

ACER

European Electricity Forward Markets and Hedging Products – State of Play and Elements for Monitoring

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Introduction – scope of the project

- ❑ Forward markets allow participants to hedge risk in order to compete effectively; ACER needs to understand:
 - ❑ What risk hedging tools are in use?
 - ❑ Are they meeting the requirements of trading parties?
 - ❑ Are they working as they should (or as theory indicates they should)?
 - ❑ How can the Agency test their operation?
 - ❑ How can the Agency report on their operation?
 - ❑ How can the Agency test the impact of the FCA NWC on these markets?
- ❑ The FCA Guideline is the main forward code that ACER must review

Project tasks

Task A

Survey of forward markets and hedging products

- Review literature
- Questionnaire
- Interviews
- Table/report

Task B

Methods to evaluate efficiency

- Review literature
- Table/report

Task C

Assessing impact of FCA NC

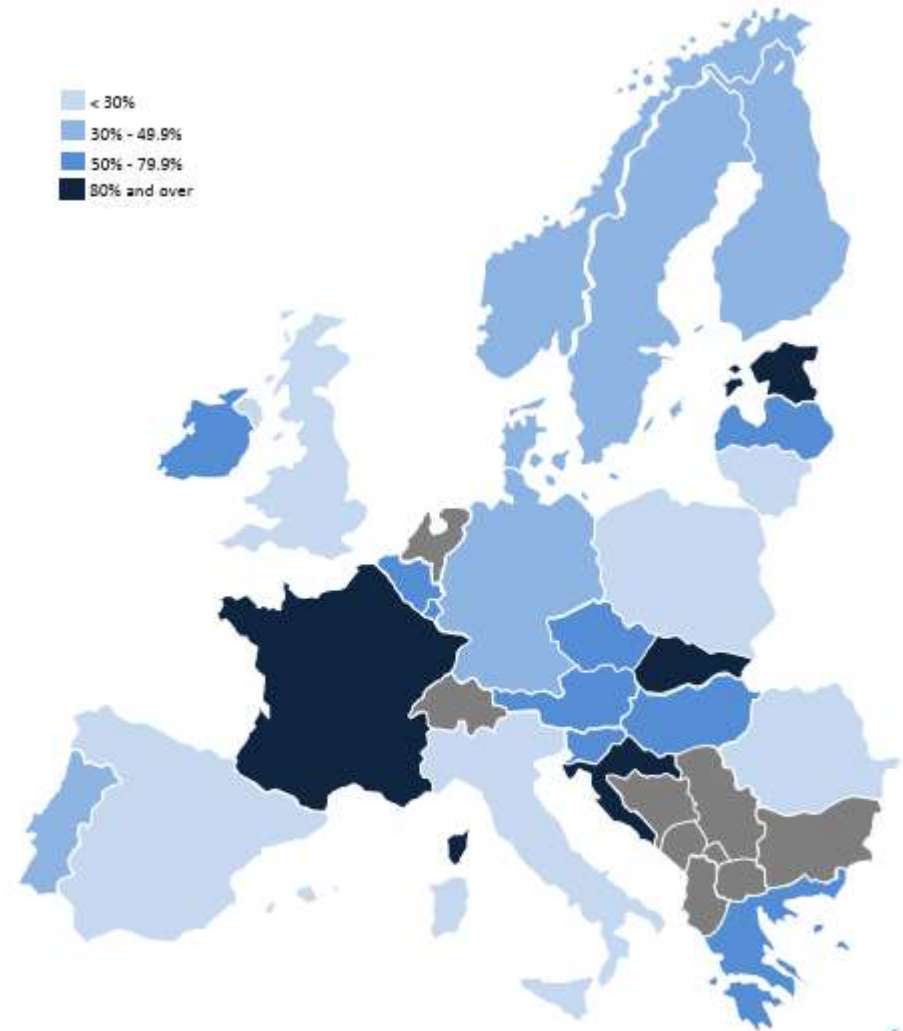
- Assessment of primary methods
- Table/report

Topics

- ❑ Task A issues
 - ❑ Data availability
 - ❑ Trader requirements
- ❑ Task B issues
 - ❑ Methodology review issues
 - ❑ What ACER needs to monitor (forward energy trades)
- ❑ Task C: FCA NC
 - ❑ What changes
 - ❑ Monitoring metrics
- ❑ Wrap-up

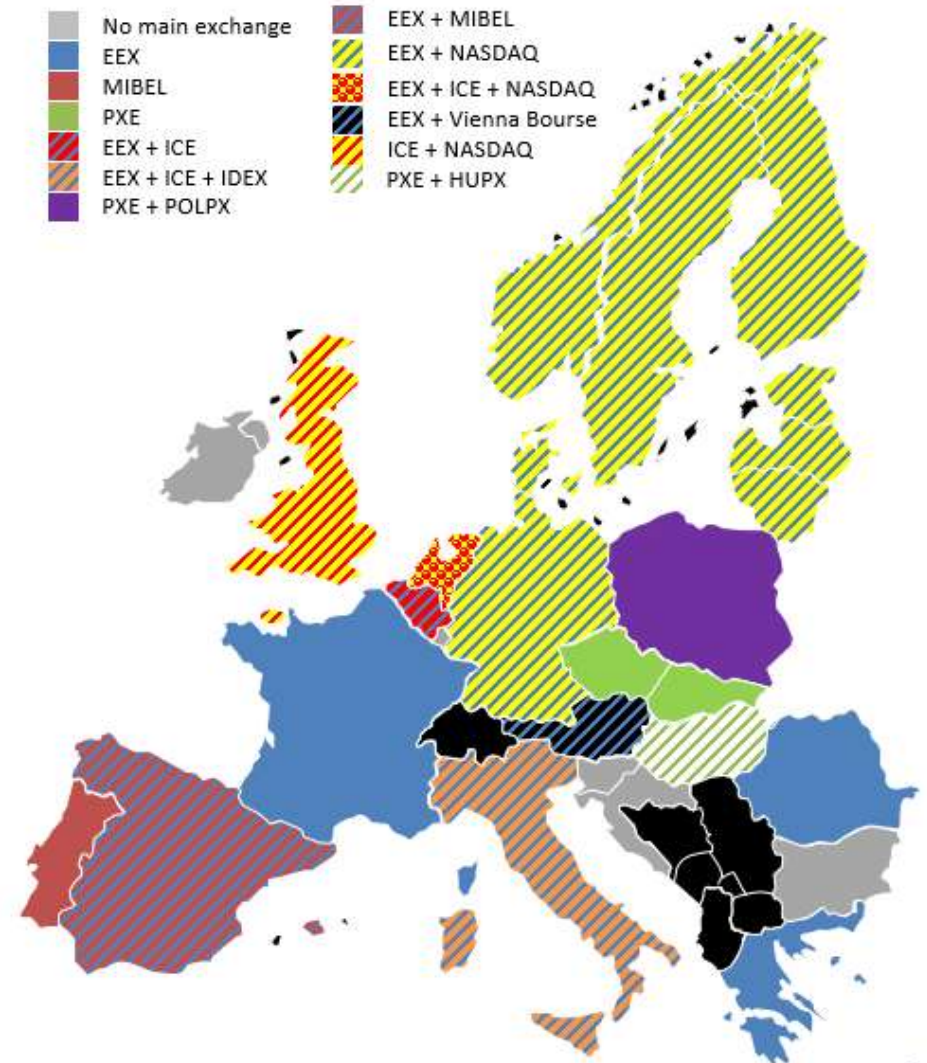
Task A – the market environment

- ❑ Wide range in level of nominal competition in different markets
 - ❑ (*Eurostat measure on generation side only*)
- ❑ This is not actually well correlated with level of competition in forward markets



Forward markets served by a variety of exchanges ...

- ❑ But share of total forward trade is often very low
- ❑ OTC market is currently more dominant
 - ❑ Lower transaction costs?
 - ❑ Greater flexibility of product?



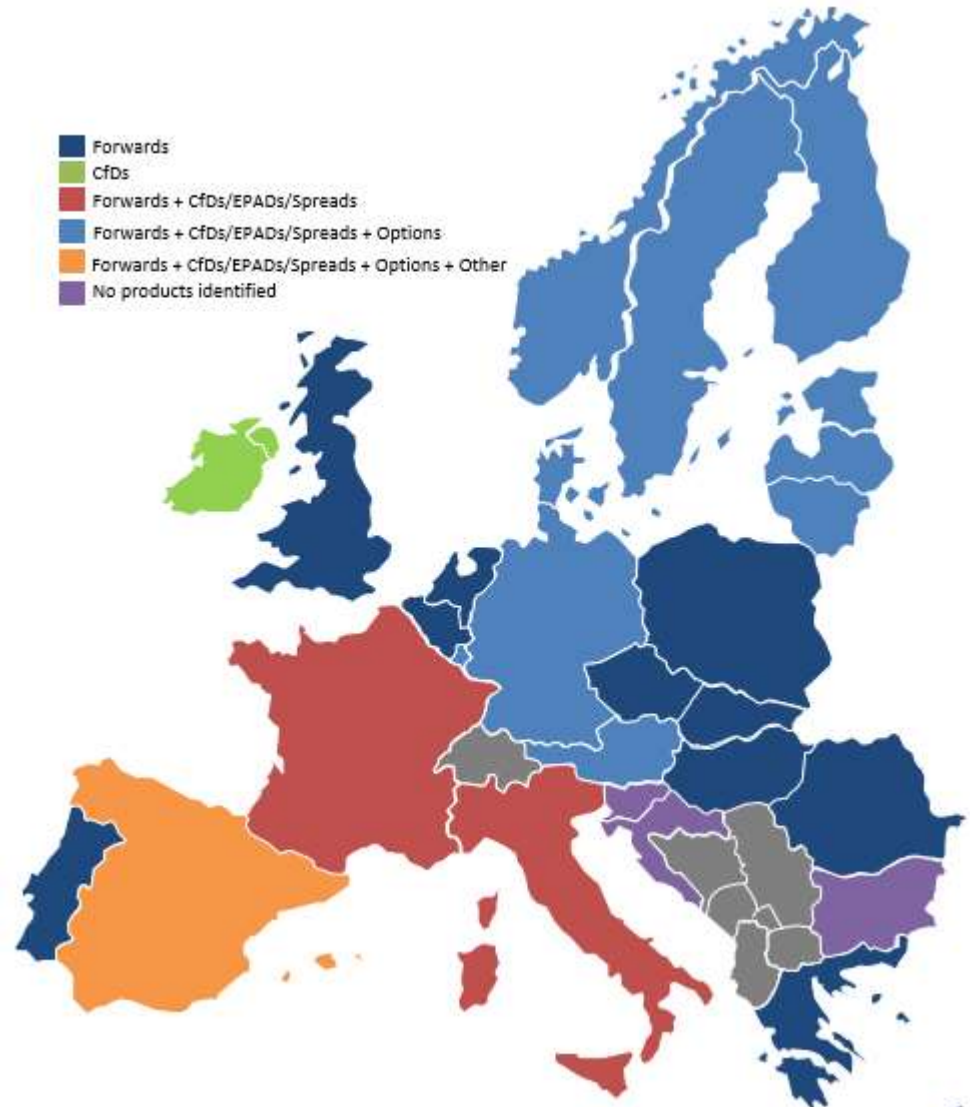
OTC Market shares

	% OTC		% OTC		% OTC
Austria	62%	Germany	62%	Norway	42%
Belgium	29%	Greece	n.a	Poland	32%
Bulgaria	n.a	Hungary	95%	Portugal	n.a
Croatia	n.a	Ireland	n.a	Romania	100%
Cyprus	n.a	Italy	56%	Slovakia	n.a
Czech Republic	87%	Latvia	42%	Slovenia	0%
Denmark	42%	Lithuania	42%	Spain	72%
Estonia	42%	Luxembourg	62%	Sweden	42%
Finland	42%	Malta	n.a	Switzerland	99%
France	90%	Netherlands	63%	United Kingdom	98%

- ❑ Gaps in data but 57% of trade by volume is OTC
 - ❑ Probably an underestimate

Dominated by financial products ...

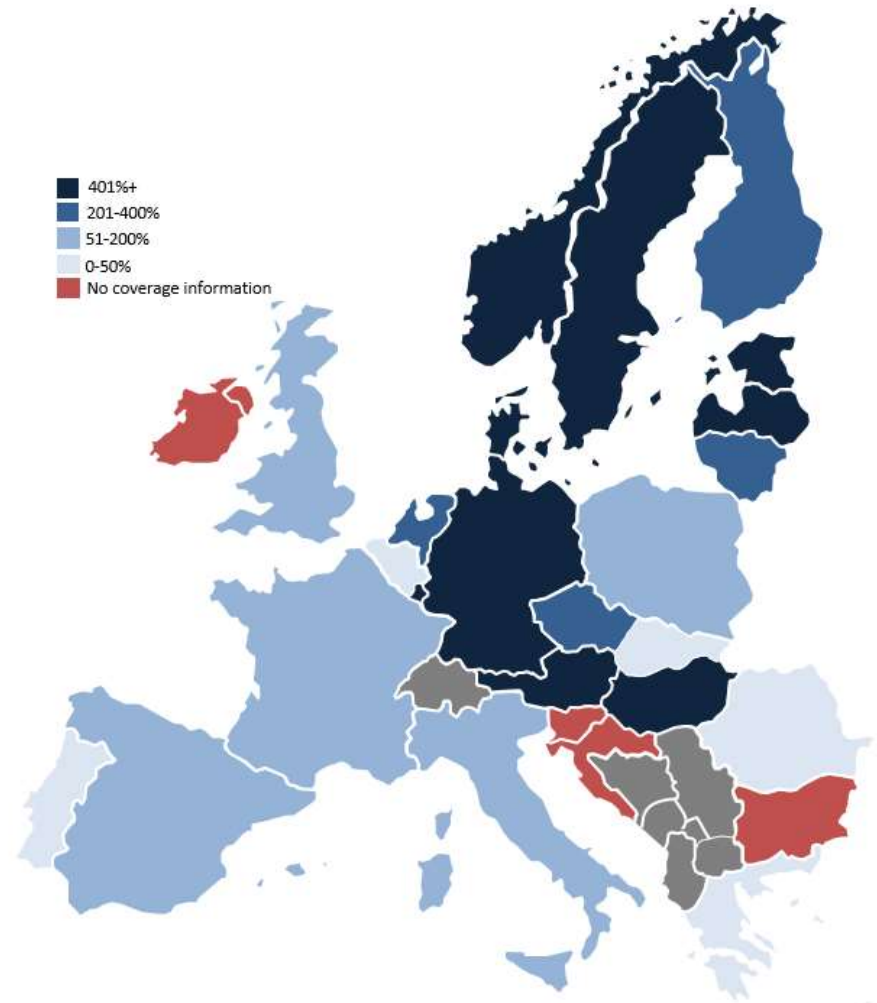
- ❑ Products partly dependent on structure of physical market but
- ❑ Demand is predominantly baseload annual
 - ❑ Time of day and part year products available but not as liquidly traded
 - ❑ But no good information on OTC products



Liquidity in forward energy markets

- ❑ Not well correlated with market structure
- ❑ Example of GB with 6 big competing businesses
 - ❑ Vertical integration means internalised physical hedging
- ❑ Markets with high cross-border exposure
 - ❑ Some evidence of spilled liquidity but not a strong driver
- ❑ Market maturity in Nordic area?

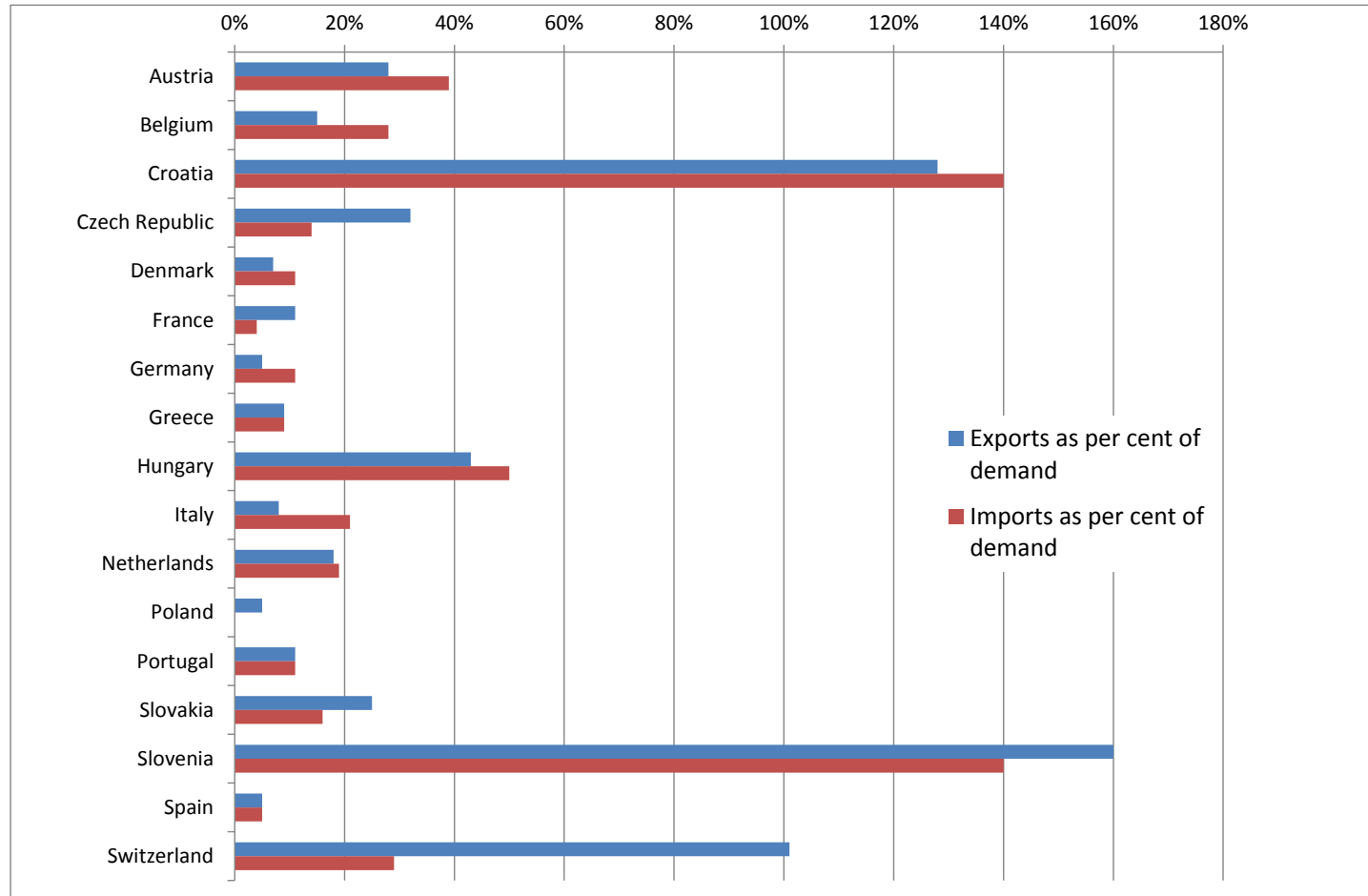
Churn rates in Forward Products



Transmission rights

- ❑ Dominated by PTRs
 - ❑ But UIOSI terms make these potentially FTR Options
 - ❑ Majority of PTRs now tending to remain financial
- ❑ Nordic area is an exception
 - ❑ No transmission rights offered to forward market
 - ❑ EPADs offered by commercial entities give forward spatial coverage
- ❑ FTRs:
 - ❑ On Spain-Portugal border
 - ❑ Being considered for Ireland-GB border
 - ❑ Belgium looking at FTRs

Some countries are very well connected



Countries connected using main platform only

Task A Issues

- ❑ Data availability
 - ❑ OTC market
 - ❑ Price reporter limitations
- ❑ Lack of information on players
 - ❑ Poor response to questionnaire
- ❑ Impact of financial regulation – not really clear
- ❑ Transparency can be variable

Task B: Three-pronged analytical approach

First principles

- why forward markets are **important**
- **problems** that could arise in their operation
- **features** of well-functioning forward markets
- possible monitoring **metrics**

Theoretical literature

- hedging and **liquidity** in forward markets
- financial and physical **transmission rights**
- relationship between **forward and prompt market prices**

Case studies

- **Nordic market** - liquid forward market, implicit capacity auctioning
- **PJM** – largest market, LMP and FTRs
- **New Zealand** – expanded forward trading

Liquidity is the focus, not overall efficiency

- ❑ Liquidity forms emphasis of the assessments and metrics
 - ❑ churn rates, volume of trade, etc
- ❑ No explicit measures of the effectiveness of price discovery in forward markets
 - ❑ other than the liquidity of longer-dated products
- ❑ Particular attention is given to contestability and competition
 - ❑ concentration, entry-exit activity, etc
- ❑ A general presumption that if markets are sufficiently liquid, they will be efficient
 - ❑ monitoring role of regulators is generally limited to detection of market abuse

Metrics grouped around desirable features



1. Hedging and liquidity facilitate buying and selling
2. Reliable forward prices important for ensuring investment
3. Forward markets provide avenue for entering real time markets
4. Structural features affect level of competition

Recommended 'essential' metrics (1)

Feature	Metric	Application	Target
Effective hedging / sufficient liquidity	Turnover (Volume/value)	Energy volumes in whole national forward energy market, amalgamated across all products Annual time trend	n/a
	Churn rate (Ratio)	All forward products as a proportion of physical throughput Time series analysis (annually) and benchmarking	Churn rate of at least 300% (higher in future)
	Bid-ask spread (€/MWh or % of price)	ACER to require exchanges to publish on daily basis and report excursions from recommended bounds	<5% of average price (tentative threshold) Average <1% in the most popular instruments
Facilitation of price discovery	Reporting of trades (Price)	Require exchanges to make trades publicly available (most already make available to members)	Within 15 minutes of trades being struck

Recommended 'essential' metrics (2)

Feature	Metric	Application	Target
Ease of market access	Bid-ask spread (€/MWh or % of price)	As above (indicator of transaction costs)	As above
	Entrance / trading fees (€/MWh)	Benchmarking	n/a
Effective competition	Minimum number of companies needed to reach 50% market share in production or of contracts bought/sold over a period of time (Number)	Forward markets as a whole or individual time periods Annual time and comparison with the number of players in the physical generation and supply market	
	Herfindahl-Hirschman Index (HHI) (Index)	All forward trading in the market regardless of time period Comparison with the HHI in physical generation and supply market	2,500

Task C: the FCA NC – requirement

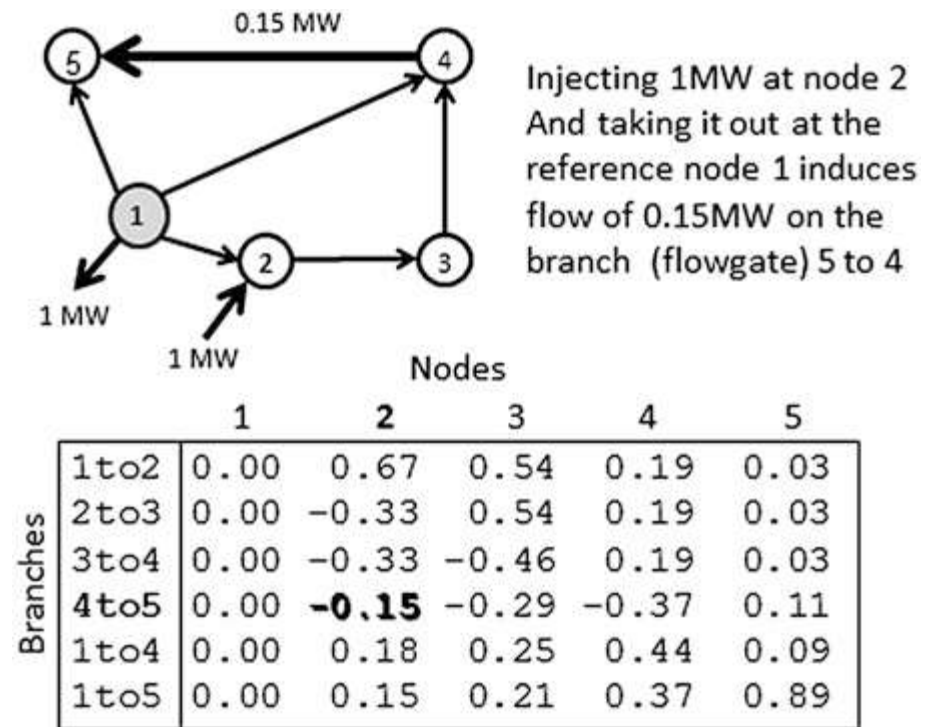
- ❑ Main area where forward trading to be regulated at EU level
- ❑ ACER needs ways to assess impact of what changes
- ❑ So what is in FCA NC?
 - ❑ Ratification of existing “best practices” = few immediate changes
 - ❑ Move towards consistent capacity availability calculation
 - Flow based method
 - ❑ Single auction platform
 - ❑ Consistent allocation rules
 - PTR with UIOSI (provided by TSOs)
 - FTR Options or Obligations (provided by TSOs)
 - Market provision of hedging instruments (Nordics)

Monitoring metrics for FCA NC

- ❑ Looking for systemic problems rather than for market abuse
- ❑ Methods proposed
 - ❑ Auction revenue reduction
 - ❑ Churn rates and Net Transfer Capacity
 - ❑ Efficient pricing of long-term capacity
 - ❑ Market efficiency of EPADS

Auction revenue reduction – rationale (1)

- Move towards wide area flow based method for calculating availability should reveal more ATC in the forward timeframe
- But flow based method will suggest different pathways for non-congested delivery



Source: Shmuel Oren

Point to Point and Flow-Based Financial Transmission Rights: Revenue Adequacy and Performance Incentives

Auction revenue reduction – rationale (2)

- ❑ Oren postulates:
 - ❑ FTR revenue will exceed congestion rent because of FTRs sold on non-congested routes
 - ❑ Flow Gate Revenue (FGR) will equal congestion rent as all route combinations are sold – portfolio risk passed to rights holders
- ❑ US FTRs pay pure price spread between not necessarily adjacent nodes
- ❑ European FTRs are between adjacent nodes – similarities to FGRs
- ❑ Expectation from flow-based method = reduction in surplus to right providers = lower auction revenues

Auction revenue reduction – methodology

- ❑ Calculate annual revenue at each border:

$$\sum(\text{rights sold} * \text{clearing price})$$

- ❑ Compare year-on-year changes
- ❑ Investigate where values increase
- ❑ Where flow based method introduced, investigation is on the wider network revenues
- ❑ Prima facie case that inefficiencies in auction introduced – not proof
- ❑ Many other reasons for changes
 - ❑ Demand/supply pattern changes - especially in hydro based regions

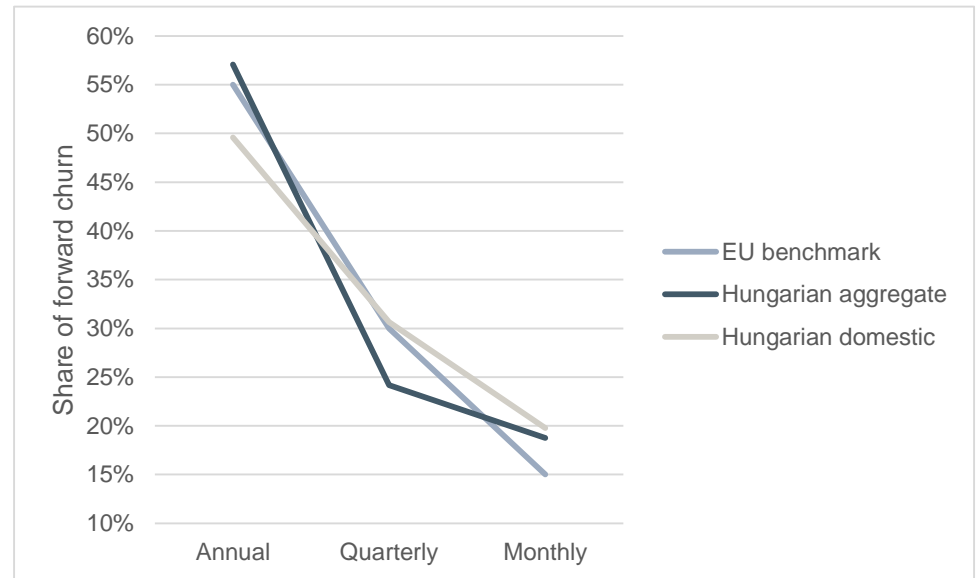
Churn rates and Net Transfer Capacity

- ❑ FCA NC requires TSOs to split availability of transfer rights products covering different time periods in accordance with market demand
 - ❑ This seeks to assess whether availability is in tune with market requirements
 - ❑ It assumes that markets will want forward transfer products in proportion to requirements for forward energy products of different durations
- ❑ In some markets, transfer capacity is a big part of demand so methodology is:

$$\text{Domestic forward share}_{t,i} = \text{Forward share}_{t,i} \times \left(1 - \frac{\text{Offered import capacity}_i}{\text{Physical delivery}_i}\right)$$

Churn rates and net transfer capacity – example

- ❑ Data for Hungary
- ❑ Good match to an EU benchmark
- ❑ Slightly short in quarterly products
- ❑ But interpretation is difficult as many factors affect churn rates in local markets



Efficient pricing of long-term capacity

- ❑ In an efficient market, auction revenues should be close to expected sum of price spreads between markets
 - ❑ Most economic rent should accrue to the holder of the scarce asset
- ❑ Interpretation difficult where rents deviate from revenues:
 - ❑ Market abuse? – auctions would over-recover
 - ❑ Excessive transaction costs?
 - ❑ Inefficient rules? – e.g. poor firmness or high reserve price
 - ❑ Mis-forecasting?
 - ❑ Illiquidity in transfer rights market?

Market efficiency of EPADs

- ❑ Gap in regulatory monitoring
- ❑ Similar to assessment of efficiency of explicitly auctioned forward products
 - ❑ Value of EPAD options should equate to sum of expected price spreads (between an area and the regional market price)
- ❑ Are auction premiums consistent between years for an area
 - ❑ But what about changes in hydrology?

Monitoring impact of FCA NC

- ❑ Many factors in setting prices and availability of transfer capacity
- ❑ FCA NC is about improving standards
 - ❑ Less efficient markets should see greatest improvement
- ❑ Most of FCA NC allows current practices to continue
 - ❑ Improvements likely to be incremental rather than fundamental
- ❑ Monitoring methods proposed consider prima facie cases for investigation
 - ❑ Not proof of abuse or systemic problem

Conclusions (1)

- ❑ Forward trading is complex and multi-faceted
- ❑ Need for much data and careful interpretation
 - ❑ REMIT programme recognises this
 - ❑ Data provision currently incomplete and not often transparent
- ❑ Case can be made that there is insufficient trading and liquidity generally – need for monitoring
- ❑ Monitoring metrics generally not well designed for European forward markets
 - ❑ Academic literature tends to focus on specific problems and does not always address the question: “is it working efficiently?”

Conclusions (2)

- ❑ There is a lack of monitoring tools assessing the underlying relationship between forward and prompt markets
- ❑ A range of monitoring tools have been recommended, but application is limited to time series analysis and benchmarking
- ❑ Reviewing the potential impact of the FCA NC we found
 - ❑ Limited help from academic studies
 - ❑ Proposed methodologies seeking to look at aspects of the implementation
 - Focussing on what might change
 - Filling gaps in monitoring methods
 - Identifying prima facie cases for further investigation

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