Auctions of CO$_2$ allowances

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Auctions for CO$_2$ allowances

Motivation for auctions
• Avoid distortions from free allowance allocation
• Avoid excessive compensation
• Competitiveness concerns – see next presentation

Design of auctions
• Objective
• Frequency
• Format
• Institution
• Harmonisation
The pyramid of distortions – we should move up there

Impacts
- Increased expenditure on extending plant-life
- Inefficient fuel choice
- Less efficiency improvements

Source: Neuhoff, K., Keats, K. and Sato, M., 2006, Allocation, incentives and distortions: the impact of EU ETS emissions allowance allocations to the electricity sector, Climate Policy, 6 (1)
… but we seem to have made little progress in NAP 2

And the level of allocation is not trivial

How does ETS change value of power stations?

- Counterfactual – continued investment in coal
- ETS – Net revenue at peak hours ~ capacity value
  - Phase I: estimation, might be higher
  - Phase II: allocation as in German NAP

-> ETS profitable even with full auctioning post 2012
Objectives of auction

• Simplicity and transparency
• No discrimination of bidders with less information
• Avoid cash flow difficulties and risks for emitters
• Market clearing price that reflects value of allowances
Frequency of auction

**Advantages of higher frequency**

- Small value / auction -> reduces risk of participation
- Emitters can buy at time to match requirements
- Emitters have to post smaller collateral
- Smaller risk of pre-emption (volume not big enough)
- If relevant – impact on secondary market smaller

**Advantages of lower frequency**

- Allows more sophisticated auction format
- Lower frequency at fixed format might reduce costs
Auction format – multiple rounds

**Sealed bit**

Ascending, descending clock etc.

- Reveal information during auction, reduces risk
- But most information already in secondary market
Auction format – calculation of clearing price

<table>
<thead>
<tr>
<th></th>
<th>Uniform price auction</th>
<th>Discriminatory price auction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bid shedding</td>
<td>Risk with</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>• Big player</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No active traders</td>
<td></td>
</tr>
<tr>
<td>Value of market</td>
<td>Non</td>
<td>High, benefits active</td>
</tr>
<tr>
<td>intelligence</td>
<td></td>
<td>players</td>
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<tr>
<td>Discrimination</td>
<td>Non</td>
<td>Against uninformed</td>
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</table>
How to distribute allowances across auctions?

Front-loaded – allows hedging
Back-loaded – match product sales

Annual
3 per year
9 per year
daily

Volume/auction

2008     2012
Gaming opportunities

- **Bid shedding**
  - Unlikely good strategy with many participants
- **Short squeezing**
  - Buy allowances to create scarcity & resell
  - Only profitable if buying unobserved
  - Not viable with high frequency auction (One auction too small, but extra demand revealed)
- **Price manipulation**
  - Change spot price with unprofitable positions
  - Benefit in derivates, other markets (electricity …)
  - Also in bilateral market – ensure EU wide monitoring!!!
Institutional set-up

Objectives:
• Bid and IT management for quick turnaround
• Back office capacity to clear many bids

Candidates:
• New governmental body
  – Track record of new IT systems ....
• Build on treasury bond auction experience
  – Not used to large number of bidders

Commission to institution with existing operations
• $\text{CO}_2$ trading like ECX, EEX, Nordpool
• Power exchanges like APX, UKPX, EEX, Nordpool
• Financial market places
Reserve price in auction

(I) To ‘protect’ auction from unforeseen events
   • Perhaps 90% of previous day’s market price
   • Announcing reserve price increases transparency
   • Keeping it secret prevents coordination at this price

(II) To increase robustness of Carbon signal
   • Has to be announced ahead of time
10% auctions with price floor could facilitate investment

Coordinated auction with price floor can reduce risk of low prices


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Harmonised and joint auctions

<table>
<thead>
<tr>
<th>Indicative results (+ positive and - negative)</th>
<th>Independent auctions</th>
<th>Harmonised design</th>
<th>Commissioning same institution</th>
<th>Joint auction</th>
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<tr>
<td>Number of auction places in EU</td>
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<tr>
<td>Transaction costs seller</td>
<td>-</td>
<td>-</td>
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Estimated costs for auctioning allowances (seller side)

Assumptions

<table>
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<th>Euro/allowance</th>
<th>Fixed cost/auction</th>
<th>Cost/registration</th>
<th>Cost/bid</th>
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<tbody>
<tr>
<td>Initial IT</td>
<td>500.000</td>
<td>25.000</td>
<td>100</td>
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Estimated savings from joining auctions (seller side)

For details please see auction paper on www.electricitypolicy.org.uk/tsec/2
## Harmonised and joint auctions

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| Participants perspective                    | Only one registration required + + +
|                                              | Frequent auction available + + +
|                                              | Simplicity of ETS scheme + + + +
| Coordination                                | Attention/demand fatigue if auctions coincide - -
|                                              | Governments pre-empting to maximise revenue - -
|                                              | Lock in to ‘random’ national designs -
| Predictability                              | Reserve price can support price floor + + +
Do auctions reduce liquidity in secondary markets?

• Passive strategy no longer viable
  – Increase overall market participation and hedging
• Concerns from early experience US SO$_2$ auctions
  – Illiquid market
  – Long lead times for auctions
  – Auction also used to resell on behave of market
  – > Not really relevant
• Experience of T-Bill auctions
  – Work with Vanessa Smith and Andreas Pick
  – Trading volume increased when bonds reissued
Conclusion

- **Motivation for auction**
  - Commitment to mainly auction avoids distortions
  - Avoids distributional imbalances
  - Other instruments for sub-sectors really exposed
- **Simple auction design wins participants**
  - Sealed bid, uniform, frequent
  - Commission to institution with existing operations
  - Distribution across auctions – uniform?
  - Can we use reserve price to support price floor?
- **Harmonisation of auctions – simple but effective**
  - Simplicity, facilitates participation, avoids lock in
  - Consider jointly commissioning to one institution