The need and potential design for capacity mechanisms in the German/continental European power market

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Jörg Jasper
Group Expert Energy Economics & Policy
EnBW Energie Baden-Württemberg AG
Our analyses: Need for cap. incentives apparently depends on geographical space generation adequacy (GA) is defined for (preliminary)

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<tr>
<th>Europe/CWE-region</th>
<th>Germany (autarky)</th>
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<td>- 'GA-Region’ (more or less) identical with geographical space for which scarcity price signal is generated</td>
<td>- 'GA-region’ not congruent with price area</td>
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<td>- Energy only market very likely to be sufficient, esp. if demand made more elastic (DSM)</td>
<td>- Scarcity price for specific requirements of GA-area cannot be generated</td>
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<td>- No capacity mechanism required</td>
<td>- Capacity mechanism perhaps required in the long run; might be transitory if definition of GA-region changes</td>
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<td>- Local/regional problems to be cured with alternative means (technical solutions in smart grids, like smart transformers, batteries etc. or G-components)</td>
<td>- No need for fully-fletched mechanism – at least not in the transition period</td>
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Autarky: Need for new built only in second half of decade (earliest)

- **Today**
  - Capacity scarcity might occur during winters 2011/2012 and 2012/2013

- **2015**
  - Situation improves due to commissioning of new built

- **2020**
  - Scarcity may occur due to limited new capacity and decommissioning

For time being, markets not willing to pay capacity price.
Significant new capacities built since 1998

- More than 15 GW new built since beginning of liberalisation despite initial overcapacities
- Since 2007 mostly CCGT (no subsidisation)
Capacity scarcity might occur during winters 2011/2012 and 2012/2013

Capacity market will not help

Situation improves due to commissioning of new built

Capacity incentive not necessary (and also not effective)

Scarcity may occur due to limited new capacity and decommissioning

Time is sufficient for in-depth discussion on incentive mechs. (if necessary)

Criteria for new market design:
- Energy only comes first
- If capacity incentive inevitable: minimal market distortion
- Reversibility if instrument is not necessary anymore
- Minimal costs
- Must fit into European market
- Non-discrimination
Some capacity mechanisms under discussion

1. Simple subsidy
2. Index-based capacity payments
3. Tender for Targeted Reserves (TTR)
4. Call for tender (new plant)
5. Reliability Options
6. Capacity Requirements
TTR: Swedish example

- Idea: central body (TSO) procures reserve capacity and withholds it from market unless 'exceptional circumstances' prevail.
- Swedish TSO calls tender for 2 GW peak reserves: capacity payment
- Plant must be available within 12 hrs (winter); offer in day-ahead market if market does not clear
- 0.01 €/MWh above last commercial bid
- Costs (SWE) limited
- Finland: similar model, but higher costs
Some aspects of TTR to be discussed

Advantages

› TTR can be implemented at short notice, if necessary, and easily be removed

› Limited (but probably existing) influence on energy-only market

› Less spot market distortion than alternative simple approaches (subsidies, tender for new plant); open for DSM (SWE)

Issues to be tackled

› Market power

› Optimal timing of implementation/Lock-in effects

› Parametrisation and other design issues
   › Dimensioning of reserve capacities (if too many reserves: high costs, perhaps artificial scarcity in spot market; if not enough: capacities not contracted may retire forever)
   › Activation rules (second auction?; highest commercial bis or spot market limit, other price?)

› But Problems appear solvable, esp. compared to alternative mechs.

→ If capacity mech. is required (autarky), TTR may be feasible and pragmatic solution for transitional period.
Summary

- Capacity problems likely to occur during next winter periods. Regulator attempted to address problem already.
- No scarcity for several years to come.
- Scarcity depends on geographical area for which GA is defined. In case of autarky for GER scarcities may occur by end of decade. For CWE-region energy only may be sufficient to provide GA, esp. if demand is made more robust. Subsidies won’t help anyway.
- EO-Market provides efficient outcomes and must continue to be the reference.
- Capacity incentive mechs. should only be in place if other means to increase GA (e.g. DSM) not sufficient: “We particularly recommend to address the chief market failure—the absence of a robust demand side—that is the primary motivation for capacity markets” (Cramton/Ockenfels (2011), p. 3)
- Capacity markets always interfere with energy only markets (largely depends on design, however). Mistakes in market design may cause huge inefficiencies. Problems well understood theoretically, but danger of political agendas.
- Mechs. must be as ‘microinvasive‘ as possible and reversible, esp. in case of changed GA-definition → TTR for transitional period?
Thank you!

Dr. habil. Jörg Jasper
Group Expert Energy Economics & Policy
EnBW Energie Baden-Württemberg AG