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Are current power markets proof checked for the 2020 challenges?

David Newbery

Eurelectric: Which Market Design for the Future?

Brussels 19th January 2012

http://www.eprg.group.cam.ac.uk

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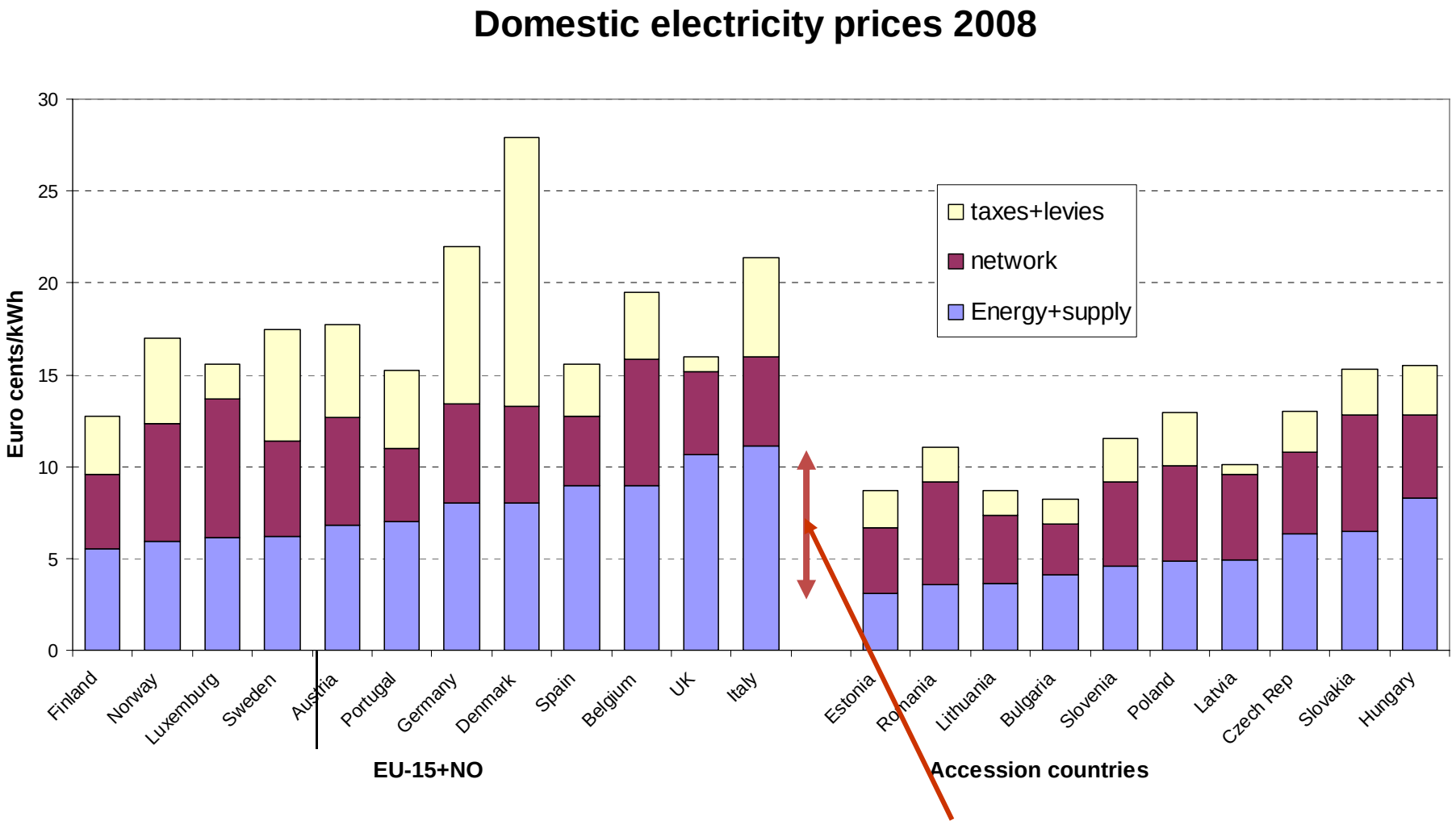
Outline

- Target Model on track and widely supported
  - but will need to evolve and design must be robust to future challenges
- Market needs to be integrated and competitive
  - long-term FTRs needed - requires regulator support
  - More interconnection needed
- Market needs to be robust to nodal pricing
  - And capacity markets`

No single energy price in the IEM



Source: ERGEG (2009) Status Review

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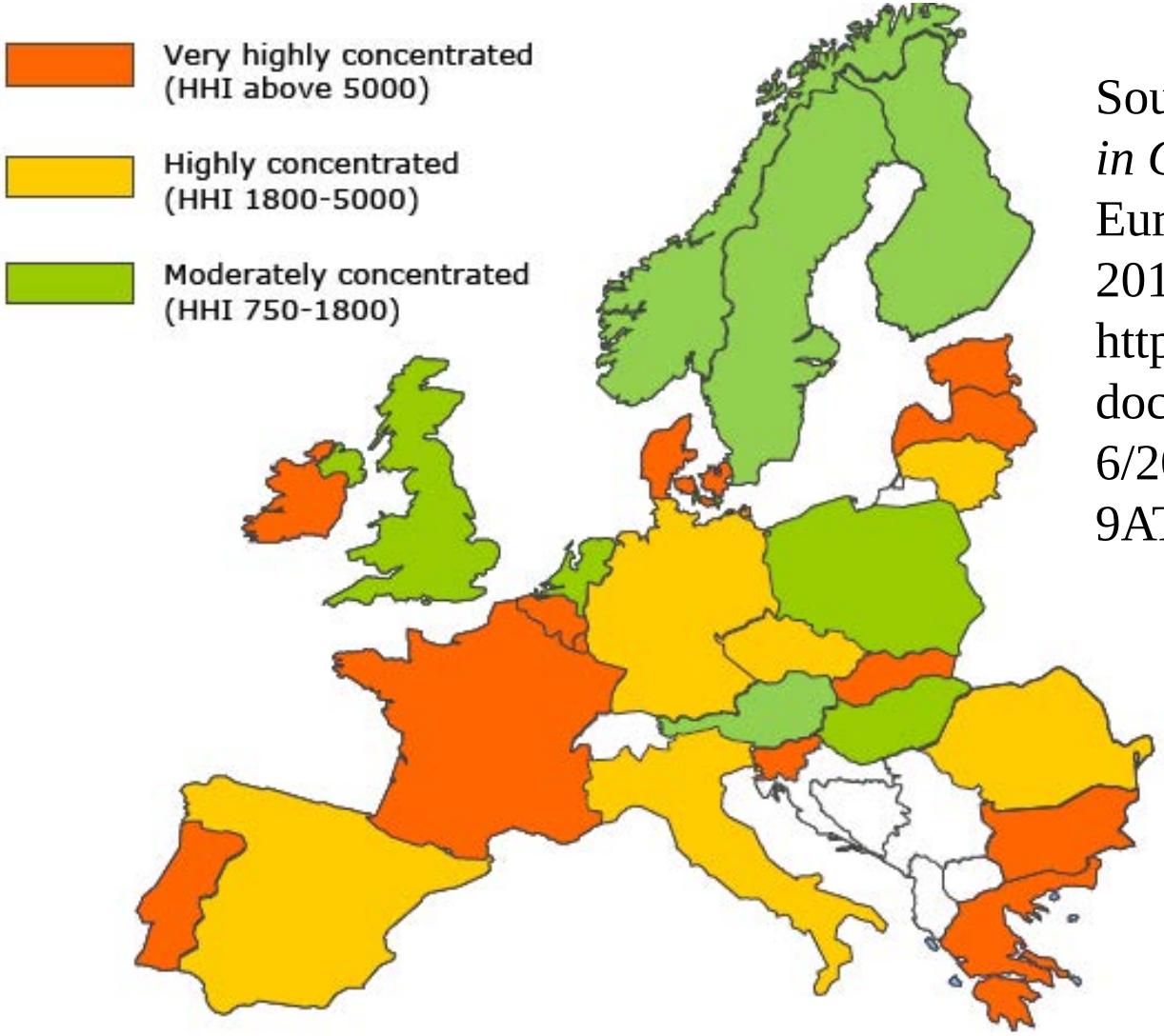
Integrating EU electricity markets

- Most markets are concentrated
  - Encouraging mergers really bad idea
- Imports can increase competition
- But interconnections limit trade
  - were inefficiently used
  - expansion resisted by incumbents
- Market coupling improves efficiency
- FTR obligations makes markets contestable

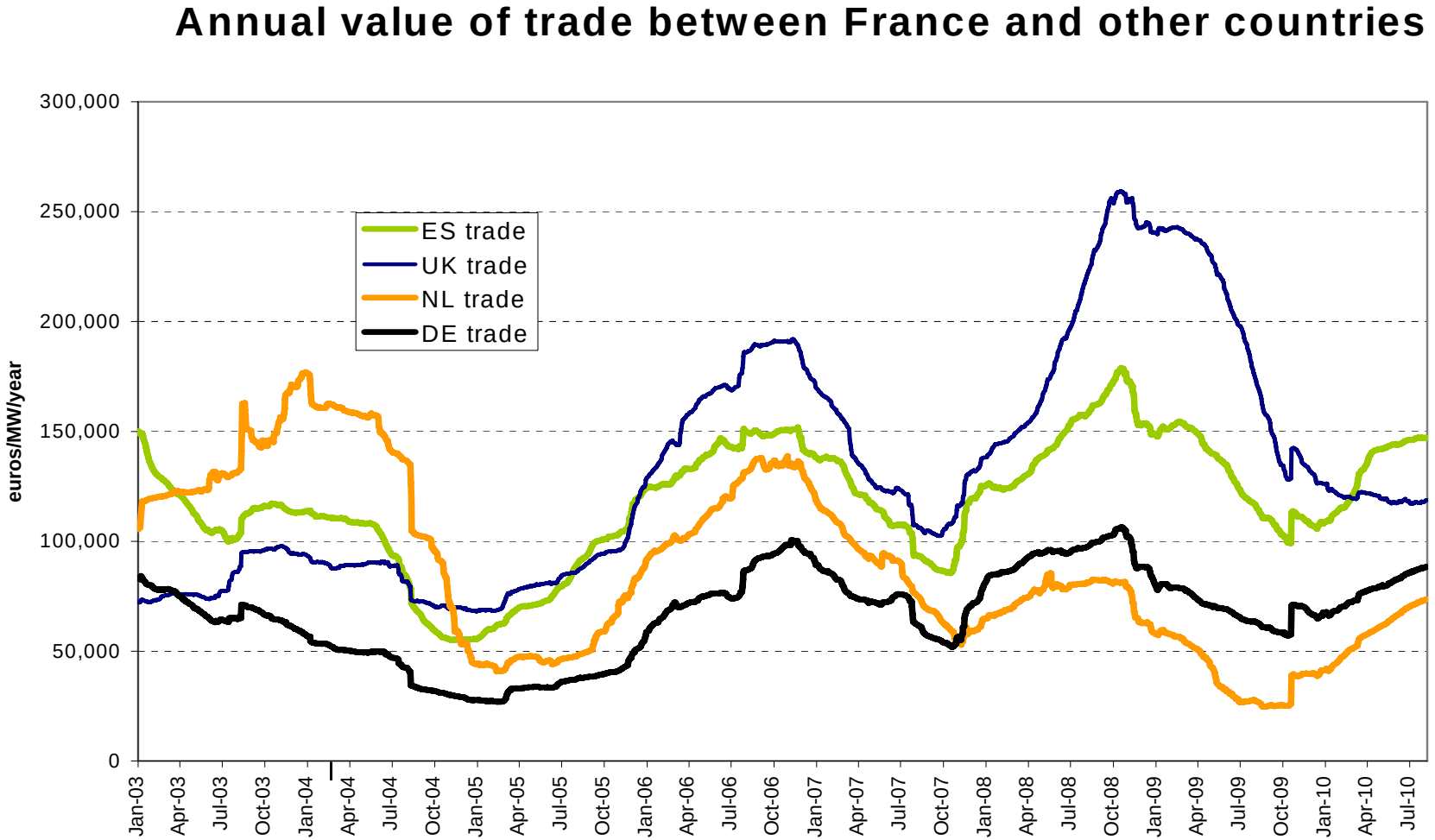
Together clarify where T investment needed

Many markets still concentrated: 10 countries showed an increase in 2008



Source: *EU Energy Markets in Gas and Electricity*, European Parliament 2010 at http://www.europarl.europa.eu/document/activities/cont/201106/20110629ATT22899/20110629ATT22899EN.pdf

Absolute hourly difference relative to France 2005-10



Source: EEX, Powernext, OMEL, APX

Market coupling – May 2011

REGIONAL IMPLICIT AUCTIONS		
	CWE	Price coupling
	Austria	1 AT PX price coupled to GE (no congestion)
	GB	1 GB PX price coupled to NL via BritNed only
	Nordic + Estonia	Price coupling, also Poland via Swepol
	ITVC	Volume coupling CWE - Nordic
	Italy - Slovenia	Price coupling
	Mibel	Price coupling
	Czech - Slovak	Price coupling

Source: ENTSO-EW & Europex, May 2011

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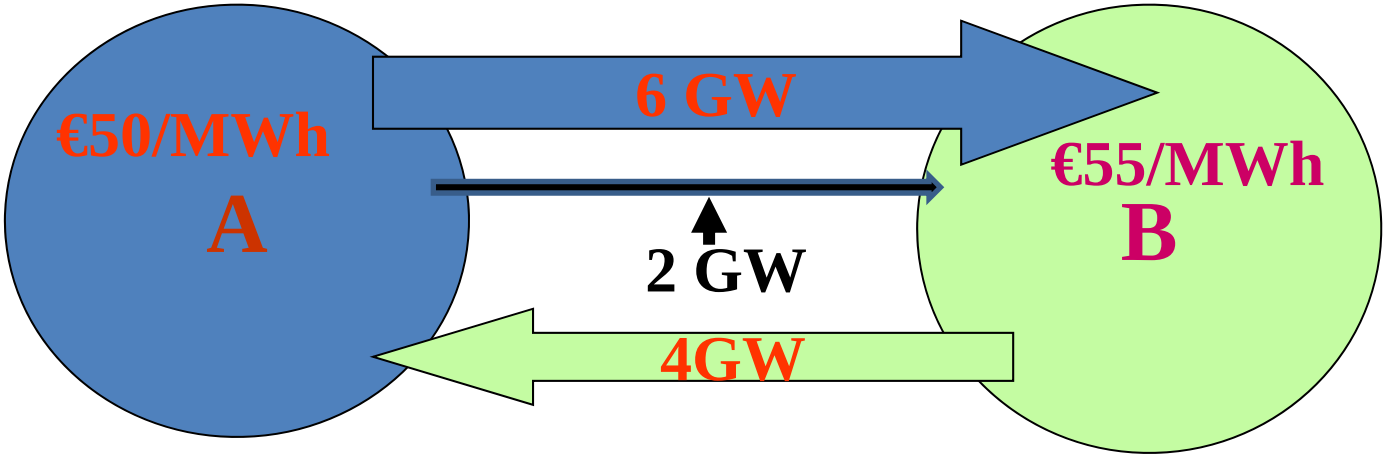
Current Transmission Rights

- Physical Transmission Rights (PTRs) are one-sided options
  - Use it (nominate) or sell it (UIOSI) day-ahead
  - Sale transforms PTR into Financial TR (FTR)
  - Effectively becomes an FTR day-ahead
- TSOs and incumbents like PTRs - “reflects physical reality”
  - one-sided options restrict trade as cannot be netted
  - **protect incumbents, impedes competition**

Firm FTRs allow netting

- 2 GW interconnector between countries A & B
- FTRs obligations trade at **€5**



Netting can dramatically increase imported competition

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Problems with TEM

- TEM has zonal not nodal prices
- FTRs are from zone-to-zone
- But flows depend on source and sink nodes
  - nodal injections depend on merit order, fuel prices

=> ATC depends on nodal flow pattern

=> market condition dependent

=> reduces ATC for forward contracting

- node-to-node FTRs depend only on topology
  - will flow-based calculations address this issue?

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Nodal pricing

- Nodal prices needed with weak transmission
  - as in US; PJM demonstrates value
  - so what is the case in EU now?
- Strong grids allow zonal pricing
  - more liquidity, provided redispatch costs low
    - Is EU strong? In future? Large T investment needed?
- Massive wind may stress transmission
  - Poland thinking of nodal pricing
- nodal prices give better location guidance w-carbon generation

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Capacity payments

- Some countries feel need for capacity payments
  - wind increases price volatility year to year
  - => lowers load factor of fossil generation
  - support for low-C generation depresses prices
  - => increases risk of investing in reserves

=> Trade between energy-only and capacity markets needs careful design

  - e.g. Ireland and GB, France and Spain

Other distortions

- RES support can lead to negative prices
  - Not helpful for market functioning
  - Cost falls unnecessarily on industrial consumers

$\Rightarrow$ finance RES from budget, raise energy VAT

$\Rightarrow$ replace ETS with EU carbon tax and border taxes

- Carbon tax needed to rectify ETS failure
  - But distorts trade (e.g. GB-Continent, within SEM)
- Investment needs credible future C-price
  - Roadmaps fail to indicate how delivered in EU

Conclusions

- Better market integration solves many problems
  - needs FTRs as well as market coupling
- More transmission urgently needed
  - particularly cross border with better permitting
  - but TSOs / regulators failing to deliver
- Nodal pricing would better guide investment
  - and also ensure better use of interconnectors
- Capacity payments may be needed
  - but complicate market coupling

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Acronyms

ATC Available Transmission Capacity

C-price Carbon price

FTR Financial Transmission Right

G Generation

HHI Hirschman Herfindahl Index (sum of squared % market shares, 10,000=monopoly)

IEM Integrated (Single) Electricity market

PTR Physical Transmission Right

TEM Target Electricity Market

T Transmission

TSO Transmission System Operator