

Auctioning greenhouse gas emissions permits: How should the auction be designed?

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(1) Overview

In Australia, there is bipartisan support on both the Federal and State government level for the introduction of a national emissions trading scheme (ETS) by 2010 in order to combat climate change. One of the key design questions is the initial allocation of permits. The different design proposals currently on the table (NETT 2006, PMTG 2007) share the view that at least some share of the permits should be auctioned. However, there is only limited international and no Australian experience on how such an auction might be implemented best.

Regarding the potential design of an emissions trading scheme in Australia, the National Emissions Trading Taskforce (NETT) has released a Discussion Paper (NETT 2006) which, among other issues, states that:

- the ETS should cover a wide range of emitting sources (e.g. electricity industry, fugitive emissions from gas retailers, ...), some of them downstream some upstream;
- permits should be valid for a particular year (vintage); if not being used in that year, they can be carried forward (banking), but the opposite (borrowing) is not allowed;
- permits should be submitted for cancellation based on annual monitoring and reporting;
- a penalty for non-compliance should be applied which on the one side encourages compliance but which on the other side caps the cost of the scheme at some acceptable level;
- some permits shall be allocated for free up to 20 years in advance to existing generators estimated to be adversely affected by the scheme; new generators, however, were exempted from free allocations;
- existing and new Trade Exposed Energy Intensive Industry (TEEII) should receive a free allocation based on recent output data multiplied by a benchmark;
- only the remaining permits might be auctioned with the revenue being shared among the States and Territories according to some formula not yet determined.

The NETT also specified later on that auctions, if applied for the initial allocation, should primarily aim at reaching an efficient allocation of permits. This paper explores the potential design of a system of intertwined auctions for the initial allocation of greenhouse gas emission permits in Australia and

summarizes the recommendations of the authors to the NETT (cf. Evans & Peck 2007). Among others, these recommendations cover the format of the actual auctions as well as their timing and frequency.

(2) Methods

The recommendations for the auction design draw on state-of-the-art results of auction theory as well as practical insights from past auctions in the area of environmental regulation (e.g. SO₂ auctions in the Acid Rain programme in the US, NO_x auctions in the US; European emission permits auctions in Ireland and Hungary).

(3) Results

It is recommended that auctions are held before the start of the scheme since early price signals and liquidity are important in an immature market. Spot auctions should take place quarterly as this is assumed to balance transaction costs and risk management. At one of these auction events per year, permits valid only one and three years, respectively, ahead in the future would be auctioned simultaneously to the spot products in order to also generate forward price signals which are valuable for investment decisions regarding abatement measures. All auctions should be conducted electronically via the internet. Regarding the auctions themselves the following format is recommended:

- ascending clock auction with iterative sealed-bidding in multiple rounds,
- uniform pricing,
- aggregate demand revealed in each round,
- simultaneous auctions of different vintages are held at the dates when advance and spot vintages are auctioned,
- allow Trade Exposed Energy Intensive Industry and other recipients of free permits to sell these permits in the auction (double auction extension),
- proxy bids to reduce transaction costs for small participants,
- intra-round bidding.

(4) Conclusions

Simultaneous clock auctions seem to be the most appropriate way of auctioning different vintages at the same time. However, so far there is little experience with this type of auction in this particular environment and experimental tests of the proposed auction format are recommended prior to an actual implementation in order to reduce the risk of any shortcomings.

References

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