Using implicit auctions by power exchanges to manage cross-border congestions:

Decentralized Market Coupling

B. den Ouden, President of Europex
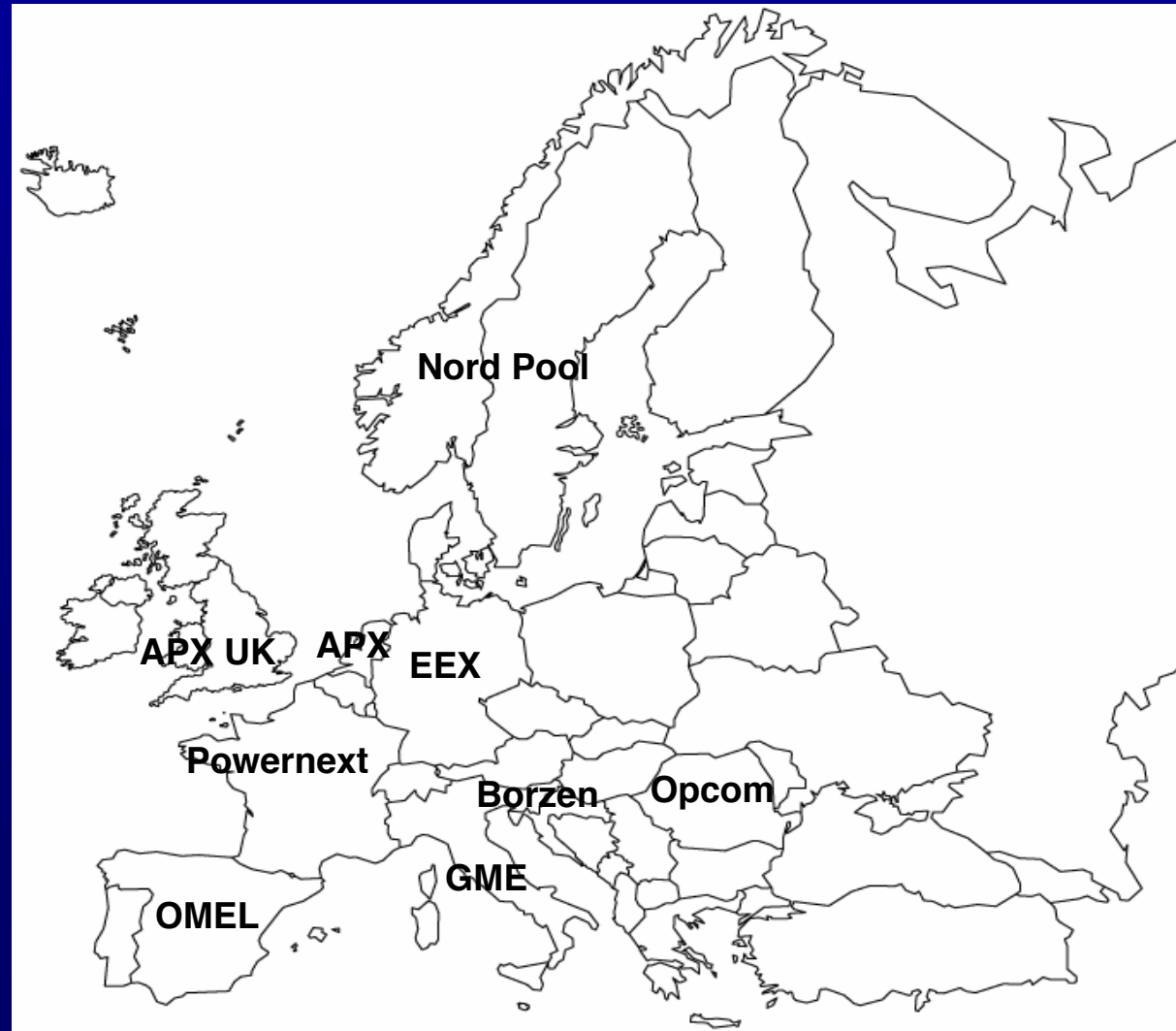Florence Forum 2003

CONTENT

- Europex members

- Implicit auctions

- The benefit for trading

- The benefit for Europe

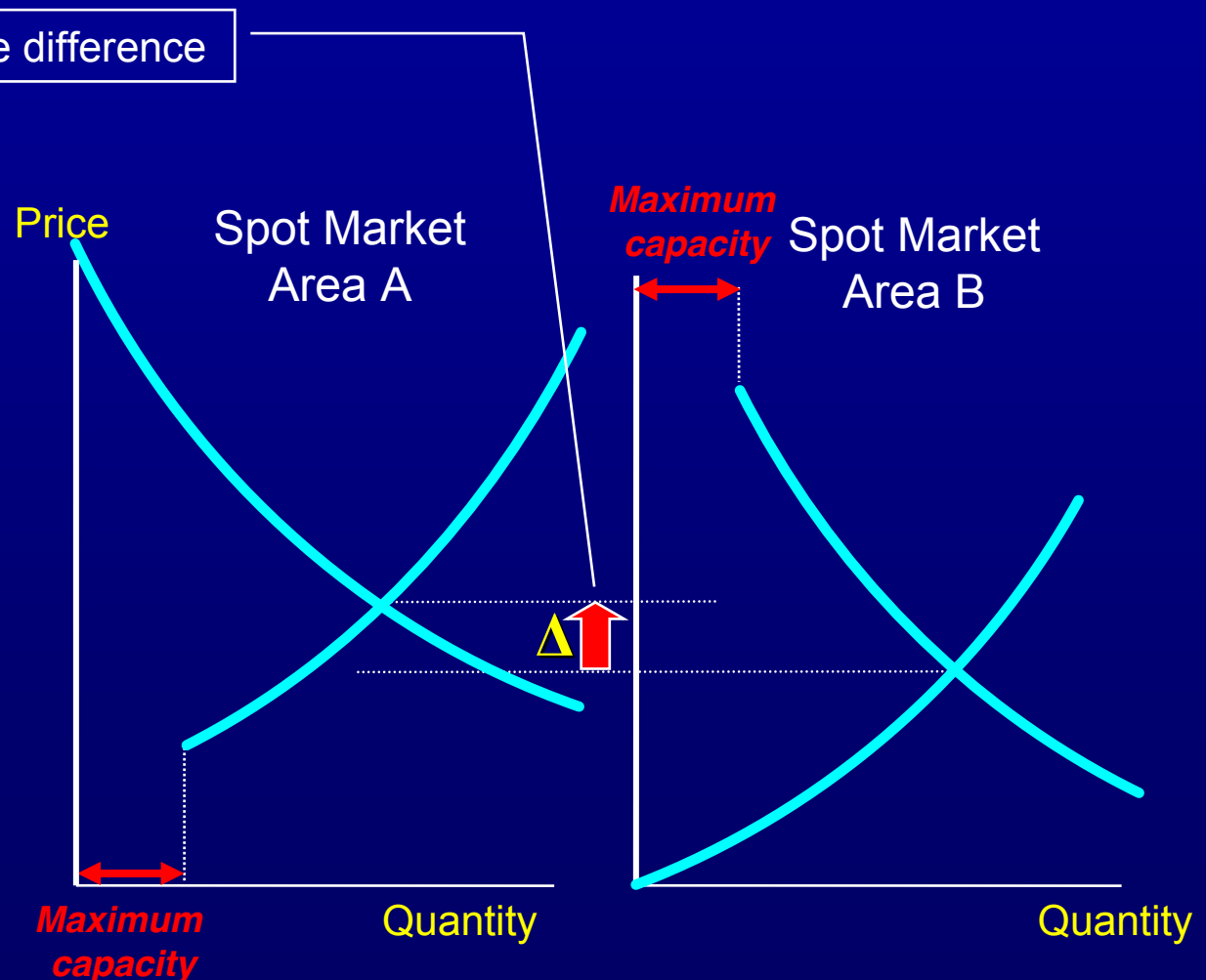- The decentralized market coupling model

- Step by step approach

EuroPEX

Implicit auctioning (market coupling)
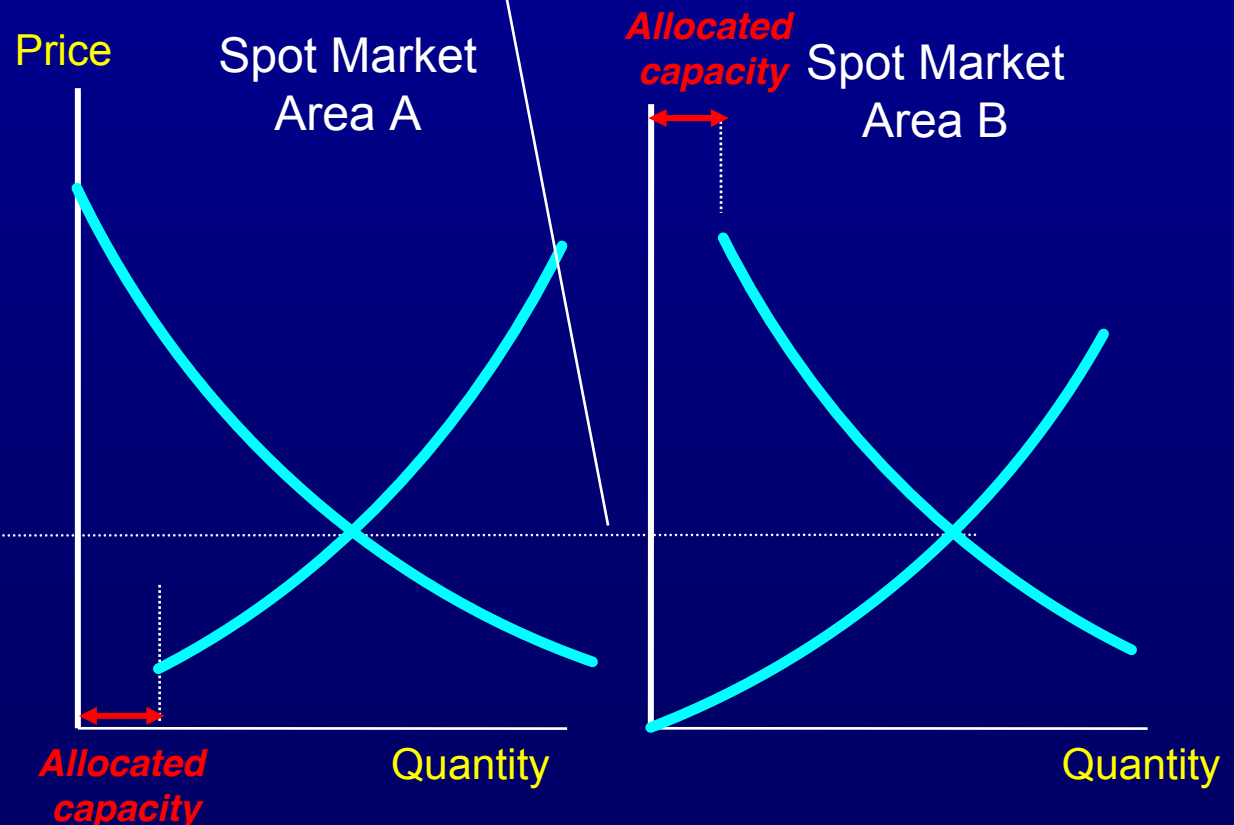## Full transparency in constraint management

EuroPEX

Area price difference

- One-step process

- No difference between auction price and area price difference

- Stimulates liquidity in each area

Price

Spot Market Area A

Maximum capacity

Spot Market Area B

Δ

Quantity

Quantity

Maximum capacity

Implicit auctioning (market coupling):
Full area integration when no constraint

One price for both areas

- Areas merge at that moment

- Trade barriers completely gone

- Liquidity shared

Price

Spot Market
Area A

Allocated capacity

Spot Market
Area B

Quantity

Allocated capacity

Quantity

The benefit for trading

- One-step process, ease of access

- Priority on interconnectors based on price

- Interconnector schedules based on area price difference

- Hedging instruments

- All local players also play internationally

- Encourages liquidity

- Encourages transparency

The benefit for Europe

- European market fragmented by constraints

- Market coupling *directly* unifies markets whenever there is no constraint

- So, for x % or the time, markets *will* be unified.

- Then, by other methods (e.g. additional transmission capacity) this x% percentage can be raised gradually.

- Contributes to the establishment of the internal European electricity market

The decentralized model : objectives

Economic efficiency	- price-based priority - no possible trades left on the table - reflect actual generation and load realities (e.g., block bids)
Promoting of effective competition	- low entry barriers - level playing field (e.g., bilaterals)
Transparency	- information: sufficient and reliable - rule based: stable and auditable
Maximising available capacity and capacity use	- efficient allowance for loop flows - netting of counterflows - reselling of forward rights
Use of congestion revenues	- for others to determine

Decentralized model: overview

- Each exchange to receive its area-based bids

- Exchanges exchanging bid – based information

- Adapting exchange price in each area:
  - Unconstrained: prices equal
  - Constrained: prices are set with maximum im/export

- Iteration process for blocks

- Local scheduling and balancing

Decentralised Market Coupling (DMC) – 1 -

EuroPEX

- TSOs to publish available capacity and power transfer distribution factors (PTDFs)

- Power exchanges (PXs) gather bids & offers in their area

- Then calculate 'net export curve' showing impact of export (and import) volumes on hourly area price

- PXs calculate optimal use of network across DMC region

- Includes bilateral bids who pay (or counter-flows receive) price difference between areas

Decentralised Market Coupling (DMC) – 2 -

EuroPEX

- PXs repeat process to accommodate block bids (several iterations, or a sequential process in some regions)

- PXs notify and settle all area commitments (including cross-border bilaterals)

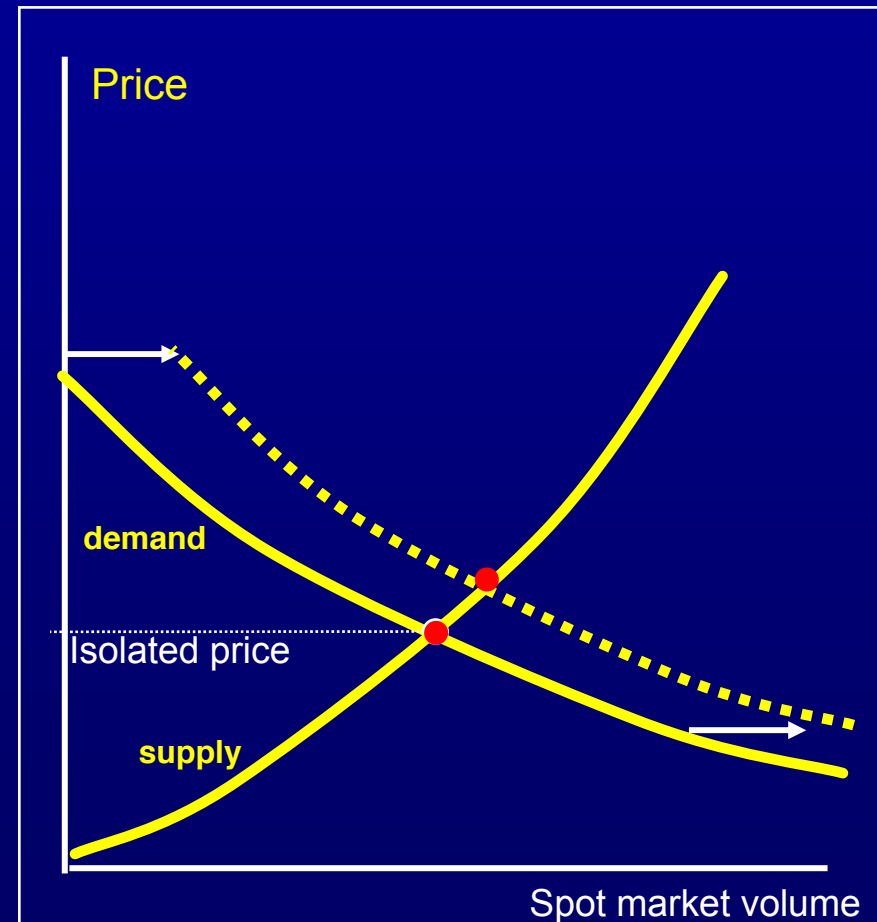- Deviations handled by local area imbalance arrangements

More details: see Europex paper as submitted

Influence of im/exports on area prices
(more details: see Europex paper)

area A

Price

demand

Isolated price

supply

Spot market volume

area B

Price

demand

Isolated price

supply

Spot market volume

Features of Decentralized Market Coupling

- Enables coupling of multiple areas together with efficient allowance for loop flows on meshed networks

- Supports block bids and other local market requirements

- Supports bilateral contracts and netting of counterflows

- Requires only limited harmonization of market rules, and no change to local notification/imbalance arrangements

- Provides open and fair market access with no additional barriers beyond existing local PX requirements

- Transparent, rule based, auditable methodology

Key Points (1)

- ■ All physical capacity and PTDFs to be made available in the day-ahead implicit auction

- ■ Physical capacity must be firm and published prior to PX bid submission to ensure orderly and efficient market
  - – TSOs to make allowance for unplanned events/outages
  - – Regulatory issue: maximize capacity (DMC can contribute to reducing TSOs' exposure to loop flow uncertainty)

- ■ Optimize the use of the physical network and maximize liquidity (+reliable reference prices)
  - – hedge forward price risk with financial products
  - – phase out explicit auctions of physical transmission rights
  - – handle adjustments in intra-day markets

Key Points (2)

- Owners of long-term capacity rights can, in effect, sell them by offering to schedule a counterflow. Historical long-term contracts could be converted into financial transmission rights

- Rules and procedures will need defining for each 'cluster' of markets, plus some harmonization of market rules will be necessary - possibly could be overseen by a regional group comprising regulators, TSOs, PXs and participants

- PXs will need to meet certain requirements - e.g., membership requirements, information publishing, audit, disputes procedures

Step by step approach

Implicit auctioning between exchanges: step by step process

- 1. Bilateral <u>pilots</u> at several places in Europe

- 2. Regional developments

- 3. European integration
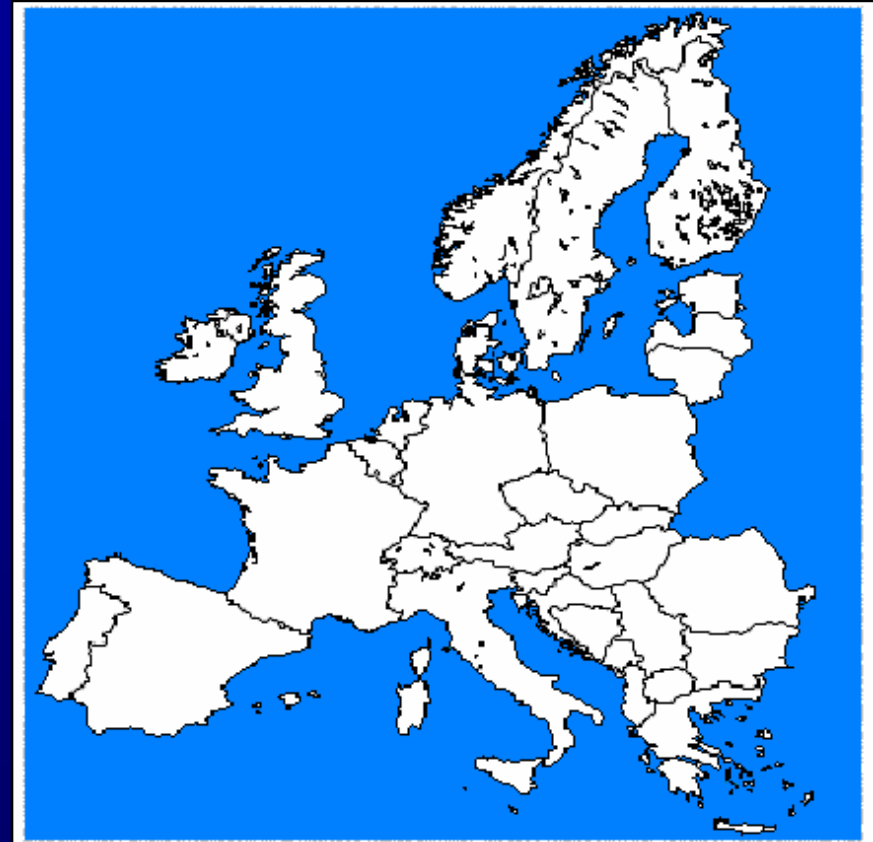
➡ Manageable learning curve

Summary

- Directly a partial (x %) integration of markets

- Local Players co-acting on European scale

- Better liquidity and transparency

- Step-by-step process

- Incremental learning curve

- Practical solution