

Discussion of
“Flow-Based Coordinated Explicit
Auctions: Auction Income Distribution”
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January 16, 2007

I. THEORETICAL BACKGROUND

Explicit auctions

[(1) auction for physical rights to transmission capacity

(2) energy markets]



Implicit auctions [pool: nodal/zonal prices embodying transmission scarcity]




Efficient allocation

under a number of assumptions, including:

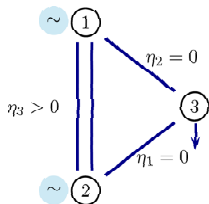
- ✓ competitive energy markets [leave aside issue today]
- ✓ real-time auctions or else contingent contracts,
- ✓ full-scale auction.

Some problems with explicit auctions

(1) ST adjustments to demand, supply and transmission shocks

- ✓ Example: Germany-France: annual/monthly/daily.
- ✓  excess conservatism?
- ✓ Creates ancillary debate about obligations/options/netting.

(2) Loop flows



$$c_1 < c_2$$

$$\begin{cases} p_1 = p_3 - \frac{\eta_3}{3} \\ p_2 = p_3 + \frac{\eta_3}{3} \end{cases}$$

- ✓ can't just auction off border capacities (BCs),
- ✓ need $\begin{cases} \text{PTDF matrix to compute needs,} \\ \text{market equilibrium to compute } \eta_3. \end{cases}$

Problems associated with multiplicity of TSOs

- ✓ Individual incentives to make capacity available?
- ✓ LT incentive to invest in transmission grid?

Well-known that:

- ✓ should not give congestion rent to TSOs that create them,
- ✓ PTDF matrix and market equilibrium, *under some conditions*, provide proper incentives for transmission investment
 - Hogan's merchant investment,
 - congestion-based incentive scheme for grid (UK).

II. LEUTHOLD-TODEM PAPER

Interestingly:

- ✓ puts TSOs' incentive to make BC available and to invest in it to the forefront,
- ✓ unveils inefficiency of various schemes.

Discussion of the assumptions

(a) “TSOs maximize individual income”

Yes, but often overemphasize reliability (managerial career concerns).

Two may go together (transit country), but they may also conflict (import country in ST).

(b) 4 criteria

- | | | |
|--|---|---------------------------|
| ✓ efficient resource allocation* | } | idea behind nodal pricing |
| ✓ signals for network investment | | |
| ✓ “externalities among TSOs” | } | put a lot of constraints |
| ✓ continuity with respect to current auction incomes | | |

* Measurement: if BC \uparrow then income \uparrow . Too qualitative.

Examples

[Mathematical modelling would clarify some of these examples for reader.]

✓ ETSO (2001) 1

Allocation based on source/sink flows.

Ex: Pure transit country would receive no income.

✓ ETSO (2001) 2

Allocation based on shadow prices

➡ incentive to create congestion.

EC 2003 ($\eta \rightarrow$ investment in grid, user price reduction)

✓ Thermal Usage (TU) fraction

Income proportional to $\frac{\text{usage}}{\text{capacity}}$

good ST incentives, bad LT incentives.

Final remark

- ✓ Profession pays too little attention to incentives of grids
 - to enhance BC for a given network
 - to invest in the network.
- ✓ Profession pays too little attention to whether subsidiarity principle + international cooperation can come close to duplicating an integrated management given
 - asymmetries of information,
 - grids' incentives necessarily reflect national political objectives.