



PÖYRY

DAY-AHEAD MARKET COUPLING OPTIONS FOR THE SEM

3 June 2011

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AGENDA

1. > Objectives
2. About Pöyry
3. Context for Pöyry report on day-ahead market coupling
4. Development of options
5. Assessment of options
6. Conclusions

OBJECTIVES OF PRESENTATION

Summarise key findings of our report to the Regulatory Authorities on options for introducing day-ahead market coupling into the SEM

- Briefly summarise drivers of market integration, particularly at day-ahead stage
- Set out the constraints placed on the options in terms of design requirements
- Describe how we developed our set of six options
- Discuss approach and results of initial qualitative assessment of each option

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Core business groups based on five knowledge clusters



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CONTEXT FOR ANALYSIS OF DAY-AHEAD COUPLING OPTIONS

Challenge of integrating the SEM more closely with other European markets given its particular design features

- SEM Committee supported exploration of development of loose form of day-ahead **volume coupling** (in March 2010 response to market integration consultation)
- European target model based around **price coupling** at day-ahead stage (by 2014?)
 - reiterated in successive drafts of framework guidelines on capacity allocation and congestion management (September 2010, February 2011, April 2011)
 - regional initiatives for coupling BETTA with CWE and Nordpool by 2012
- Existing SEM design fundamentally different to other markets in NWE
 - intended to address challenges of maintaining secure supply and mitigating market power in small, relatively isolated island system

1. In volume coupling, interconnector flows are determined by a joint algorithm covering several markets, but market prices and generation quantities are determined separately in each market. The 'tightness' of volume coupling describes the similarity between joint algorithm and individual market algorithms
2. In price coupling, interconnector flows, market prices and generation quantities are all determined simultaneously by a joint algorithm covering several markets.

OBJECTIVES FOR PÖYRY REPORT ON DAY-AHEAD TRADING

Pöyry appointed by Regulatory Authorities to provide advice on options for development of day-ahead trading solution for the SEM

- Options should allow day-ahead coupling of SEM and neighbouring markets in line with expected requirements of Framework Guidelines and Network Codes
 - **Price coupling**
 - **Firm** trades, both price and quantity, on both the generation and demand-side
- Options should not fundamentally alter SEM design
 - Gate closure suitably in advance of real time (day-ahead gate closure)
 - Complex technical and commercial bids submitted by generators
 - Centralised scheduling calculated ex-post
 - Gross mandatory market, i.e.with no physical trading outside the Pool
 - SRMC bidding principles
 - Single SMP (for the island)

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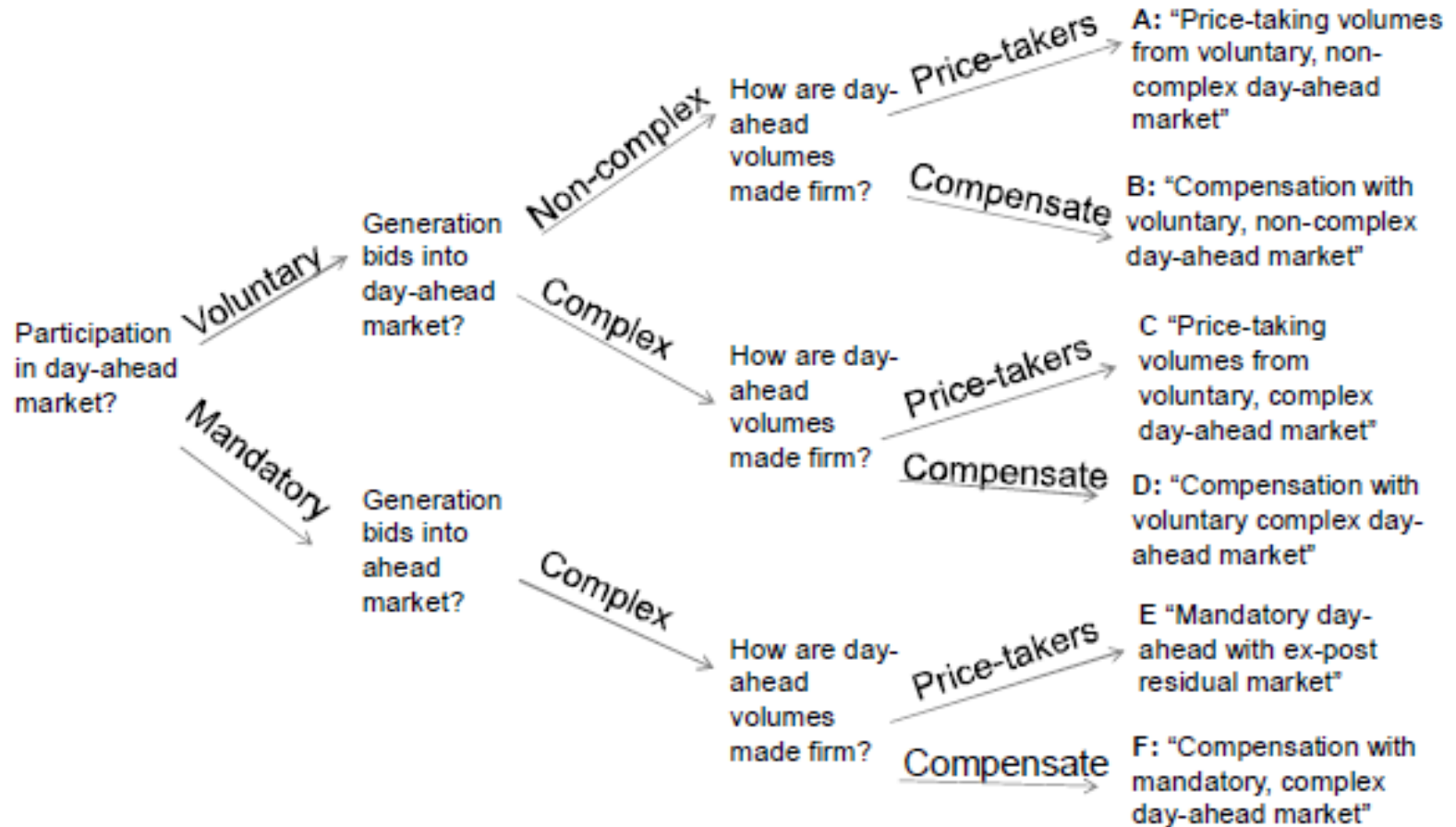
REQUIREMENT FOR FIRMFNESS IN PRICES AND QUANTITIES

SEM principles imply non-firm market on the part of both buyers and sellers until the ex-post stage

- If ex-post market settled as gross pool with day-ahead market settled as CFD, the total revenue for generator = SEM revenue + CFD payment
= $(MSQ * SMP)$ + $Q_{DA} * (P_{DA} - SMP)$
- This is equivalent to firm forward and residual ex-post (imbalance) markets, the total revenue for generator = firm forward market + ex-post residual
= $(Q_{DA} * P_{DA})$ + $SMP * (MSQ - Q_{DA})$
- Therefore, CFD provides price hedge for day-ahead volumes matched in ex-post schedule **but** doesn't remove quasi-imbalance risk for deviation from day-ahead volumes
 - if $Q_{DA} = MSQ$, generator revenue = $(Q_{DA} * P_{DA})$
 - risk for generator of situation where $Q_{DA} > MSQ$ but $P_{DA} < SMP$

HIGH-LEVEL OPTIONS FOR DAY-AHEAD MARKET COUPLING

The options are described by the answers given to three design questions



IMPLEMENTATION ISSUES FOR OPTIONS

There are a number of detailed issues still to be resolved before implementation of any of our options

- Allocation of risks associated with firm quantities – who will accept firmness on demand-side?
- Common gate closure times
- Common bid format
- Comparable prices
- Delivering a liquid and reliable day-ahead market
- Identity and nature of local day-ahead market operator

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ASSESSMENT CRITERIA

Our assessment criteria are based on TSC objectives, with the addition of an explicit requirement for compliance with European developments

- **Promotion of competition**
- **Efficient administration of SEM**, including cost of implementation
- **Efficient ex-post pricing**, reflecting TSC objective regarding costs to consumers
- **Opportunities for risk management** reflecting TSC objective regarding costs to consumers
 - people being able to choose to contract in timescales which suit their portfolio and attitude to risk
- **Size of constraint and compensation payments**, reflecting TSC objective regarding costs to consumers
- **Compliance with European development**
 - subject to detailed legal interpretation

SUMMARY ASSESSMENT OF OPTIONS

All options have some strengths but no option performs consistently well across all criteria

Assessment criteria	A (Voluntary, non-complex, price-taking)	B (Voluntary, non-complex, compensate)	C (Voluntary, complex, price-taking)	D (Voluntary, complex, compensate)	E (Mandatory, complex, price-taking)	F (Mandatory, complex, compensate)
Promote competition	-	-	(✓)	(✓)	✓	✓
Efficient SEM administration	✓	(✓)	(x)	x	xx	x
Efficient ex-post pricing	(x)	(✓)	(x)	(✓)	x	(✓)
Opportunities for risk management	(✓)	(✓)	✓	✓	(✓)	(✓)
Size of constraint and compensation payments	(x)	(x)	x	x	(✓)	x
Compliance with European developments	(✓)	(✓)	(✓)	(✓)	(✓)	(✓)

PRELIMINARY RECOMMENDATION

Initial assessment favours Option B (non-complex bids into a voluntary market with compensation mechanism)

- Should participation in the day-ahead market be voluntary or mandatory?
 - **voluntary day-ahead market would allow participants to choose whether or not market is attractive (as in rest of Europe)**
- What is the form of generation bids into the local day-ahead market (for the SEM)?
 - **in a voluntary market, appropriate for generators to be responsible for converting complex SEM bids into non-complex bids for day-ahead market**
- How are day-ahead volumes made firm?
 - **compensation mechanism used to keep day-ahead volumes firm**, which means that day-ahead market does not directly restrict optimisation of ex-post schedule
- Option E (mandatory day-ahead market with ex-post residual) may be an attractive alternative in the long-term (with frequent intra-day rebidding)

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CONCLUSIONS

Key challenge for SEM is addressing possible tensions between supporting market integration and retaining its existing design

- Option B is preliminary recommendation from review of key design choices (given constraints placed on options)
 - Option E may be more attractive in long-term if intraday rebidding becomes more frequent
- Interaction with developments in market integration at intraday (and forward markets) will be vitally important for day-ahead market design
- Decision on way forward also needs to take into account
 - implementation issues, particularly around comparable bid prices
 - scope for changes to the SEM design
 - required timescales for market integration
 - detailed legal interpretation of requirements



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