The opening up of the EU and the French power sector to competition

Professor François Lévêque
(francois.leveque@mines-paristech.fr)
Seoul National University
Department of economics
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Outline

• The building of the internal energy market in the EU up to now
  – A long and half-successful process
• The case of France
  – a pseudo-liberalization
• The threats on the future of the internal electricity market
  – The chocs of the economic crisis, renewables, and capacity mechanisms
The building of the internal energy market in the EU

• Competition + Integration
  – Electricity and gas deregulation (or restructuring, or liberalization) as in other network industries (e.g., telecom, airlines)
  – Creating a single market in eliminating trade barriers between EU countries as for any other goods

• A long process
  – From the 1994 initial vision of Jacques Delors to the 2014 expected achievement
  – Through new of EU laws (Regulations and Directives) adopted in different packages (first, second and third package)
The building blocks

- Setting independent regulatory authorities
- Separating networks (natural monopolies of transmission and distribution) from competitive activities (generation and supply)
- Designing wholesale markets and creating power exchanges
- Introducing retail competition
- Developing interconnections and their efficient use (transmission lines between EU member states)
- Harmonizing rules (e.g., grid code)
Some European rules
The missing building blocks

• No obligation to privatize state-owned companies
  – A limit to the trade of assets and to the europeanization of utilities
• No obligation to dismantle monopolistic incumbents through divestiture
  – Dominance position of incumbents could remain
• No true EU energy regulator (but a strong EU competition regulator, i.e., DG Comp)
• No sovereignty transfer from member states to EU institutions regarding the energy mix
The changes in market structure

• Mechanisms
  – Divestures of the incumbent (e.g., UK, Italy)
  – M&As

• Outcomes
  – Increase in concentration in countries historically featured with local vertically integrated companies (e.g., Germany, Scandinavia)
  – Decrease in concentration in countries which privatized and divided into several pieces their large utilities
  – Stability in concentration in countries with a state-owned vertically integrated monopoly (e.g., France, Belgium)
  – Europeanization of largest companies (e.g., Eon, EDF, Vattenfall)
Current concentration in generation by country

Generation market concentration (2009)

Generators’ market shares [%] - based on the installed capacity

Herfindahl-Hirschman Index (HHI)

Note: HHI is a commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in a market, and then summing the resulting numbers.

Source: Companies’ annual reports – Capgemini analysis, EEM012
Power generation market concentration in the UK (Source: Okö Institute)
Power generation market concentration in Germany (Source: Okö Institute)
Power generation market concentration in France, Belgium, The Netherlands and Luxembourg
(Source: Okö Institute)
Market share of EU electricity production

- EDF
- ENEL
- EON
- Fortum
- GDF Suez
- Gas Nat
- Iberdrola
- SSE
- RWE
- CEZ
- Centrica
- Other
Major power utilities’ installed capacity mix in the EU (Source: K. Groot, 2013)
Concentration in retail electricity market
The internal electricity market, today

• More competition and more integration regarding wholesale markets
  – An interconnected network from Portugal to Finland
  – Regional markets
  – Price convergence

• However little progress on investments in cross-border transmission lines and on competition in retail markets
Regional couplings of day-ahead markets

Coupling of coupling schemes between Nordpool & the Central Western Region
Electricity regional initiatives

- Baltic
- Central-East
- Central-South
- France UK Ireland
- Central-West
- Northern
- South-West
Hourly price convergence by region
(source: ACER, 2013)
No convergence at retail level for households (source: ACER, 2013)
Same for industrial consumers
Incumbents’ and foreign players’ presence in retail (source: ACER, 2013)

<table>
<thead>
<tr>
<th>Presence of foreign players (capital city)</th>
<th>Estimated incumbent market share in the household market – December 2012 (capitals)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;90%</td>
</tr>
<tr>
<td>&gt;50%</td>
<td>BG (1/1); HU (1/2); RO (1/1)</td>
</tr>
<tr>
<td>Between 20 and 50%</td>
<td></td>
</tr>
<tr>
<td>Between 0 and 20%</td>
<td>NI (1/4); SK (6/16)</td>
</tr>
<tr>
<td>0%</td>
<td>CY (0/1); MT (0/1); GR (0/1); LT (0/1); LU (0/6); LV (0/1); EE (0/1); PL (2/7); FR (1/9)</td>
</tr>
</tbody>
</table>
Switching rates of households (source: ACER, 2013)

<table>
<thead>
<tr>
<th>Country</th>
<th>Rate 1</th>
<th>Rate 2</th>
<th>Rate 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>4.0</td>
<td>1.8</td>
<td>2.2</td>
</tr>
<tr>
<td>Slovenia</td>
<td>5.9</td>
<td>4.0</td>
<td>1.9</td>
</tr>
<tr>
<td>Denmark</td>
<td>3.7</td>
<td>1.8</td>
<td>1.9</td>
</tr>
<tr>
<td>Norway</td>
<td>13.0</td>
<td>11.3</td>
<td>1.7</td>
</tr>
<tr>
<td>Spain</td>
<td>11.6</td>
<td>10.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Hungary</td>
<td>1.6</td>
<td>0.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Sweden</td>
<td>9.9</td>
<td>8.9</td>
<td>1.0</td>
</tr>
<tr>
<td>Italy</td>
<td>6.4</td>
<td>5.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>7.6</td>
<td>7.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Bulgaria*</td>
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<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Cyprus</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
<td>Estonia</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Germany</td>
<td>7.8</td>
<td>7.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Latvia*</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
<td>Lithuania</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Northern Ireland*</td>
<td>2.0</td>
<td>3.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Romania</td>
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<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>0.1</td>
<td>0.2</td>
<td>-0.1</td>
</tr>
<tr>
<td>France</td>
<td>3.6</td>
<td>3.9</td>
<td>-0.3</td>
</tr>
</tbody>
</table>
General assessment of the Internal Electricity Market

• A long process that has not been achieved yet
  – The European Council agreed in 2011 to complete the internal market by 2014
  – The deadline will not be respected because some progress has still to be mad
  – Above all there is a risk of regression (see part 3)

• But a unique case in the world
  – “No other ‘federal-style’ government of a major country has achieved an internal market for electricity. The US, Canada, Brazil, Russia, India or China have none of them succeed in opening up a continent-wide electricity market” (J.-M. Glachant, 2013)
The French case

• Yesterday
  – two state-owned monopolies (EDF in power and GDF in gas)
  – A large dominance of nuclear power generation in the energy mix (58 reactors; 19 NPPs: 75% of TWh)
  – No market, only planning (only administrative tariffs proposed by EDF and authorized by the government)

• Today
  – Two competing incumbents, listed on Paris Stock Exchange, with the French state as the major stockholder (EDF, 82,5%; GDFSuez, 36,7%)
  – A small competitive fringe in supply
  – A small increase in renewables, same nuclear fleet
  – A competitive wholesale day-ahead market
  – A dominance of administrative tariffs (proposed by the regulator, authorized by the government)
Installed capacity (GW)
Tiny increase in renewables
HHI wholesale market (by type of delivery)

Figure 20 Indice de concentration HHI - livraisons sur le marché de gros en T3 2013 –

Marché très concentré

Marché concentré

Source: RTE, Analyse CRE
HHI wholesale market (injection)
HHI wholesale market (withdrawal)

Figure 22 Indice de concentration HHI – soutirages en T3 2013 -

Marché très concentré

Marché concentré

Consommation clienta finals  1 376  6 430
Portes  1 763  1 630
Exportations  882  943

Sans compter EDF  En comptant EDF

Source : RTE, Analyse CRE
Retail market in France

Market segments

Figure 1 Typologie des sites

Source: données GRD, RTE, fournisseurs – Analyse: CRE
Retail market
HHI by market segment

Figure 6 Indice HHI par segment de marché

Source: GRD, RTE – Analyse: CRE
Retail market in France
Market share by market segments
(number of customers)

Figure 4 Répartition des sites par type d’offre au 30 septembre 2013

- Grands sites non résidentiels (41 000 sites)
  - Offres de marché fournisseurs alternatifs: 6%
  - Offres de marché fournisseurs historiques: 8%
  - Offres aux tarifs réglementés: 9%
  - Total: 23%

- Sites moyens non résidentiels (438 000 sites)
  - Offres de marché fournisseurs alternatifs: 6%
  - Offres de marché fournisseurs historiques: 9%
  - Offres aux tarifs réglementés: 9%
  - Total: 24%

- Petits sites non résidentiels (4.4 M sites)
  - Offres de marché fournisseurs alternatifs: 9%
  - Offres de marché fournisseurs historiques: 8%
  - Offres aux tarifs réglementés: 6%
  - Total: 23%

- Résidentiels (31.0 M sites)
  - Offres de marché fournisseurs alternatifs: 0%
  - Offres de marché fournisseurs historiques: 8%
  - Offres aux tarifs réglementés: 9%
  - Total: 17%

- Tous sites (35.0 M sites)
  - Offres de marché fournisseurs alternatifs: 6%
  - Offres de marché fournisseurs historiques: 9%
  - Offres aux tarifs réglementés: 9%
  - Total: 24%

Sources: GRD, RTE, Fournisseurs historiques – Analyse: CRE
Retail market in France
Market share by market segments
(energy volume)
Regulated retail tariffs

- **Clients raccordés au réseau de distribution** $U < 50$ $kV$
  - $P \leq 36$ $kVA$: **Tarifs bleus**
    - Petits sites
  - $36$ $kVA < P \leq 250$ $kVA$: **Tarifs jaunes**
    - Sites moyens
  - $250$ $kVA < P$: **Tarifs verts A**
    - Sites moyens et grands sites

- **Clients raccordés au réseau de transport** $U > 50$ $kV$
  - $250$ $kVA < P$: **Tarifs verts B et C**
    - Grands sites

$P =$ puissance souscrite

$U =$ tension de raccordement
The evolution of retail tariffs

Figure 12 Historique des tarifs réglementés de vente d'électricité hors taxes en euros constants 2013 (sur la base du portefeuille clients EDF à la fin 2010)

Historique des tarifs réglementés de vente d'électricité hors taxes en euros constants 2013 sur la base du portefeuille de clients EDF à la fin 2010

Source : Analyse CRE
Comparing wholesale prices and administered retail tariffs for a industry (green and TaRTam)
The introduction of a wholesale tariff for competitors to access to nuclear MWhs produced by EDF

- A new energy law adopted in 2010 obliges EDF to sell to its rival on the retail market up to 100 TWh/year at a tariff set by the regulator/government (42 €/MWh in 2013)
  - Only customers located in France could enjoy this tariff
  - This access is scheduled until 2025 in order to give time to alternative suppliers to invest in generation
- The law also states that the retail tariffs for industry will be withdrawn in 2016
- The new law has been initiated to respond to concerns competition from the Commission
- The objectives have been to ensure that French industry will continue to enjoy a low electricity price and to facilitate competition in supply
A pseudo-liberalization and a limited integration

• A large part of power is currently purchased at administered tariffs (retail tariffs for households and access tariff to EDF nuclear production) and this public intervention on price is likely to continue for a long time
  – The reason is that French policy makers want only French customers will enjoy the cost advantage resulting from the past choice to build a large nuclear fleet
• It is true that the opening-up a market to competition is difficult, not to say impossible, to achieve when the monopoly has not been dismantled and is the most cost efficient because of its nuclear assets
The threats on the internal electricity market

• Three chocs
  – Economic crisis + Fukushima Daiichi + US Shale gas

• Structural distortions
  – The internal market is distorted by national renewables schemes and will be distorted more by future capacity mechanisms
Electricity prices are diverging

Platts Year Ahead Base Power Assessment (€/MWh)

Source: Platts
CO2 and coal prices are decreasing whilst gas price remains high (forward Y+1)
Clean spark and dark spreads
Gas plants are loosing money

(Source: Roques IHS, 2013)
Wind and power generation in Europe is fastly growing

Figure 39: Aggregated solar and wind generation in Europe – 2000 to 2012 (TWh)

Source: Eurostat (2013)
Note: Estimated value for 2012.
Thanks to national subsidizing schemes

Target: 20% of energy consumption from renewables by 2020

RES integration into market differs from one country to another

Feed-in tariff → access priority → start-up and shutdown constraints on conventional generators
Feed-in premium and green certificates → no access priority → more flexibility to manage situation of excessive energy

Figure 1 Map of EU countries according to their support mechanisms for RES-E
Wind and solar production variability

Figure 40: Aggregated daily wind and solar production in Germany – 2012 (GWh)

Source: The German TSOs (2013)
Less price convergence because of renewables

Figure 14: Monthly average hourly wind production in Germany compared to price differentials in the CWE region – 2012 (MWh and euros/MWh)

Source: Platts and German TSOs (2013) and ACER calculations

Note: The price differentials are calculated as the hourly difference between the maximum and minimum price of the bidding zones of the CWE region. In 2012, the lowest price was recorded in Germany for around 70% of the periods.
Impacts of renewables on thermal plants

• Conventional plants’ revenue decreases because they operate less hours and sell at a lower price
• Sometimes they are even confronted with negative prices!
Modelled power price with and without renewables additions (Source: Roques IHS, 2013)
The development of capacity mechanisms

• Paying conventional power producers to make capacity available
  – To get back-up capacity in absence of wind or sun
  – To try to counterbalance the trend in shutting-down conventional power plants and in not investing in new capacity

• Several different national schemes are in the pipe
  – They will distort spot market and investments allocation
A new balkanisation of the internal electricity market
Europe’s unresolved energy versus climate policy dilemma

• The climate change policy implementation is inconsistent
  – Leaving the European CO2 market dying
  – Renewables development based on national and non-market schemes

• And clashes with the achievement of the internal electricity market
To conclude

• Opening-up power sector to competition is necessarily a difficult and long process
  – Electricity is a difficult product to trade as it requires hundreds of technical, legal and economical rules and standards to be agreed before it becomes tradable
  – Especially when liberalization is associated with an objective of regional integration
• Key requirements
  – Good market design
  – Independent regulator
  – Withdrawal of administered tariffs
  – Partial or total privatization
  – Breaking-up the incumbent in several pieces
  – Consistency between climate change policy instruments and energy markets
Trends in price indexes (2005-2012)