue no. 3

price-setting in neighbouring countries
Politics and the electricity market

⇨ **The problem:**

✓ **This <u>choice</u> for the spot prices has never been discussed openly and transparently among market players, TSOs and regulators!**

- **Which is very bad, as a lot of money is involved...**

Appendix
Terms and acronyms

Anders Plejdrup Houmøller

Terminology and acronyms – 1
As used in this presentation

⇨ *Border* means a border between two price zones

  ✓ Hence, it need not be a border between two countries. It may be a border between two price zones inside a country.

⇨ *CWE* Central Western Europe: Belgium, France, Germany, Luxembourg and the Netherlands.

⇨ *Double auction* A calculation method whereby an exchange's price is set by calculating the intersection between the exchange's supply curve and the exchange's demand curve.

⇨ *EMCC* European Market Coupling Company.

⇨ *Market coupling* A day-ahead congestion management system, you can have on a border, where two spot exchanges meet. The day-ahead plans for the cross-border energy flows are calculated using the two exchanges' bids and information on the day-ahead cross-border trading capacity.

Terminology and acronyms – 2
As used in this presentation

⇨ *Market splitting* A day-ahead congestion management system, you can have on a border, where you have the same spot exchange on both sides of the border. The day-ahead plans for the cross-border energy flows are calculated using the exchange's bids and information on the day-ahead cross-border trading capacity.

⇨ *Nordic* and *Nordic area* refer to the countries Denmark, Finland, Norway and Sweden.

⇨ *PCR* Price Coupling Regions. A market coupling system proposed by some European spot exchanges. Unfortunately, PCR would mean market coupling with a lot of redundant staff, computers and software installations – financed by captive costumers.

⇨ *Price zone* A geographical area, within which the players can trade electrical energy day-ahead without considering grid bottlenecks.

Terminology and acronyms – 3

As used in this presentation

⇨ *Spot software* The software which calculates the spot prices and the day-ahead plans for the cross-border energy flows.

⇨ *Spot exchange* In this document, a spot exchange is an exchange where

- ✓ Electrical energy is traded day-ahead.
- ✓ The day-ahead prices are calculated by means of double auction.
- ✓ Note: this document strongly recommends the price calculation is outsourced to a Price Calculation Service Centre (PCSC). The PCSC will calculate the spot prices and the day-ahead plans for the cross-border energy flows for the coupled region.

⇨ *Spot price* A price calculated by a spot exchange. Either by a calculation performed by the spot exchange itself, or by a calculation performed by a body, to which the calculation has been outsourced.

Terminology and acronyms – 4
As used in this presentation

⇨ ***Volume coupling*** **A market coupling scheme, where a central body first calculates the spot prices and the day-ahead plans for the cross-border energy flows for the whole coupled region. However, the centrally calculated spot prices are not used. Instead, there are local re-calculations of the spot prices.**

- ✓ **If you have volume coupling, the prices and the energy flows may mismatch (energy flows apparently going from high-price zones towards low-price zones).**

- ✓ **This can happen because the spot prices for each price zone are calculated twice. First, the central body calculates all spot prices for the whole coupled area. Next, for some interconnectors in the coupled area, the market coupler sends price-taking purchase bids to the price zone on the interconnector's low-price side; and corresponding price-taking sales offers to the interconnector's high-price side. After having received the market coupler's bids, the local spot exchanges re-calculate the local spot prices. However, the redundant, local re-calculations are economic sub-optimizations for sub-areas of the coupled area. Therefore, the local re-calculations may fail to reproduce the prices calculated in the global optimization performed by the central body. In turn, the wrong re-calculations may cause a mismatch between the prices and the energy flows. However, the glaring mismatch is not the most serious effect of the redundant re-calculations. By far, the most serious effect is the fact that <u>the market is supplied with unreliable spot prices</u>.**

Terminology and acronyms – 5
As used in this presentation

⇨ **TSO** **Transmission System Operator.**

⇨ **Welfare criterion** **A criterion used in the calculation of the spot prices and the day-ahead plans for the cross-border energy flows.**

The welfare criterion states the preferred solution must be the solution maximizing the economic gain created by the spot trading.

Thank you for your attention!

Anders Plejdrup Houmøller
Houmoller Consulting
Tel. +45 28 11 23 00
anders@houmollerconsulting.dk
Web houmollerconsulting.dk