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# *Acquirente Unico* electricity procurement strategy in 2005: objectives, tools and impact on the Italian electricity market

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ref. seminar “Coperture e creazione di un mercato forward per l’energia elettrica in Italia”

## Agenda

- **Evaluation criteria of Acquirente Unico hedging strategy**
- **The 2005 products**
  - The strategy
  - Implementation – Product definition
  - Implementation – The auction mechanism
  - Comparison with regulated *Virtual Power Plants*

## Evaluation criteria of Acquirente Unico procurement strategy

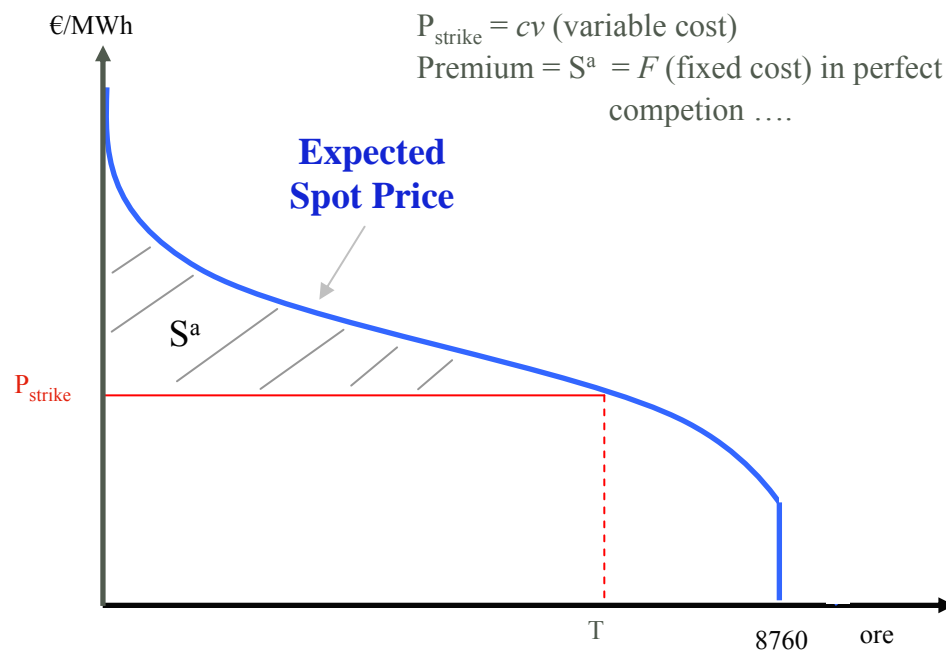
- In the debate Acquirente Unico performances are often assessed *ex-post*; e.g. several observers pointed out that:
  - in 2004 AU hedging strategy paid back (but no-one asked if AU procured *Ct* swaps at the lowest possible cost)
  - in 2005 AU did not hedge the fuel cost component of electricity prices ... which turned out to be a bad choice ...
  
- We will take an *ex-ante* perspective, discussing AU strategy in terms of:
  - Objectives
  - Consistency of the selected solutions with the objectives

## The strategy - 1

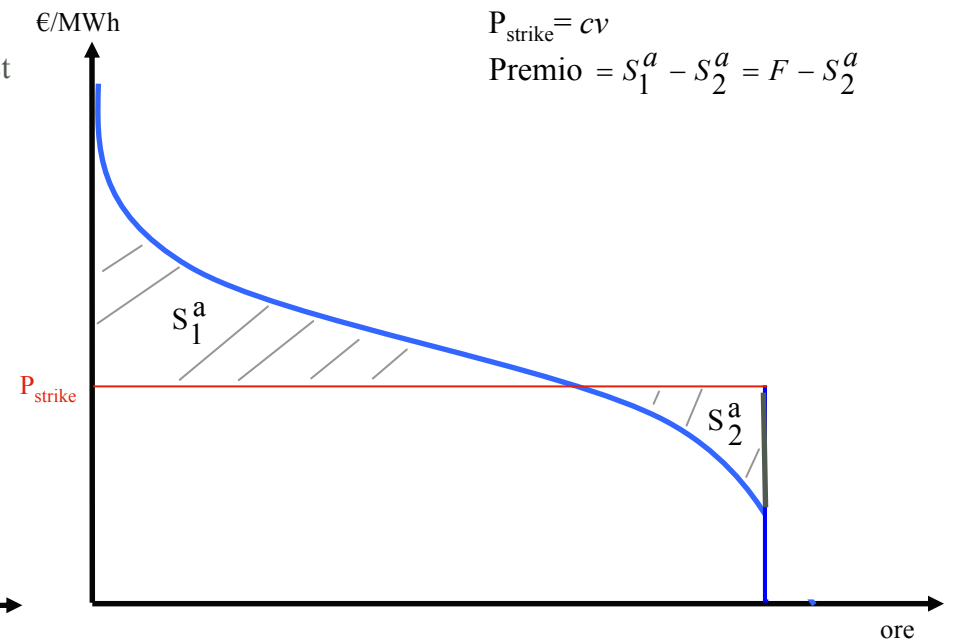
- AU strategy for 2005: *obtain low prices by ensuring electricity generator full hedging* (through options or one-way Contracts for Differences)
  
- Evaluating AU strategy for 2005 needs answering these questions:
  - Were one-way CfDs much more attractive to generators than two-way CfDs?
  - What was the cost to AU of not fixing their average procurement cost?

## The strategy - 2

- One-way and two-way CfDs place different risk on generators



$$\Pi_{\text{gen}} = \sum_{t=0}^T (P_{\text{spot}} - cv) - \underbrace{\sum_{t=0}^T (P_{\text{spot}} - cv)}_{\text{CfD with AU}} + F = F$$



$$\Pi_{\text{gen}} = \sum_{t=0}^T (P_{\text{spot}} - cv) - \underbrace{\sum_{t=0}^T (P_{\text{spot}} - cv)}_{\text{CfD with AU}} + \sum_{t=T}^{8760} (P_{\text{spot}} - cv) + F - S_2^a = F + (S_2^{\text{actual}} - S_2^a)$$

Two-way contracts put some risk on generators that one-way contracts do not

## The strategy - 3

- Given the market situation at the time of the auction, forecasting spot price in the subset of hours in which  $P_{spot} > P_{strike}$  could be harder to generators than assessing the value of a two-way CfD
- Plant inflexibilities and outages might prevent units to generate in all the hours in which  $P > cv$  (and only in those hours)



- The advantage to generators of one-way, compared to two-way, contracts was perhaps limited

## The strategy - 4

- One-way CfDs set a ceiling to the price paid by AU; but they don't limit the average purchase price
- One-way contracts induce generators to exploit their market power in the hours in which *System Marginal Cost* <  $P_{\text{strike}}$



- At the yearly auctions AU's buyer power is greatest. Not fixing the average procurement cost at that stage would make AU vulnerable to the exercise of generators' market power during the year.
- AU hedging strategy impacted all the market, via the incentives provided to generators to exercise market power in the spot market

## Implementation: product definition

- Indexation: AU's strike prices appear to reflect Brent price dynamics more rapidly than generator's fuel supply contracts
- Standard heat rates implemented in AU's contracts are not good proxies for actual heat rates
- Strike prices relate to the value of electricity at the national *hub*, while generators sell power at zonal prices



- Some risk is unnecessarily placed on generators

## Implementation: auction design - 1

- Quantities of each type of contract purchased by AU were exogenously set before the auction
- AU procurement cost minimisation would require purchased quantities to be endogenously determined depending on offer prices



- In order to control their risk exposure AU unnecessarily limited their flexibility in selecting the most profitable set of offers

## Implementation: the auction mechanism - 2

- AU implemented a simple offer selection rule, allowing AU to partially accept each offer
- Given the supply structure, this rule might have induced the dominant generator to play a pivotal supplier strategy: i.e. to accept losing market shares, while asking high prices on the residual quantities



- Alternative mechanisms based on multi-round auctions are conceivable, in which AU exploits their possibility to shape, through the selection strategy, the competitive conditions of (at least part of) the auction

## A comparison with regulatory *Virtual Power Plants*

- VPPs are modelled on each generator's set of plants
- The main difference compared to AU's contracts is that, in case of regulatory *VPPs*, the generator cannot choose "how much of each type of contract to sell". This is the source of the market power mitigation properties of VPPs, not shared by AU's contracts



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