Erasmus Centre for Future Energy Business

ROTTERDAM SCHOOL OF MANAGEMENT
ERASMUS UNIVERSITY

RESEARCH

Energy portfolio hedging

Sustainable Smart Energy Business – Lecture 7
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Learning Agents Research Group at Erasmus (LARGE)

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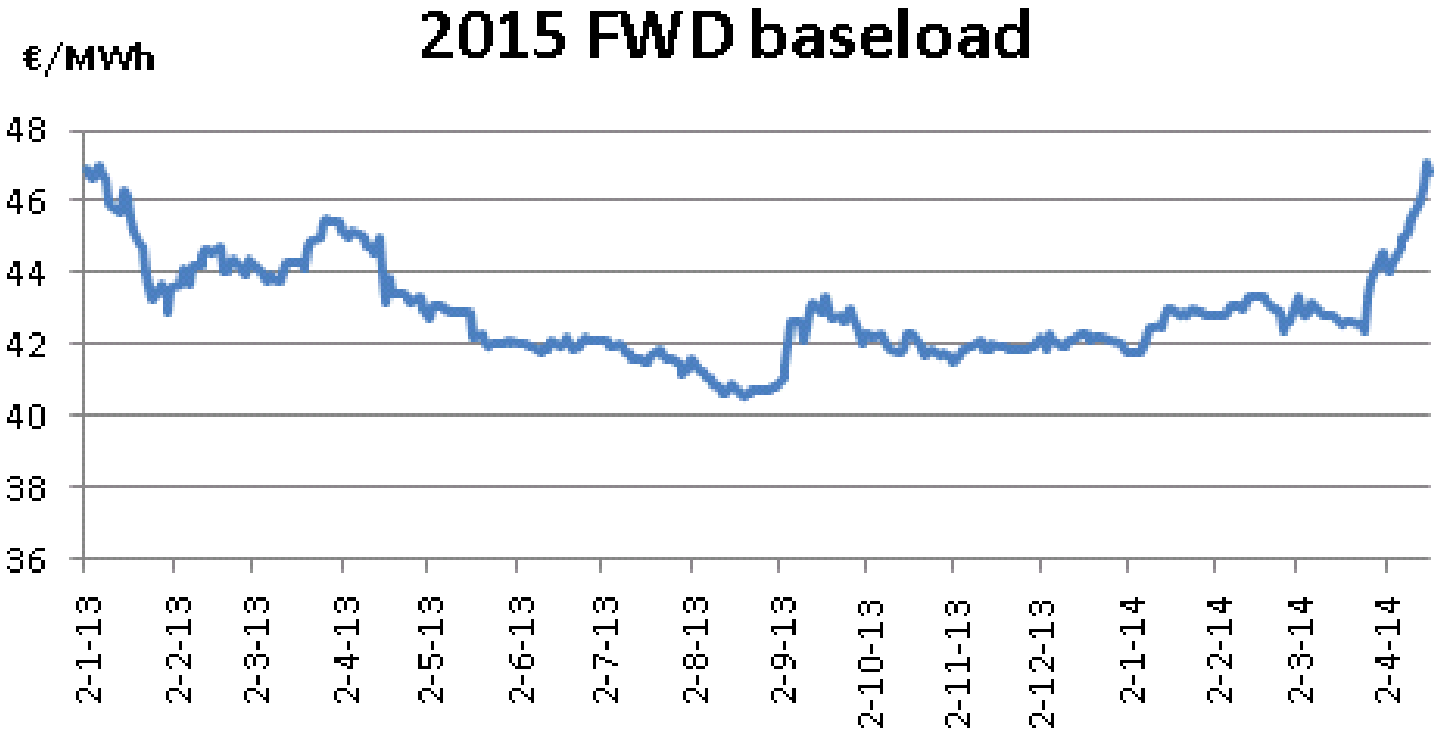
Topics

1. The basics of hedging
    - Forwards
    - Financial position modeling
    - Risk and Hedging
    - Mark-to-market
2. Portfolio Management Game
3. Forecasting

Forwards

- A forward contract is a an agreement in which the buyer agrees to buy from the seller a fixed quantity of commodity (e.g. electricity or gas) for a fixed price for delivery in the future (delivery period).
  - There is no payment at the conclusion of the forward contract.
  - There is a payment at the actual delivery of the commodity



Price is driven by supply/demand
Increase of ~4 €/MWh mainly due to Doel/Tihange outage

Financial Position Modeling

- Positions can be long or short
- Long positions gains value when underlying price increases
- Short position gains value when underlying price decrease

Underlying index	Portfolio value	long-short
up	up 	long
up	down 	short
down	up 	short
down	down 	long

Risks and hedging

- Risk = profit is not known in advance with absolute certainty
- Holding long or short positions is risky
- Hedging: reducing the positions, thus reducing the risks

Mark-to-market

Calculation

- The MtM of your position is the profit or loss you would make if you would liquidate (sell or buy) your complete position today on the market at current forward market prices
- For a long position:
    - MtM = (forward market price – contract price) * volume
- For a short position:
    - MtM = - (forward market price – contract price) * volume

Mark-to-market

- To compute the MtM of an asset, you need to estimate or forecast how much that plant will generate and how much that plant will consume

- These estimations can be influenced by forward power and fuel prices and is for a gas and coal asset depending on the level of Carbon Clean Spark Spread and Dark Spread

  CCSS = power revenues – gas costs – CO_2 costs

  CCDS = power revenues – coal costs – CO_2 costs

- Hedging: reducing the positions, thus reducing the risks