Liberalizing Electricity Markets

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http://www.econ.cam.ac.uk/dae/electricity

Politically acceptable liberalisation requires:

- confidence in supply security
- sustainable competitive outcomes
- absence of market abuse
- ability to mitigate market power
- credible regulation for efficient free entry and investment

*These challenges remain in EU*

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EU Energy Directives

- Electricity 96/92/EC due Feb 1999
- Gas 98/30/EC due Aug 2000
  ⇒ extend single market to energy
  ⇒ increased role of Commission
  ⇒ de-politicise energy policy
  ⇒ energy policy to be market friendly

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Energy vs economic policy

- Tensions between energy policy and market solutions
- Liberalisation helped by benign circumstance?
  - Energy liberalisation worked in UK
  - collapse of communism ⇒ privatisation
  - US: unbundling ⇒ lower prices
    ⇒ escape backward-looking RoR tariffs?
Energy policy for electricity

- Security of supply critical
- cannot store electricity - unlike oil, gas, coal
- local failures can have wide-area impacts
- security ensured previously by:
  - obligation to supply + reserve margins
  - franchise and vertical integration
  - imports on long-term contracts

Security of supply

- spare capacity aids liberalisation
- encourages competition ⇒ low prices
- liberalisation shortens contracts
  - threatens investment adequacy
- early liberalisers had spare capacity
- Britain developed regulation, licences
- Continent unprepared for Energy Directives?

Lessons for Reform

- authorisation preferable to tendering/SBM
- access is key to creating single market
  - press for rTPA
  - require transparency
- require ownership separation of G & T/D
- separate distribution and supply
- strong sector specific regulation needed

A Single European Electricity Market?

Lars Bergman, Geert Brunekreeft, Chris Doyle, David Newbery, Michael Pollitt, Pierre Regibeau, Nils-Henrik von der Fehr

Published London: CEPR, 1999
European Council response

- Lisbon 2000 European Council asks CEC to work to complete single ESI market
- CEC reaches same conclusion as CEPR
- Stockholm 2001 CEC presents
  - analysis: working papers
  - Press Release: ‘California not a problem’
  - proposed amendments to Gas+Elec Directives
- France and Germany oppose

What happened in California?

1996: cost of new power < regulated price
  - buy out stranded generation assets
- Price cap until then, expect price fall, **but**
- average 2000 wholesale price 3 x 1999
- Jan-Apr 2001 prices 10 x 1999
- distribution companies bankrupted
- State steps in at huge cost

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**California ISO**

What Explains the High Prices?

Prices above competitive levels were due to both higher production cost and higher mark-up from market power

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**California ISO**

Scarcity or Market Power?

Responses to California

- ESC concerned at supply risks
- NRAs to monitor supply/demand balance ⇒ tenders if S/D inadequate
- security cost to be met by whole system
- improve interconnection, harmonise tariffs
- subsidiarity ⇒ CEC only if impossible

Competition problems in EU ESI

- dominant incumbents (Fr, Be, It)
- merger wave (EdF, E-on, RWE)
- inadequate interconnect transmission
- illiquid or absent wholesale markets
- under-staffed or no regulator
- access to information patchy
- lack of regulatory enforcement power

Transmission constraints in Europe

Source: Towards a Reliable European Energy Market, Presentation by B. van Ouden, APX, January 2001

Share of dominant generator in peak demand

Source: Towards a Reliable European Energy Market, Presentation by B. van Ouden, APX, January 2001
Why so much concentration?

- Energy policy vs market forces
- National champion to defend national interest?
- More policy control over dominant firms?
- Weak EU concept of ‘market’ and ‘dominance’
- Britain shows importance of deconcentration
- Netherlands nearly merged 4 gencos into one!

Generation in England and Wales
Tensions in liberalisation

- variable cost ~ 50% average cost
- \( p = \text{SRMC} \) low unless margin tight
- tight margins \( \Rightarrow \) low supply security
- competitive market unacceptably volatile without long-term contracts
- Supply competition reduces contract length
- futures markets illiquid
\( \Rightarrow \) investment risky in competitive markets

Response to risk

- market dynamics: \( \Rightarrow \) reduce risk, protect margins
- wholesale price risk: reduce by vertical integration
- investment risk: reduce by horizontal integration
- entry deterrence protects investment, margins

Without entry threats Gencos may

- Merge (c.f. Germany)
- Reduce spare capacity (Germany)
Contract cover demand driven \( \Rightarrow \) expensive
\( \Rightarrow \) reduces cover \( \Rightarrow \) market power

\( \Rightarrow \) Critical to minimise barriers to entry
- ownership unbundling of G & T

CCGT as the answer to liberalisation?

- High efficiency, low capital cost, fast build
- modest scale economies \( \Rightarrow \) IPP entry
- but economics depend on gas and electricity market design
- these are likely to be influenced by incumbents
- NETA as an example
Contestable entry and gas liberalisation

- incumbent gas companies can
  - deny/delay access under nTPA
  - obstruct new imports
  - then price discriminate to extract rent
- gas balancing charges can distort electricity market

Benefits of gas liberalisation

- cheaper to move gas than electricity
  ⇒ locate new CCGT near demand
  ⇒ each country increases supply/demand
- reduces transmission constraints
- widens market, reduces concentration
- but is gas liberalisation even harder?
Increasing interconnection

- increases short-run security
- mitigates market power
- provokes cross-border mergers
- spare capacity becomes a public good
- California relied on other states for reserves

Decentralising security

- Suppliers to secure adequate reserves?
- Problem is length of contract
- Answer: retain the franchise?
  ⇒ yardstick contract regulation
  ⇒ requires more active NRAs

Environmental impacts

- liberalisation ⇒ lower prices, higher CO₂?
- Obvious solution = carbon tax
- practicality = ‘green’ energy
- country obligations ⇒ trade ‘green’ certificates
- CHP, wind disadvantaged by balancing markets
- wind requires more interconnection
  ⇒ competition benefits

Conclusions

- tension between competition and investment
- but oligopoly without entry threat reduces capacity
- gas liberalisation key to single electricity market
- otherwise maximise interconnection, ensure reserve adequacy
  ⇒ delay ending franchise?
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