Vertical arrangements in decentralised electricity markets:
an explanation by risk allocation

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- 1. Introduction
- 2 Limited convergence of interests to long term contracting
- 3 Conditions for credible long term contracting linked to new investments

1. Introduction

- **Benchmark market model and investment in generation**
  - Vertical arrangements (integration , long term contracts) not propitious to competition
  - pure producers and pure suppliers:
  - investment risk is borne by the producer-investor
  - Decentralized model propitious to efficient investment choices

- **Failure of the model of the merchant plant:**
  - Bankruptcy of entrants
  - ⇒ Almost no investment is done under pure merchant plant model
  - ⇒ All the Investments have been done, or are done by Vertically Integrated Firms, by long term contracts or by consortia

⇒ **In generation, investment choice are dominated by**
  - risk management criteria rather than minimization expected levelized costs

So problem of long term efficiency

  - CCGTs favoured : less capital intensive and self hedged
  - Equipement mix grows away from the optimal mix
  - On the long term : higher prices for consumers

1. Introduction (following)

A priori observation: Interest of producers and large buyers to mutually hedge:

- ⇒ Long term contracts would be a solution
- ⇒ Increasing their long term surplus by sharing risks

⇒ In this respect, long term contracts would reduce two big problems :

- ⇒ investment risk re-allocated away from the sole producer:
- ⇒ reduction of transactional complexity associated to risk management

⇒ But it remains to solve several issues

- ⇒ interests are not so converging
- ⇒ large buyers do not show their interest to hedge on long term
  - ⇒Maximum contractual period of two or three years with price indexed on spot price
- ⇒Investors could be faced to hold-up risks if long term contracts at fixed price

So two contractual issues related to generation investment

- What long term arrangements are valuable to have a good balance of interests?
- What institutional conditions to help long term commitment of large consumers or retailers with producers?

1. Limited converging interests between producers and consumers (retailers/industry)

The reference arrangement: fixed-price fixed-quantity contract

1.1. What is the producers' interest to sell by long term contracts at fixed price?

- In the general case, no interest to LTCs:
  - Fixed price increases risks (all the fuel cost risk borne by the producers)
  - A contractual price aligned to specific technology cost is not market sustainable
    - Example of large consumers' contracts related to coal generation in Spain
    - Exeltium agreement in France, a political contract

- Long term hedging strategies only related to new equipment and investment
  - Need of some risk sharing :
    - Indexed price contracts: fuel price risk borne by buyer
  - Other motives: Cases with industrial and technological risks to be shared (new technologies)

1. Limited converging interests...

- 1.2. What are the large consumers' interests to LTC?

Need of risk management when importance of energy costs

- On short term volatility :
  - outprice price does not follow in timely way
- On longer prospects:
  - fuel price trend
  - Independance from Carbon price
    - (competion of location between region)
- Long term guarantee on location in a market
  - access to a specific technology equipment (non fossil fuel)

Interest for long term fixed quantity « Ribbon » purchases among other contractual pruchases

Interest to access to « stable cost » resource

1. Limited converging interests…

1.3. What are supplier's interests with LTCs ? (historic supplier without generation or entrant)

- Intrinsic fragility of suppliers if they are not backed to other assets
- Complexity of risk management of sourcing related to retail contracts: Asymetric risks
  - Mainly retail contracts at fixed price
  - Volumetric risks (The switching rules of 28-day)
  - Risk of price squeeze in case of wholesale price increase
  - Solution may be price-reactive contracts, but small part of customers only

So they dislike fixed quantity fixed price contract

- Need of quantity flexibility
- Interest to be hedged for the period of high prices
  - the ideal long term contract with producer : call option contract
  - Diversification by long term indexed price contracts with specific risk profile producer (coal plants , nuclear) ?

- Two other general consequences for LTC:
  - Risk aversion to commit in LTC
  - Symmetrically lack of credibility of eventual long term commitment at fixed price

1. Limited converging interests…

1.4. Few mutual adavantages from innovative contracts between producer & consumer

Contracts related to new equipments

1. Adaptation to the supplier's need of volume flexibility and high price hedging
   - **non-firm physical contract**
   - **option contracts**: option call with payment only when price up to strike price

But limited interest for the producer: revenue only if production

2. Adaptation to the producer' need to share some risks

Indexed price contract (fuel price)

Tolling contract:

- Purchaser (supplier) delivers fuels to generator
- Payment of a fee for capacity and availability

But limited interest for the buyer,

except if he is a large gas buyer and reseller

2. Credible long term contracting related to generation investments

2.1. LT contracting between producers with large consumers

- **1. Joint venture of one consumer with producer :**
  - Common ownnership and operation
  - *Ex : EU chemistry*

  - **Safeguards in the set of contracts :**
    - the common ownership,
    - the co-production of two products : heat and power (in excess of the industrial partner's needs),
    - The use of by-product
  - Industrial contracts at cost price

- **2. Horizontal association**: cooperative of large consumers & suppliers to access to stable cost production resource
  - *Finnish TVO consortium:*
  - **a cooperative which sell by long term PPA at cost price to its members**
  - Safeguards: common ownership

Comparison in the perspective of the industrial consumer

	Contribution to investment	Technical and commercial shared risk	Governance Issue	Margin over cost to be accepted by consumers
Consortium producers – industrial consumers	High	High	High	Low
Consumers 'cooperative of production	**Shared**	Medium (depending on the terms of PPAs)	Medium	Low to medium
Benchmark Self generation	Total	Total risk bearing Incentive to arbitrage with gas and power pruchases	Internal	

2.2. Safeguards in contractual relations producers-suppliers for investment

If risk transfer on consumers is restricted by effective competion,

Two consequences :

- The supplier's risk aversion to contract
- No credible commitment in long term contracts associated to new equipmen

The solution : a base of sticky consumers to help suppliers to contract

Possiblity of risk transfer on retail prices

- **USA: The historic LSEs** (Joskow , 2006, Chao, Oren et Wilson, 2008):
  - Provision of the last resort supplier is a powerful way to keep customers
  - Creditworthiness: Banks lend money to IPPs with long term contract with historic LSEs
- **Example of an independent nuclear project backed on LT contracts with municipalities and historic suppplliers (South Texas Project)**
- **In Europe the inactive consumers base in numerous markets**
  - Possibility LT contracts with aggreggators of small suppliers
  - The Italian « Acquirente unicco » for the purchase of Default suppliers

Combination of LTC and vertical integration for suppliers' sourcing

- Observation of suppliers' integration in the UK and some US jurisdictions
  - main reasons : risk management
    - and compensation of intrinsic undercapitalisation of pure suppliers

- Suppliers strategies: Portfolio of generation assets and long term contracts

- Remark about Portfolio management:
  - new physical assets are related to the mass market segment

- Advantage of physical assets :
  - Best hedging of price risk during peak and semi-base
  - Reduction of volume risks
  - Less transaction costs

  - Exemple: Centrica, EDF energy, E.on UK

3. Conclusion

- Regarding long term efficiency, LTC are important

- But complexity of interests of producers and consumers to commit in LTC linked to equipments

  - With industrial consumers long term LTC linked to a new equipment with producer (not an existing one)

  - With suppliers, the importance of core consumers base

- All these developments do not preclude the other long term issue of barriers to entry and imperfect competition,

  even if it supposes that the gains to have adequate caapcity and technology mix would probably dominate pitfall in imperfect competition