Power Generation Investment in Liberalised Electricity Markets

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http://www.econ.cam.ac.uk/electricity
Liberalisation and investment

• Will liberalisation prejudice investment?
  – In generation? In transmission and distribution?
  – Socially efficient type and level?
  – If prices are not capped?
  – If the market functions well?

• If so, why?
  – Because of market design?
  – Because of market failures?
Will competitive markets deliver efficient investment?

- Only if:
  - security is priced efficiently and reflected in demand directly or by proxy (suppliers)
  - contract markets work well
    - credit risk is addressed
  - investors can confidently predict future energy policy
  - fuel is efficiently priced
Issues for discussion-1

• Are price spikes problematic?
  – Short-term: deal with contracts
  – Medium term: are they likely?
  – Are investment cycles likely?

• Does demand response help?
  – Or would CfDs be sufficient?
  – Do spikes cross borders?
Issues for discussion-2

• Domestic customers need supply security
• Are capacity payments necessary?
• Or would contracts suffice?
  – What if customers can switch?
  – Exit charges for stranded contracts?
  – Or resource adequacy requirements?
• What are costs and benefits of solutions?
Issues for discussion - 3

• How does risk affect investment choice?
  – Did integrated utilities mis-price options?
• How should fuel price risk be handled?
• What of real option theory?
• Is there a socially inefficient bias against nuclear/hydro?
  – If so why and what is the solution?
Issues for discussion - 4

• How reduce fuel import dependence?
  – Via state-owned national champions?
  – To support nuclear power, CHP?
  – How balance the risks of market power?
• How best to encourage renewables?
  – Tradable quotas, tender auctions, or carbon tax?
• What impact on private investment?
Issues for discussion - 5

• What extra challenges in developing countries?
  – Regulatory credibility or country risk?
• What are the solutions?
  – DFI or self-finance?
• What are suitable models?
  – Authorisation and wholesale markets?
  – SBM + IPPs on PPAs?
Issues for discussion - 6

- Do markets give efficient fuel diversity?
- Is there a market failure?
  - Inefficient contracting for domestic market?
- How will carbon trading impact choices?
- What about regulatory uncertainty?
Security of supply-1

• 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-2

- liberalisation shortens contracts
  - threatens investment adequacy
- early liberalisers had spare capacity
- Britain developed regulation, licences
- CEC considers capacity monitoring essential
- Some regulators lack powers to request information about generator plans and actions
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
  \( \Rightarrow \text{investment risky in competitive markets} \)
Decentralising supply security

• Suppliers to secure adequate reserves?
• Problem is length of contract
• One answer: retain the franchise?
  – Supported by France, to be ended by EC?
⇒ yardstick contract regulation
  – what has been the experience here?
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