

# 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  $\sim$  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*

# 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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