Auction cases from Denmark and Portugal

Bo Jellesmark Thorsen, University of Copenhagen

Logan Bingham, University of Lisbon

Miguel Sottomayor, Catholic University of Portugal
A small SINCERE field experiment with a reverse auction for biodiversity contracts in Denmark
Can we get more for the money than current conservation instruments?

They support and prioritize set according to rank as

1. Presence of Natura 2000 class 1 or 2
2. Presence of Natura 2000 class 3, 4 or 5
3. Presence of areas with High Nature Value score 8 or more...
4. Other areas of interest

- Within a rank, offers are prioritized according to the area
- Compensation equals estimated present value... take it or leave it
- You cannot trade-off across ranks
- But forest owners come in many forms... and have different objectives
Pros and cons of the current instrument

- Simple to use and explain
- May be said to avoid “subjective” trade-offs
- No profit-based over compensation... in principle

- Trade-offs are in place – but not so obvious
- If price is set wrong, supply is too low
- Over compensation happens on other parameters

Present Value of Production DKK/ha

Number of hectares of homogenous quality for biodiversity

These guys would have sold for slightly more than estimated profit loss – but still cheaper than others

These guys would have sold for less than the estimated profit loss
A reverse auction with discriminatory pricing

- Owners get the price they set – or nothing
- There is a small incentive for overpricing a bit
- This could be much more cost effective
We ran a small 1:1 field experiment in SINCERE

- We designed a reverse auction using a €60K budget
- In May 2020, we announced a call for small biodiversity focused projects where owners competed on content and price – both set by themselves
- We obtained 24 different bids for a total sum of more than €185K – implying a clear competition
- We scored these on biodiversity potential, spatial context, scale and permanence – all information known and requested from owners.
- We selected 13 interesting sites for field visits (at a cost of up to €120K)
- We re-evaluated scoring and selected the best 8, that exhausted the budget. We revisited all sites to seal contract details.
- Contracts registered on the deeds and binds future owners
A case study of limited scale and no control – but...

- ...we can still make some interesting observations
- Considerable variety in what is offered
  - ... a few offered private goods for low prices
  - ... some offered public goods at (too?) high prices
  - ... many offered public goods at very competitive prices
- ‘Set aside’ offers comparable to current instrument targets varied in price from DKK 40K to DKK 110K/ha within the winning set.
- This is roughly and approximately 50% cheaper than current subsidy schemes for setting aside untouched forests areas or single trees
- Many biologically interesting land areas are not registered as such
Exploring multicriteria forward auctions in Portugal
Reverse and forward mechanisms

**Reverse**
- Central purchaser
- ES providers bid their *willingness to accept*
- If multiple criteria, purchaser makes trade-offs

**Forward (here, ECOSEL¹)**
- Decentralized financing (crowdfunding)
- ES providers bid their *willingness to accept*
- If multiple criteria, stakeholders make trade-offs

[1] Tóth et al. 2010
Auctions and PES

Study area: fires and collective action

- Privately owned land fragmented into small parcels → collective action problem for fire management → establishment of joint management areas
- Vale do Sousa:
  - 360 landowners
  - 14,000 ha
  - 2,000 stands
  - Mostly eucalyptus plantations (pure or mixed with maritime pine), some hardwoods
  - High fire risk: ~50% burned in last decade
  - Not the landscape people prefer
Step 1: Optimization and stakeholder consultation

- Model ecosystem services production (timber, erosion protection, carbon storage, fire protection, etc.)
- Generate possibility frontier of efficient combinations (bundles)
- Explore frontier with stakeholders to identify interesting bundles
- Auction: which bundle will stakeholders will pay the most for?
Step 1: Optimization and stakeholder consultation

Default bundle

Bundle 1

Bundle 2

Bundle 3

Bundle 4
Step 1: Optimization and stakeholder consultation
After optimization, preparing for the auction:

Which ES matter? → Survey
Which bundles are attractive? → Pareto tool workshop
Is the auction platform understandable? → ECOSEL workshop
Step 2: Forward auction (ECOSEL)
Step 2: Forward auction (ECOSEL)

Bid totals and reserve prices
Current status: stakeholder workshops and mock auctions in the lab, preparing for upscaled online trial
## Quick comparison of Danish and Portuguese cases

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Thank you!
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