MARKETS FOR ELECTRICITY IN EUROPE

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Context
- European Union countries are liberalising their electricity industries
- Nature of electricity requires specialised market
- This paper discusses the approaches in UK, Nordic countries and Spain in designing a properly functioning electricity market

Electricity is a Difficult Commodity to Deliver
- Every power station must be synchronised
- Electricity must be generated at the instant it is consumed
- Some capacity must always be held in reserve
- A safety margin is needed

Industry Structure
- Generation and transmission are a wholesale market
- Distribution to the end user is a retail market

Electricity Market Aims
- Electrical stability
  - Lights stay on
- All power is paid for
  - Generators are paid for all power they produce
  - Consumers pay for all power they consume
- Economic efficiency
  - The cheapest power stations available are used to meet demand
- Price stability
  - Agents should have the choice of making most transactions at stable prices agreed in advance

Electricity Market Design (1)
- Due to the nature of electricity all power markets must contain some form of short-term balancing mechanism
- Solution: Introduce spot market in which transactions between suppliers (generators) and consumers (retailers, factories, etc) take place
- Prices in the spot market are determined by marginal cost pricing
Electricity Market Design (2)
- Marginal cost pricing: Set the spot market price equal to the marginal cost.
- In a competitive market, this scheme gives generators the correct incentives:
  - They increase output if their own marginal cost is below the spot market price.
  - They decrease output if their marginal cost is above the spot market price.
- Success relies on the assumption that prices put forward reflect the true electricity costs.
  - Competitive environment must prevail.
  - Market power should not be concentrated.

Electricity Market Design (3)
- Further issue to consider is price stability.
- Spot markets exhibit considerable price volatility.
- Solution: Introduce financial markets where agents can trade in advance to hedge price volatility.
- Examples:
  - Futures markets.
  - Bilateral trades mediated by Market Operator.

United Kingdom (1)
- The 1990 restructuring and privatisation split the Central Electricity Generating Board (CEGB) into three generators and one transmission company.
- 12 Regional Electricity Companies are responsible for distribution.
- Trading takes place in a spot market called Energy Pool.
- All trading has to go through the Pool but bilateral contracts can be used for stability.
- Little trading takes place in the financial markets.
- Pool rules are complex and sometimes inappropriate.

United Kingdom (2)
- Level of competition was not sufficient.
- Big generators used Pool’s loopholes to manipulate market prices.
- Electricity charges were not cost-reflective.
- The Pool was replaced in March 2001 with New Electricity Trading Arrangements (NETA).
- Spot market rules are improved.
- In the meanwhile, RECs enter the generation market.
- Price declines even though it may still be above the level of new entrant’s costs.

Nordic Countries
- In 1990, Norway became the second country to implement market-based reform.
- This created a sufficiently competitive environment.
  - Example: Vattenfall’s market share dropped from 50% to 30% after joining NordPool.
- Participation in the spot market is entirely voluntary.
- Volume of trade in the financial markets 12 times greater than the spot market.
  - This is an indicator of market maturity.
  - Market power is not concentrated.

Spain
- Liberalised in 1997 with a vertically integrated industry.
- Government allows the incumbent, Endesa to take over two smaller generators.
- To avoid abusing market power.
  - Government fixed the retail tariff.
  - Provide incentives for keeping wholesale price down.
Competition in Retailing

- UK
  - To date, 25% customers switched retailer with up to 10% savings
  - However, the cost of setting up the systems required was high (£3.4 billion)
- Nordic countries
  - 13% customers switching
  - Margins and price dispersion declines
  - Cost of introducing competition is lower than that of UK
- Spain
  - Customers obtained price reductions up to 30%
  - If a large number of customers switch on regular basis, retailers may become reluctant to buy on long term contracts
  - Absence of long term demand will result in reduced investment and price increases

Lessons Learnt (1)

- Although there is no 'one size fits all' design that should be universally adopted, all markets studied in this paper have been reasonably successful
- Importantly, lights have stayed on
- Marginal cost pricing can result to efficient market design
- Price stability mechanisms are vital

Lessons Learnt (2)

- NordPool is probably the most successful implementation
- In the UK, the Pool was plagued by market power concentration
- It is therefore important to
  - Curb market power
  - Have simple and flexible operation rules
- These issues are particularly relevant to trading across European borders