Political Economy of Regional Power Markets
Testing Times in the Nordic Power Market
by Kjell Roland
Energy Lecture May 11, 2005
Agenda

The unique Scandinavian story
- Regulation by court or by common sense
- Restructuring and company strategies
- Investing to secure supply
- An overstretched policy agenda
- Future of Scandinavia Electricity Industry
The unique Scandinavian story

NORDPOOL


1998 1999-2000
Unleashing competition

Whole sale to end user price pass through

Spot market and household prices, Norway

Source: ECON
Unleashing competition

Cut-throat competition: $p = mc$

Marginal cost versus Nord Pool prices

Source: ECON/Nord Pool
Explaining the success

- Diversified and complementary portfolio of generating assets
- Nordel: Long tradition of cooperation across borders incl common pool from 70s
- Public ownership
  - Slow restructuring of industry
  - Fragmented industry
  - No stranded costs, flexible and adaptive regulatory systems
  - Strong government owned TSOs
Half way to success ....

.. or at the end of the easy part?

- Regulation – increasing in scope and complexity?
- Investment and capacity crunch?
- Restructure or be structured?
- Regional market, but national regulations and institutions?
- Inconsistent and overstretched policy agenda?
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Regulation by court or by common sense
Regulation: A moving target

• **We know what not to do:**
  – Copy the US experience or move back to selfregulated European utilities

• **We do not know the end game, but how to move towards it:**
  – A flexible, adaptive and pragmatic search for robust and roughly optimal systems
Market needs regulation

Liberalisation require a lot more, not less, regulation and put new strains on policy making
European incentives degenerate

Cost efficiency

Pre-reform expectations

Self regulation and public ownership

Incentive regulation

Start of sliding

Efficient monopoly regulation?

Rigid cost based regulation

Model of monopoly regulation
The challenges

• Can we avoid US-style legalistic, rigid and detailed regulation?

• Are regulators able to handle the complexity of system design? And willing to co-operate across borders?

• Can the political system cope with the increased political risk of a regulated and competitive electricity system?
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Structural change and company strategies
Phase I: Disaggregation of value chain

Integrated utility

- IT
- Risk management
- Metering
- Trade
- Retail
- Billing
- Branding
- Energy services
- Project finance
- Asset development
- Fuel procurement

Disaggregation

- IT
- Metering
- Billing
- Trade
- Retail
- Branding
- Energy services
- Project finance

Producer-retailer

- Fuel procurement
- Asset management

Network company

- Risk management
- Asset development

Asset entrepreneur

- Disaggregation of value chain
Scandinavia

- National champions again attractive
- Pan-Nordic strategies
- High degree of public ownership – still highly commercial
The strategy of choice

Back to square one!
- Vertical integration
- Gas & Power - if possible
- Across borders to diversify regulation risks
- Energy Intensive Industry: The complete U-turn
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Investment and continuity of supply
Is there a problem?

Liberalization with surplus capacity works – but when surplus capacity has eroded …

- Will a pure energy market ensure efficient investment – or are special mechanisms needed?
- Will volatile and high prices attract political/regulatory interventions that distort market price signals?
- Is electricity different from other commodities?
  - Long lead-times in new capacity
  - Environmental externalities
  - Balance market in real-time
  - Physical constraints & interdependence
Prices- towards full costs?

Textbook expectation: Market based prices gravitate around full costs

Historical prices

Assumed long run marginal cost

Assumed trend towards long run marginal cost

Source: ECON
... or commodity price cycles

- Strong cyclical price patterns
- Investment booms and busts

Commodity market

Price

Investment boom

Investment bust

Cost of new capacity

Turn in business cycle

 capacidad

Capacity deficit

Investment bust

Time
Market price & investment cost

Investment in CCGT unprofitable in Scandinavia

- CCGT was profitable in UK, but prices have declined

2001 Cost of CCGT in Sweden and Denmark, gas price range 12.0 - 15.7 €/sm³

2001 Cost of CCGT in Norway 2001, gas price range 8.2 - 10.2 €/sm³

UK

Nord Pool
Market for security of supply

Market left alone
⇒ No investment for security

Options include:
– Pure energy markets
– Capacity payments
– Reserve markets
– Capacity markets (ICAP)
– Enhanced demand side participation

Tinkering with the system – hard to fine tune
Prospects for investment

• Living with the market
  – Accept cyclical & higher prices
  – Introduce special mechanisms

• Taming the market
  – Integration to internalise investment risks
  – Anti-competitive implications

• Politically controlled market
  – Government ownership to mandate investment
  – Subsidise green power
  – New transmission interconnectors
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An over-stretched policy agenda
An over-stretched policy agenda

- Three primary objectives:
  - Efficiency/low prices
  - Security of supply
  - Environment

- BUT the objectives are conflicting

- Energy policy: A conflicting story about trade-offs and compromises
  - Last decade: easy due to liberalisation and excess capacity
  - This decade: expected to be more of a problem!
The electricity sector: squeezed in the trade-off between three important but conflicting goals
Long waves in energy policy

Energy policy - invented in the 70s

• Ever since – a continuous fight be on top of the agenda
Moment of thruth

Low prices - secure supply - environment

• Even modest demand growth challenge emission targets
• Energy - too expensive for the poor and industries, too cheap for the environment
• Security of supply needs regulation – mandatory diversification of technology/fuels – or market friendly policy instruments?

Something has to give!
Future of the Scandinavian Electricity Industry
Drivers for change:

- Investment & prices
  - A tightening market
- Corporate strategies
  - National champions & super-utilities
- Regulation & policy
  - Kind of state intervention
Three scenarios for 2010:

**Marginavia**
- Structural changes
- European integration

**Cyclinavia**
- Living with the market
- Pan-Nordic orientation

**Polinavia**
- Governments intervene
- National orientation
Average wholesale prices

Average scandinavian wholesale prices in the scenarios

Source: ECON
Expanding generating capacity

Cumulative new investments in the scenarios

Source: ECON
Political economy of the Nordic region

Present Nordic Challenges:

• Energy/environment policy hard to move beyond nation states
• And politics wants far more than what is feasible, (some) politicians understand but are not able to cope. NIMBY between governments the easy way out
• Investment in capacity – politically controlled in detail, and no commercial options attractive at the present
• Peak capacity – how to modify a pure energy market
• Energy intensive industries down the drain?
• Co-ordination of regulators and TSO’s – not easy
Liberalisation: What have we learned?

- US – the mother of regulation of infrastructure industries, so far not the star performer
- The EU IEM benchmark report: not much competition 15 years after the first White Paper
- European Energy Intensive industries and households: what happened to those who promised increasing efficiency and lower prices?
- Security of supplies - not provided by the market but needs to be regulated into the market
Not just another commodity

• Competition in electricity – not a natural point of gravity, but a very demanding regulatory and policy proposition

• Reliability and security of supply – a must far more important than market

• Policy agenda complicated and inconsistent, and market based electricity not on top of agenda any more

• Market based electricity - not a unique/ well defined animal, but varies between countries and over time
Insights: system design

• Pragmatic, adaptable and flexible regulatory regime - no perfect solution exist but avoid the US legalistic approach

• Investment – the Nordpool set up overemphasise operational efficiency in a mature system, more attention needs to be paid to secure investment and bying down investors risks

• Regional co-operation between vertically integrated unbundled government owned utilities much easier to set up and far more robust than the energy only Nordpool in an unbundled environment
The question is not market - or not market, but what kind of - and how much market
What kind of market?

Open access pool

Energy market + Uplift

Energy + capacity markets

Closed shop pool

Wholesale

Service area

Access to large customers

Access to bundled commodity

Access to pure energy market

GERMANY

NORD-POOL

UK

CALIFORNIA

ARGENTINA

CHILE

PJM

California

Nordel