An analysis of the oligopolistic effects of the integration between electricity and gas suppliers in the Spanish market

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Introduction

• Gas Natural bid for Endesa (Sept 5th, 2005)
  – Also E.On (Feb 21th, 2006)

• Several competition authorities will have to issue an opinion

• We study the competition problems of the operation
  – In practice there are more elements apart from competition policy
  – In particular vertical integration
    • Rather new
    • Increasingly popular
  – Model-based
Outline

• Description of the situation
  – The market
  – The administrative procedure

• Overview of relevant competition problems

• Vertical integration
  – The model
  – The assumptions
The market

• In electricity
  – Approximate market shares:
    • Endesa 35%; Iberdrola 30%; Unión Fenosa 10%; Gas Natural 4%; ....
  – CCGTs represented 20% in 2005
    • Endesa 1200MW; Iberdrola 4000MW; Unión Fenosa 2000MW; Gas Natural 2800MW; ....

• In gas
  – Gas Natural dominates:
    • aprox 70% of the market
  – There is an ISO
    • Claims of lack of flexibility of the operation
  – CCGTs buy LNG by themselves
The administrative procedure

- Sep 5th, 2005: Gas Natural starting move
- Nov 8th, 2005: CNE on regulated business; OK with remedies
- Nov 15th, 2005: EC (not concerned)
- Dec 20th, 2005: CNE on competition; OK with remedies
- Jan 5nd, 2006: TDC: reject
- Feb 2nd, 2006: Government on competition; OK with remedies
  - Slightly softer than the ones from CNE
  - Divest gas contracts
  - Divest 4300 MW
  - Divest retail clients
  - Divest 1,500,000 gas distribution clients
  - Separate retailing from distribution in gas; indep. switching agency
- Feb 21st, 2006: E.On
- Feb 24th, 2006: New regulation issued
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Most relevant concerns (I)

- Horizontal market power in electricity
  - Static analysis (equilibrium models)
  - There is already a high concentration
    - Although not exercised due to regulatory distortions
  - Gas Natural would not increase so much Endesa’s dominant position. Not a critical issue.
  - (The Iberdrola deal)

- Horizontal market power in electricity (dynamic)
  - Gas Natural has been very active (maverick)
  - For us, very relevant concern
  - The divestiture process should facilitate the creation of new mavericks
    - Not so likely
Most relevant concerns (II)

- **Horizontal market power in gas**
  - Endesa is very small
  - Not any significant problem

- **Balancing market power in gas (alleged by Endesa)**
  - Large players are not active in short term gas deals.
  - Eliminating Endesa would reduce much liquidity here
  - Increase in unbalance cost for small parties (entry barrier)

- **Networks overlapping (alleged by Endesa)**
  - Same gas and electricity distributor in one area is bad
  - Distributors are assumed to be the only credible retailer (brand recognition)
  - Let’s have at least two
Most relevant concerns (III)

• Vertical integration
  – Input foreclosure

A situation where the vertical firm can increase his rivals’ costs by manipulating the prices in the upstream market and therefore benefit from higher prices in the downstream market.
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The model: stage 0

• International long-term gas market
  – 20-30 years
  – All players can participate there
  – All Spanish players are price-takers here
  – So it is irrelevant for the next stages
    • Just a fixed price
The model: stage 1

• National gas market
  – 1 year
  – Cournot in this market
  – But reserve gas for the electricity production

\[
\max_{V_{gas}, A_{Mgas}, p_{1gas}^g} \pi_{gas} V_{gas}^g - \pi_{Mgas} A_{gas}^g
\]

\[
s.t. \quad p_{1gas}^g = A_{gas}^g - V_{gas}^g : \mu_{gas}^g
\]

\[
A_{gas}^g \leq A_{max}^g : \mu_{A}^g
\]

– plus the optimality conditions of stage 2
The model: stage 2

- Electricity market
  - Cournot in this market
  - Opportunity gas deals priced at the national gas price
    - No access to the international price in the short term for most players
    - Limits to arbitrage

\[
\max_{p^g, p^g_{2gas}, p^g_o} \pi P^g - \pi_{gas} p^g_{2gas} - C^g_o (P^g_o)
\]

\[\begin{align*}
s.t. \quad & P^g = P^g_{1gas} + P^g_{2gas} + P^g_o \quad : \quad \mu^g_P \\
& p^g_{2gas} \geq 0 \quad : \quad \mu^g_{min \_G} \\
& p^g_o \geq 0 \quad : \quad \mu^g_{min \_O}
\end{align*}\]
The model

- Strategic optimality condition for the electricity market

\[ -\pi + \frac{\partial \pi}{\partial P^g} P^g + \mu^g_P = 0 \]

- Price
- Ability to change the price
- Interest in changing the price
- Marginal cost
The model

- Strategic optimality condition for the gas market (considers both markets)

\[
\pi_{\text{gas}} + \frac{\partial \pi_{\text{gas}}}{\partial V_{\text{gas}}} V_{\text{gas}} + \mu_{\text{gas}} + \frac{\partial \pi}{\partial V_{\text{gas}}} \mu_{\text{m}} - \frac{\partial \pi_{\text{gas}}}{\partial V_{\text{gas}}} \mu_{\text{CMG}} = 0
\]
The model

- Strategic optimality condition for the gas market (considers both markets)

\[ \pi_{gas} + \frac{\partial \pi_{gas}}{\partial V_{gas}} \left( V_{gas} g - \mu_{CMG}^g + \frac{k}{m} \mu_m^g \right) + \mu_{gas}^g = 0 \]

- Classical single-market incentive
- An increase in gas price is an extra cost for his own gas-fired generators buying opportunity gas
- Marginal income resulting from a change in the rivals’ strategies
- Impact of a higher gas price in the residual demand
- Input foreclosure
The model: assumptions

• Input foreclosure exists

• Based on the assumption of a local oligopoly for opportunity gas
  – Not access to the international market

• Since the international market is infinite
  – Eliminates the possibility of market foreclosure

• Regulation
  – Improve storage and flexibility for nationals
    • They could buy better
  – Improve flexibility for international firms making opportunity deals
  – Much better than precluding the merger
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