Incentive Regulation in the German Energy sector – from concept to implementation

Christian Growitsch

EPRG Spring Research Seminar
Cambridge, 18 May 2007
Agenda

• The German incentive regulation’s schedule
• Calculating allowed revenues – the formula
• Central implementation issues
  - Number and duration of regulation periods
  - Initial value
  - General X-Factor
  - Benchmarking / individual X-Factor
  - Exemption rule for small utilities
• Conclusions
BNetzA (Federal Network Agency)
• 30 June 2006 report handover

Public comments

BMWi (Federal Ministry for Economics and Technology)
• September/October 2006: Consultation, 1st round Framework
• November 2006: Proposal for the central elements
• December 2006 - today: Consultation, 2nd round
• April 2007: Submission of memorandum to the Cabinet
• May/June 2007: Approval of the bill (?)

BNetzA
• 2007, 2nd half of the year: Regulatory cost audit
• 2008: Cost-plus regulation, Benchmarking
• 1 January 2009: Beginning of incentive regulation in Germany
Allowed revenues - the formula

\[ EO_t = K_{dnb,t} + (K_{vnb,0} + (1 - E_{ind,t}) \cdot K_{b,0}) \cdot \left( \frac{VPI_t}{VPI_0} - PF_t \right) \cdot EF_t + Q_t \]

- **Individual X-Factor** (Benchmarking)
  - Persistently not influenceable cost (given by regulation)
  - Temporarily not influenceable cost (structurally determined)
- **General X-Factor**
  - Initial value
- **Influenceable cost**
- Draft ordinance
  - 2008: Adjustment year with cost-plus
  - 2 periods, 4 years each
- Industry (incumbents) complaints:
  - Adjustment time very short: Problems due to long amortisation periods of network assets
  - Reference to § 21a 5 EnWG: Requirements have to be achievable and surpassable at reasonable effort
  - Industry request: 3 periods, 5 years each
Central issues
Number and duration of regulation periods II

The economics behind:

- High uncertainty due to weak database
- Incentive regulation is meant to imitate competition
- Given workable competition, (significant) inefficiencies should not exist or be cut back within short time. Suppliers bear the cost of inefficiencies and the risk of default.
- Persistent inefficiencies cause extra economic costs. (widely neglected in the current discussion)
- Game of rent distribution: Who bears extra costs?
  - Network operators
  - Customers
Central issues
Number and duration of regulation periods  III

The economics behind, cont.:

- The legal terms in § 21a 5 EnWG concerning incentive regulation – achievable, surpassable and reasonable – are neither sufficiently specified nor is it possible to operationalize them appropriately. This
  - induces legal uncertainty and
  - complicates effective incentive regulation

Conclusion: To maximize social welfare in the long run, regulatory pressure should neither be:

- to weak in order to incentivise cost reduction (productive efficiency)
- to strong in order to allow new investments (dynamic efficiency)
Central issues

initial values I

• Draft ordinance
  - Initial values for incentive regulation are based on cost-plus results
  - Limited on ‘cost of efficient production‘
  - Network operators may apply for an extra investment budget on top of the allowed revenue
    • Due to different cost standards (replacement vs. historical costing) and partly very old networks, especially in the western part
    • Max. 1% of overall CAPEX
    • Ex post monitoring of capital actually invested
• Industry complaints:
  - Incentive regulation prevents investment
  - and claims: abandonment of additional cost monitoring in favour of a simple adjustment of capital base and the persistently not influenceable cost
The economics behind:

- (Obviously, ) initial values are of crucial importance for incentive regulation – and not just for the beginning

- Current cost plus regulation is an unappropriate cost base -> comparability ?
  - Differences in depreciation strategies
  - Differences in capitalisation strategies
  - Two different cost standards for old and new investments)

- Cost monitoring – before the beginning of incentive regulation – becomes necessary
  - Including comparisons to identify ,excessive cost‘
  - However: time-critical process
Central Issues
Initial value, duration and efficiency target

\[
\begin{align*}
N_2; t=0 & \quad \overline{X}_2 \\
N_1; t=0 & \quad \overline{X}_1 \\
N_1; t=1 = N_2; t=1 & \\
\overline{X}_1 & \quad \overline{X}_2 \\
\end{align*}
\]

Cost

\[
\begin{align*}
t=0 & \\
t=1 & \quad t=2 \\
\end{align*}
\]
Central issues
General X-Factor I

- Draft ordinance
  - Proposal (BNetzA): initial 2.54% (Törnquist-Index)
    - Productivity differential: 2.23%
    - Inputprice differential: 0.31%
    - Data provided by Statistisches Bundesamt (Federal Statistical Office)
  - Political decision: 1.5
  - Perspective: Calculation of the general X-Factor by Malmquist-DEA
Central issues
General X-Factor II

• Industry complaints:
  - Incomplete data base
  - Weigthing in equal proportions inappropriate
  - Indeces applied inappropriate
  - Network sectors cannot achieve higher productivity advances than the economy as a whole – due to long asset amortisation periods
  - claims: $X_{\text{gen}} = 0\%$
Central issues
General X-Factor III

The economics behind:

- X-Factor is a relative value: relationship to economy as a whole
- Aim: 'competitive' price-level
- Calculating the General X: allocative vs. dynamic efficiency. High X-Factors
  - reduce prices (in the short run) and increase allocative efficiency but might
  - prevent investments (inappropriate returns) and decrease dynamic efficiency
- Data base currently incomplete
- Calculating the inputprice differential
  - capital: necessity of applying private-sector data: objectivity?
  - labour: not yet discussed; data supports positive wage differential
Central issues
Benchmarking I

- Draft ordinance
  - Best of performance from DEA/SFA
  - DEA with increasing returns to scale
    - Aim: Protection of small network operators
    - Economic outcome might be right the opposite
  - Cap on individual X-factor: max 50% inefficiency over 8 years
  - Standardization of CAPEX
    - 1st period: historical costing and application standard economic lifetime
    - 2nd period: special registry for assets (Technisch-wirtschaftliches Anlagenregister) to avoid potential biases due to differences in depreciation and capitalisation strategies
• Industry complaints:
  - Schedule for registry too ambitious (although the industry claimed for it)
  - claims: additional discounts to best of performance from DEA/SFA
  - claims: benchmark to the average: OLS instead of SFA and DEA
  - claims: capping the individual X-factors due to low data quality – max. 2% p.a., i.e. max. 30% over 15 years
The economics behind:

- Benchmarking might prevent investment: since former depreciation and capitalisation strategies distort benchmarking ranking
- Cost base to be standardized – to the beginning of 2nd regulation period latest
- Registry could serve as interim solution
- Prefereable: change to annuity based valuation and standardized cost
- Capping the individual X-factors:
  - seems unnecessary in a best of performance setting but
  - might be acceptable in the 1st period due to low quality of data
  - in order to arrive at the efficient cost level at the end of the two periods
Central issues
Exemption rule for small utilities I

• Draft ordinance
  - Definition 'small network operator':
    • Gas and electricity together less than 20,000 connected customers and
    • Gas only less than 10,000 connected customers
    • Otherwise too few utilities left over for the gas benchmarking
  - Option menu:
    • Full participation
    • Simplified approach: Individual X-factor equal to the average

• Industry complaints:
  - Regulatory burden too high for small utilities (e.g. data collection); efficiency decrease due to regulatory requirements (additional staff)
  - Diseconomies of scale
  - Reference to § 21a 5 EnWG: Requirements achievable and surpassable
  ⇔ Claim for special treatment of small companies
Central issues
Exemption rule for small utilities II

The economics behind:

- Avoid setting wrong incentives ⇒ simplified approach better than originally discussed cost-plus alternative
- Self-selection (option rule): order is important to avoid cherry picking:
  1. Choice, then
  2. Benchmarking
- Reasons for exemption rule questionable: No indication for scale economies in explorative benchmarking
- 10,000 connected customers:
  approx. 480 electricity and approx. 410 gas utilities
    ⇒ Reduces the number of benchmarking entities
    ⇒ Possibly affects results for remaining companies
    - Associated companies should be analysed jointly with their parent utility
      (as in unbundling de-minimis-rule)
Conclusions

- Postponement of transition period should be used to increase data quality
- Current regulation inappropriate base for calculating initial values
- Instead: Use annuities based on standardized quantifications
- General X-Factor > 0 is justifiable but should be determined with caution
- Exemptions for small companies should not undermine regulatory regime
- Open issues
  - Definition of internal rate of return
  - What comes after 2016 (yardstick competition?)