

Liberalisation of the European Electricity Industry: Internal Market or National Champions?

Fabio Domanico*

Abstract

This article offers an analysis of the present competitive and regulatory framework of the European electricity sector. Considering the complexity of this industry, the focus in this work is mainly on the problem of market concentration of incumbents in the sector as a result of the liberalization process. The new trend toward the creation of “national champions” as well as recent mergers between gas suppliers and electricity producers, raised serious concerns about abuses of market power and risks of future collusion. Taking account of investment in interconnection as well as other international and regional experiences, the internal market issue is investigated as the solution to the “risks” from liberalization.

Keywords: internal market; liberalization process; market concentration; interconnection investments.

Résumé

Cet article offre une analyse du cadre concurrentiel et de normalisation actuel du secteur européen de l'électricité. Vu la complexité de cette industrie, le focus dans ce travail est principalement sur le problème de la concentration du marché dans le secteur en raison du processus de libéralisation. La nouvelle tendance vers la création des “champions nationaux” aussi bien que des fusions récentes entre les fournisseurs de gaz et les producteurs de l'électricité, pose des problèmes sérieuses concernant des abus de puissance du marché et des risques de future connivence. Tenant compte de les investissements en interconnexion aussi bien que d'autres expériences internationales et régionales, la question de marché intérieur est étudiée comme solution au “risque” de la libéralisation.

Mot- clés: marché intérieur; libéralisation; concentration du marché; investissements en interconnexion

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1. Introduction

The European single market programme launched in 1987 aimed at Member States' removal of any physical, legal and fiscal obstacles in order to obtain the free movement of goods, services, capitals and labour in the European Union (EU). The Single Europe Act required, among other things, the abolition of state-owned monopolies, changes that also applied to the electricity sector.

In the 1990s electricity was still a heavily regulated industry in almost all EU Member States, dominated by national or regional, vertically integrated monopolies engaged in generation, transport and retail. In other words, they were the main actors from production through distribution to final consumers. Moreover, these monopolies were often state owned companies.

In general, transmission and distribution are characterized by high capital intensive segments, where substantial investment is required to maintain and to build network infrastructures and power plants, necessary to meet consumers' electricity needs. Because of the long investment periods involved, continuous planning and monitoring are indispensable.

Two reasons in particular, namely security of supply and the complexity of this commodity, justified the intervention of the State. Indeed the electricity sector is considered extremely important for the economic development for all other sectors. Moreover, the particular characteristic of electricity, such as non-storability and the continuous balance between demand and supply, supported State intervention. This situation led to the lack of economic incentives for efficiency; direct and indirect State subsidies had been the rule to maintain a stable industry.

Several problems, such as overcapacity of generators, did not foster competition resulting also in lack of incentive for innovation. Furthermore, the type of energy source chosen for use in the electricity production process, was based on internal resources, and on considerations of security of supply rather than the cheapest available (Serrallés, 2006). This led to insufficient diversification in terms of fuel sources, now recognized as an important problem which has to be addressed by European energy policy.

The paper is structured as follows. After a description of the implications of the industry's characteristics for the liberalization process, an analysis of the European regulatory framework and its achievements is presented. The trend towards horizontal and vertical integration of generators and their possible anticompetitive effects are hence studied. Following a discussion of European policy towards concentration, and

consideration of interconnection, a better implementation of the internal market is proposed as one of the main solutions to present and future risks in the conditions of competition in Europe. Lessons are drawn from other regional and international experiences. The final section offers some conclusions.

2. Some technical characteristics of the electricity industry and their implications for the liberalization process

It is important to distinguish the electricity sector from other network industries. Understanding of the particular features of this industry is cardinal to understanding the nature of regulation and competition policy in the sector and the problems involved in achieving the goals of the liberalization process.

The vertical structure of the electricity sector and the peculiar characteristics of this commodity differentiate it from other industries. Partly for these reasons it has been historically organized as an integrated, state owned monopoly in most European countries. Moreover, unlike what occurred in other industries, liberalization in the electricity sector was introduced only in some segments, such as generation and retail (or supply), while transmission and distribution networks remained natural monopolies, thus requiring some type of regulation.

The economic foundation of liberalization was that some degree of contestability could be introduced into the electricity sector, generating benefits for consumers, despite the high sunk costs related to the network infrastructure. In other segments, such as generation and those directly associated with the provision of services, sunk costs are lower or even absent. The separation of different production phases coupled with measures to guarantee access to new entrants can promote competition in potentially contestable segments (Marzi *et al.*, 2001).

Other important characteristics of this industry and of electricity as a commodity, need to be considered. Firstly, for consumers electricity is a homogenous product. It does not have any particular feature or quality that differentiates it. Secondly, production costs are heterogeneous depending on the technology and the energy sources used. Thirdly, demand is highly inelastic and there are no substitutes for it. This means that changes in prices have little influence on consumption. Fourthly, unlike gas, electricity is a non-storable commodity. It is not possible to produce more during normal periods in order to cover peak demand periods. It is necessary instead to balance demand and supply at every single point in time. Fifthly, the transmission (high voltage) and distribution (medium, low voltage) of electricity depend on the distance, but also on the resistance in the transmission network. For these reasons, in the case of congested network infrastructures, it is possible that inefficient generators located in a specific place could provide electricity more cheaply than efficient generators in other locations.

Considering all these characteristics, the transition from a highly regulated state-owned integrated monopoly to a situation of free competition poses various types of problems. For example, the reaction of big generator incumbents to the liberalization process has been an increasing trend toward vertical and horizontal concentration. What the effect

will be of this new scenario is an open debate. Moreover, there are issues over what the outcome of the liberalization process will be in term of the investments needed to maintain the infrastructure and to build new capacity. In addition, investments are also needed to create the interconnection among different Member States and hence to increase competition among various, mainly national electricity wholesale markets. This lack of interconnection capacity is one of the main obstacles to achieving an internal market. Another more general problem is whether the liberalization process will provide the right incentives for the sustainable development of the electricity industry in the long run. Will some external intervention be needed? This paper addresses some of these issues.

In the next section it is investigated how the European liberalization framework is trying to achieve these results and whether they are satisfactory.

3. The results achieved by the European regulatory framework

There are three essential goals pursued by European energy policy. First, the creation of an internal market as a means to introduce cross-country competition thereby setting the right incentives for efficiency. Efficiency gains are expected to be passed through to final consumers in the form of lower prices. The second objective is to guarantee security of supply. The third is the enhancement of environmental protection.

None of these goals are completely separate from one another, but they are complementary in aiming at different but connected objectives. For example, as discussed below, the creation of an internal market is one of the best ways to achieve security of supply.

3.1 The goal of liberalization and its problems

The first legislative framework leading to liberalization was established by Directive 96/92/EC¹. However, this directive did not achieve the expected results. The negotiated Third Party Access, the limited effect of accounting unbundling duty and the lack of obligation to create national electricity regulators did not foster the achievement of competitive markets. Another market distortion resulted from the different results achieved by each Member State in opening the electricity market to the competition (EC, 2007). For these reasons, the European Commission decided to implement a second step in order to accelerate the liberalization process and to balance the limitations of the first directive. In 2003 two measures were implemented: the second electricity Directive

¹ The goals pursued by this legislation differed. First, the directive distinguishes the regulated segments of the industry (transmission and distribution networks infrastructure) from the competitive segments (generation and supply or retail). Moreover, the directive prescribed the gradual opening of the electricity market, establishing different rules concerning non-discriminatory access to the transmission and system network, leaving it to Member States to choose between third party access (regulated or negotiated) and the single buyer model. It established the requirements for settlement of national disputes indicating two options for the construction of new generation plants (by tender and by authorization). It required the unbundling of the transmission system operators (TSOs) and the separation in accounting of transmission and distribution from other market actors.

2003/54/EC² and Regulation 1228/2003/EC relating to the regulation of cross border trade. This Directive also had some limitations; it did not eliminate the differences among Member States concerning the market design obtained and thus did not achieve the ultimate goals. Moreover, different Member States did not implement it in a sufficiently comprehensive way. As we will see, this situation made it difficult to create a competitive environment.

As already mentioned, the “second electricity package” included Regulation 1228/2003/EC regarding the cross border trade of electricity³. This regulation establishes rules on how the revenues of TSOs must be spent (for example, in capacity allocation). However, firms can obtain an exemption from these obligations if they demonstrate that revenues are being used for other investments that will enhance competition and would not otherwise have been possible. However, this exemption rule has had poor results; only two have been requested to date (EC, 2007).

As will be shown, the long term impact of liberalization on incentives for investments in interconnection infrastructure is one of the major problems that is not adequately addressed by the European regulatory framework.

As indicated by the European Commission in the Energy Inquiry (EC, 2007), there are several obstacles in the electricity sector that limit the results achieved by the European liberalization process. Several issues were raised in the report concerning the difficulty of achieving an internal market and competitive environment. In terms of achievement of a fully internal market there are five main barriers: concentration, vertical foreclosure, lack of market integration, lack of transparency, and increased prices.

The report also gave an indication of the future policy of the European Commission towards the electricity sector. Among other things⁴, the Commission intends to pay more attention to mergers and acquisitions (M&A) at European level, an issue that some would argue is being addressed too late. This will be analyzed in succeeding sections.

Moreover the Green Paper on the energy sector (June 2006) indicates the lack of incentives for investment in international interconnections (EC, 2006).

² The new Directive has four main objectives. First, it guarantees better non-discriminatory access to the network, eliminating the possibility of negotiated third party access and allowing only the regulated TPA, assuring all market operators more rights to access the network. Second, it assures a more effective legal separation between markets actors and the operators working in the transmission and distribution sectors, with the aim of limiting the risk of cross subsidization and discrimination between incumbents and new entrants. Third, it establishes the obligation for Member States to create an effective regulator with a major degree of independence from market operators but, not from national governments. Fourth, the Directive provides a timetable for the different market opening stages, giving consumers freedom of choice over suppliers. 1st July 2004 for non-domestic users (industrial, commercial and professional costumers) and 1st July 2007 for all consumers.

³ In particular it regulates such features as harmonized principles for tariff and payments between TSOs as well as rules and compulsory guidelines regarding the management of network congestion and the allocation of cross border capacity. It provides rules about incentives for private investments in the network.

⁴ It will apply strict control over state aid, implement more antitrust investigations (e.g. on vertical foreclosure for long term downstream contracts) and take a closer look at price formation in energy wholesale markets. Also the “grandfather’s rights” on capacity as barrier to entry, will be considered.

3.2 The second and third pillar: other difficulties arise

This paper is focuses on the issues of liberalization and the internal market. However, the strong complementarities and interconnections of these aspects with the other two main pillars of the European electricity policy, security of supply and environmental protection, mean that they cannot be left out of the discussion. We therefore provide a brief review of the difficulties arising in their achievement, and the influence of the internal market on them.

As mentioned above, security of supply is the second objective of European Energy Policy. Some issues related to security of supply are included in Regulation 1228/2003/EC and in Directive 2003/54/EC. The specific regulation of this areas was addressed in Directive 2005/89/EC on electricity supply and infrastructure⁵.

The political influence in this sector has already been mentioned. It has led to excess electricity generation capacity in most Member States. However, the increasing future demand for electricity and the need to maintain existing plants, require continuous investment in the sector. The European Commission calculates that in the next 20 years (i.e. up to 2027), Europe will need approximately one trillion euros to meet the growing energy demand (EC, 2006).

Even though it is difficult to assess the optimal level of investments needed to meet future demand, several authors have argued that problems will arise in the near future. The recent spate of power blackouts (and those in summer 2006) suggest that there is a pressing need for new power plants and investments in interconnection in the next few years. If on the one hand the market determines the optimum level of investments, on the other hand any lack of incentives for market players in this particular sector could delay the creation of new capacity and interconnection, thus threatening the security of supply in the short term.

Other difficulties were caused by the third objective of the European Electricity Policy, the environmental issue. Various directives have been adopted in order to protect the environment toward the sustainable development. The Directive 2001/77/EC requires Member States to increase the share of green energy sources in the production of electricity to 22% by 2010. It also requires Member States to provide incentive mechanisms to promote investments in green power generation⁶.

Directive 2003/87/EC on emissions trading introduced the European Greenhouse Gas Emission Trading Scheme (1st January 2005) under which energy generators producing lower levels of emissions can sell their excess allowances to other more polluting generators⁷.

⁵ It obliges Member States to maintain a sufficient level of network security with transparent market rules. This directive will be implemented in December 2007.

⁶ This directive and Directive 2004/8/EC regarding the promotion of cogeneration include priorities in the network access for green electricity producers.

⁷ The directive obliges electricity generators that use thermal energy sources and have an input of more than 20MW to produce only if they have a greenhouse gas permit. It is important to remember that the internal market is indispensable for the emissions trading mechanism to work properly.

While this issue is not analysed in detail in this paper, it is important to stress the interrelation between liberalization and green energy policy. If the liberalization process leads toward higher efficiency, then green energy will enable this objective by lowering the social costs of pollution and enhancing (green) power capacity. However, the share of green energy produced in Europe is far from policy target provisions (Perez-Arriaga and Barquin, 2005). Problems, such as lack of investment, the so-called carbon lock in⁸, the need to recover the investments made in old power plants, are still creating difficulties.

We should also not forget that the combination of the environmental policy and technological development has brought changes to the sector. Different studies estimate that the level of CO₂ emissions from the electricity sector represent one third of the global CO₂ emission (Unruh, 2000). The European environmental policy goal and the development of green technologies have provided an incentive for transformations in generation plants.

Technological developments in this industry should not be underestimated and the new gas fired plants have been promoted for environmental reasons. This has had an effect not only on achievement of the third pillar, but also in terms of leading to a concentration of electricity generators and gas suppliers, addition complexity to the European Electricity Policy.

In sum, the environmental pillar (along with other factors) has led to a change in technology and, indirectly, to a change in the industry structure. These changes provides some threats to competition and the creation of an internal market. Nevertheless, it can be argued that an adequate level of investment in the interconnection infrastructure is one of the solutions to these problems.

4. Concentration in the internal market

One of the main features of the electricity deregulation process is the unbundling of the network infrastructure from other segments, aimed at enhancing competition in the generation and retail segments. The process of liberalization has been followed by a wave of consolidation as a reaction from incumbents to the regulation, in order to maintain market share. Liberalization has enabled the expansion of business into other Member States creating new opportunity for profits.

One of the main objectives of liberalization is to increase the geographical size of the market and thereby to promote competition among the most efficient producers who have the largest market shares (Jacobsen *et al.*, 2006). Naturally, all incumbents in the electricity power sector are trying to maintain their position post liberalization, but the ways in which they are trying to achieve this are not always the most efficient. They are exploiting their positions as former state-owned and vertically integrated monopolies. One of the risks of concentrations is that incumbents will try to increase the barriers in order to maintain their position and to foreclose on the entrance of more efficient market actors (Ringel, 2003).

⁸ For a detailed discussion on carbon lock in, see Unruh (2000).

Therefore, although the liberalization process has led to the disintegration of national monopolies, it has not resulted in less concentration within the sector. The situation in Europe is far from one of an internal market and open competition. Different national and regional markets still exist, with the incumbents continuing to be the main actors in each electricity market. Despite liberalization, the level of concentration is quite high. For example, among the original 15 Member States, the top three European generation power firms have 60% of the market in ten different countries (EC, 2007).

Table 1

Member State	Demand (TWh)	Companies	National production company (TWh)	Concentration Ratio
Spain	260	Endesa	98	c1 38%
		Iberdrola	66	c2 63%
		Union Fenosa	26	c3 73%
		Hidrocantabrica	15	c4 79%
Portugal	51	Electricidade de Portugal	25	c1 49%
France	477	EDF	429	c1 90%
Belgium	88	Electrabel	76	c1 86%
Germany	554	E.On	150	c1 27%
		RWE	140	c2 52%
		Vattenfall Europe	83	c3 67%
		EnBW	55	c4 77%
UK	390	British Energy	73	c1 19%
		E.On UK	35	c2 28%
		RWE	33	c3 36%
		EDF Energy	25	c4 43%
Austria	62	Verbund	30	c1 48%
Scandinavia	379	Vattenfall	88	c1 23%
		Fortum	54	c2 37%
		Statkraft	34	c3 46%
		E.On Nordic	33	c4 55%
Italy	322	Enel	126	c1 39%
		Edison	48	c2 54%
		Edipower	25	c3 62%
		Endesa Italia	21	c4 68%

Source: own elaboration on data from Matthes et al.'s (2005), Vattenfall, annual report 2005, website companies.

Table 1 presents the generation capacity of the major companies compared with demand in 2004, in some of the EU15 Member State. These data and the concentration ratios of main players in the market, helps to explain the high level of concentration in national industries.

Moreover, recent M&A activity in Europe has increased at both national and international levels. National companies have consolidated and strengthened their position through the acquisition of small utilities. There is a clear path towards concentration across Europe. Some authors have predicted that in ten years there will be around 7-10 significant players in the European electricity market (Codognet *et al.*, 2003). Others argue that this trend will lead to the creation of “seven brothers” comparing it with the industry structure evolution in the oil sector and the formation of the “seven sisters” (Thomas, 2003).

There are different reasons for this growth in the size of the leading companies. Mergers have various advantages, The entrance of new firms can lead to a decrease in the market share of incumbents and the acquisition of other players reduces this risk. This situation can limit effective competition in the wholesale generation markets.

The data also reveal that the UK and Scandinavian power generation markets are less concentrated than some others. This will be discussed in detail later, but we should point out here that in these two regions the existence of regional markets is the main reason for lower concentration ratios. These two markets are good examples of the benefits of an internal market across Europe. However, in other regions and countries market concentration remains high. In some countries, such as in Spain, Portugal and Italy, although concentration ratios have decreased slightly in recent years they are still high. In Germany, large mergers in recent years have acted to increase market concentration (Matthes *et al.*, 2005). Moreover, most of bigger generators also play an important role in other segments of the industry. Some have diversified into other businesses, related or not to the electricity sector. As will become clear from the discussion, high concentration ratio and interaction in different markets can lead to anticompetitive behaviour from generators.

The focus in next two sections is mainly on the increasing trend towards consolidation implemented by the major generators. Two particular aspects and their effects are analysed: the trend towards the creation of “national champions” and a new wave of mergers between gas suppliers and electricity generators. Both strategies have been applied in recent years and are in some way essential to our understanding of the liberalization process.

5. National champions and the influence of governments

As we have shown, the European Community Energy Policy is mainly oriented towards the achievement of three goals: more competition, security of supply, and green energy, but in recent years Member States have added the objective of creating national champions. This has been promoted by the implementation of a policy favourable to mergers of national generator incumbents with other firms, mainly in the same segment.

To better understand this situation, the development of two recent mergers will be analysed.

In September 2005 the largest gas supplier in Spain, Gas Natural, launched a takeover bid for the largest electricity producer in Spain, Endesa. A few months later, in February 2006 the German electricity and gas company E.On launched a counter bid for Endesa. Overruling the decision of the Spanish competition authority, the Spanish government implemented a special decree to protect Endesa from E.On's bid. In September 2006, the European Commission declared the takeover compatible with the EC Treaty. One year later the situation is still complicated. Enel, the largest electricity operator in Italy, recently acquired 10% of Endesa, which combined with the 22% of Acciona SA, a Spanish company, made it impossible for E.On to secure control of Endesa.

The second merger involves the former-gas monopoly in France, Gaz de France (GDF) and the French company Suez, which holds the largest market share in electricity production in Belgium. This operation was clearly a quickly implemented defensive move in order to counter Suez's hostile takeover launched by Enel. Also the French government clearly applied the policy of defending its "national champion". In addition, the European Commission gave its authorization (subject to remedies) for the creation of the first energy group in Europe.

In general national mergers are seen as having a bad influence on the liberalization process, while cross-country mergers and acquisitions are seen as having a positive effect on internal market implementation (Durand, 2006).

This may be true, but it is essential to have a complete and clear picture of this strategy. The issue must be seen within a dynamic perspective. National mergers have also been implemented in the past. For example, in July 2002, the German government authorized a merger between the largest electricity producer, E.On, and the largest national gas supplier, Ruhrgas. This merger created a "national champion" in opposition to the national antitrust authority, the German Federal Cartel Office. The EdP/GdP mentioned in footnote 11 is another (though unsuccessful) example of the promotion of a national champion.

This policy seems common among incumbents, growing domestically, then competing internationally. Big players want to expand abroad to exploit the revenue opportunities in new markets deriving from the liberalization process (Durand, 2006).

This situation highlights the importance afforded to the energy sector by political decision-makers. The belief that the energy sector should be in some way "controlled" for national reasons seems as strong as it was 50 years ago and the interest of politicians continues to be as high.

In this sense, it can be argued that market based deals are positive while politically based deals are dangerous. There are some implication from the GDF/SUEZ/Enel case. If the French government was protecting Suez from the "hostile" foreign takeover by Enel, then the Italian government's reply should have been along similar lines? In other

words, in order to compete strongly at international level should the Italian government have allowed Enel to implement a merger with ENI⁹?

It is interesting that political influence in the electricity sector in protecting national incumbents is not really an efficient policy. Governments in arguing the strategic importance of the sector, have overruled national antitrust decisions. M&A should not be banned *per se*, but they should be market based and not politically motivated. In moving towards liberalization the involvement of national government should be minimized.

Political intervention in the electricity sector has been facilitated by the two-thirds rule in European merger regulation. The regulation 139/2004 on the control of concentration between undertakings specifies in article 1 that if firms involved achieve more than two-thirds of their aggregate Community turnover within one and the same Member State, then the European Commission does not have the competence to decide for the case¹⁰, the decision is left to the particular Member State.

This then implies that merger regulation should be enforced in a different way in the electricity industry. If the final objective of liberalization is to create an internal market, than the structure of the electricity sector is somewhat problematic: the interconnection capacity for cross-border trade is limited and incumbent firms in general are dominant in their home countries.

One way to solve this problem might be to change the two-thirds rule in the case of electricity and gas sectors, perhaps on the basis of the subsidiarity principle. This would allow the European Commission to intervene. However, this still leaves some questions, particularly whether the European Commission is in a better position to decide on a merger at national level than a national authority. The solution to this problem will be a better implementation of the second electricity Directive 2003/54/EC regarding the power entrusted to national antitrust authorities and in particular their independence from national government. But this does not solve the problem of the threat posed to national authorities from incumbents.

Also if a modification of the Two Third Rule of the EC Merger Regulation can be claimed today, changes in terms of M&A are already establishing a new market structure.

In the absence of European policy, Member States will continue to pursue their “economic patriotism”, attempting to address the fourth objective, of national champion status, rather than cooperating with other Member States in order to reach the real goals of the European energy policy.

Furthermore, there is no indication that a national champion will pursue the general interest better than a foreign firm. The obligation on the general interest service would

⁹ It is useful to remember here that 30% of Enel is still state owned.

¹⁰ To show how the European Commission can influence mergers in this sector, it is useful to remember that in 2004 in the merger between the first electricity company, Electricidade de Portugal, and the first Gas Utility, Gas de Portugal, which was disallowed by the European Commission. The prohibition was announced because the operation would have strengthened the dominant positions of the merging companies in that Member State. The Commission’s intervention was possible because Electricidade de Portugal generates more than one-third of its turnover outside the country (Lévêque, 2006).

be binding for national and foreign firms alike (Durand, 2006). We can suspect that governments are protecting the interests of some organized groups and not the welfare of citizens generally.

This situation shows that national governments are partially responsible for the obstacles that are still present in the liberalization process of the electricity sector. They are not completely willing to open the electricity market. It is rather ironic if we remember that the European Union was established 60 years ago, first with coal and then with nuclear energy as the main objective for integration.

In 2007, we can see how several Member States are “dragging their feet” in implementing the European directives despite the fact that the European Commission has initiated several infringement procedures against these States.

6. The integration between gas suppliers and electricity producers

In general, we can classify M&A as geographically diversified or geographically focused. Moreover we can distinguish between convergent mergers (electric utilities merging with natural gas utilities) and non-convergent mergers (electricity firms acquiring other electricity firms) (Becker-Blease *et al.*, 2005). The recent trend toward convergent mergers is the focal point of the analysis in this section.

To illustrate the changing strategy at European level, it is interesting to analyse the strategies implemented by incumbent generators. In recent years there have been several mergers between natural gas companies and electricity producers. Some examples are given below.

In Germany, in November 2000 there was a merger between RWE and VEW. Also in Germany, there was a merger in May 2002 between E.On and Ruhrgas. In Finland, the Fortum has been active in mergers with gas companies: in June 2000 it merged with Stora Enso Oyj Power (a gas producer) and in February 2002 it merged with NYA BIRKA Energi, another big player in the North Pool, particularly Sweden. In Italy, a merger occurred in August 2001 between Itالenergia and Edison (Toh, 2003).

More recently, other convergent merger cases have been addressed by the European Commission. Some examples on integrations between gas suppliers and electricity generators in the EU15 include Dong/Elsam/EnergiE2, the acquisition of MOL by E.ON, the proposed merger between E.ON./ENDESA, and the merger between Gaz de France and the Belgian Suez.

This trend it is not peculiar to the EU15 Countries; it is increasing among the new Member States. Examples are the E.ON. acquisition of the Hungarian MOL, the acquisition by the Spanish Endesa of the Polish electricity operator Zedo, and ENEL's acquisition of the Slovakian Elektrarne.

Some authors have suggested that in a few years the electricity generation market will be transformed into an oligopolistic market with a small number of actors in this segment and with high degree of vertical integration upstream in natural gas supply.

Before analysing the economic reasons behind the process of convergent mergers, it is important to mention that the technological development of gas combined cycle turbine

is a leading reason for gas becoming an important resource for electricity production¹¹. The important advantages of the gas combined cycle turbine explain why several new power plants are built with this technology but do not explain all the economic reasons behind the trend towards vertical integration between those two sectors.

First, vertical integration with a gas supplier can be motivated by reductions in transaction costs (Eikeland, 2006). In the electricity generation sector this may be true especially if remember that relationship between gas suppliers and electricity generators are in general regulated by long term contracts. However part of the explanation lies in the classical decision of whether to “make or buy”.

Second, the acquisition of firms in the gas sector, presenting numerous similarities with the electricity industry, allows synergies in terms of already acquired experience in the field.

Third, as long term contracts in the forward market, mergers allow power generation firms to hedge against the risk of price volatility in natural gas and electricity. Price fluctuations in electricity production sources generate risks, and risk is a disincentive for investment. In order to minimize these risks, firms try to get more energy sources within their portfolio.

Fourth, a vertically integrated electricity generator can decide to produce less electricity and to sell more gas to downstream competitors in periods of peak demand. In other words, generators can produce electricity, or arbitrage and sell gas if this is the more profitable option. Fifth, this strategy can be seen as a business diversification strategy and in this way it is possible to compensate the losses coming from one sector with the revenue in the other sector¹².

Finally, it is important to remember that this trend toward vertical integration is being followed by most incumbents in the electricity sector. This strategy, then, is a reaction in order to compete in a “horizontal way” with other upstream integrated electricity firms (Eikeland, 2006).

7. Possible “Risks” coming from liberalization

The picture described above is not static. Mergers will continue to occur in the future and will also involve the big players. Liberalization has allowed an unprecedented level

11 During the 1990s in fact, two main elements - the gas combined cycle turbine and the liberalization process – operated to change the connection between the gas and electricity sectors in Europe. First, the use of gas for power generation as a result of the combined cycle gas turbine and the increase in gas reserves which have tightened the connection between these two industries. This technological innovation is one factor explaining the recent trend towards the integration of these two industries. Second, the gas fire turbine power plants are more efficient in the new more competitive environment created by the liberalization process. This type of power plants in fact requires lower initial investments and shorter period to build compared to other kinds of plants. Thus, new actors and incumbents should be encouraged to invest and especially if the uncertain conditions of the market created by the liberalization do not encourage long term investments (Toh, 2003). Moreover, this kind of technology has low returns of scale, eliminating another entry barrier for new generators. Finally, the electricity produced using this technology is less polluting in terms of CO₂ than electricity from sources such as coal.

12 Different electricity producers have diversified into a multitude of businesses, which is why they are often referred to as giant multi utilities. Enron is one of the best known cases, famous mainly for results. In fact the not correct accounting system and the wrong provisions for the combination of telecommunication and energy business played a great part in the collapse of this multi utility (Toh, 2003).

of M&A in the European electricity industry. Although these concentrations can generate efficiencies, they also introduce some anticompetitive risks. The first is related to the limited cross border interconnection capacity, where the actual risk comes from increasing the market power, in several Member States or regions, of a few big actors. The second arises because the process of concentration can encourage future collusion among a few vertically integrated large players.

The exercise of unilateral market power is a familiar problem in the electricity sector. Wholesale markets are generally vulnerable to the exploitation of market power by generators (EC, 2007). This situation is especially dependent on the characteristics of electricity such as it being a commodity that cannot be stored and where demand is inelastic. Moreover, as the price is influenced by the highest offer made in the wholesale market, prices are higher when more expensive inframarginal plants are utilized.

Generators can influence prices in two main ways: they can withdraw generation capacity or charge higher prices in peak demand periods. In the former case, the generator withdraws capacity¹³ such that losses from the lower quantities being produced are more than compensated for by the gains from charging higher prices for all other quantities sold on the market. In the latter case, although the generator can charge a high price even if it does not have a big market share, it is the owner of the inframarginal power plants that are indispensable for meeting the higher demand.

Generally big incumbents have base-load plants (coal or nuclear) and hence they can exercise market power according to the first scenario presented above. On the other hand, generators owning the inframarginal plants are more interested in charging high prices during peak load demand, as in the second scenario (EC, 2007).

Transmission capacity constraints also play a role. If it is not possible to deliver electricity in one region because of transmission constraints, then in the case of peak demand the abuse of market power by a small inframarginal generator is probable in non-concentrated markets. This situation would not arise in interconnected markets: the competition from different inframarginal generators should limit the abuse of market power even in peak demand periods. Moreover, all generators would gain from increased prices in the electricity wholesale market.

Furthermore, convergent mergers make it possible to use the market power held in one market in order to influence another upstream or downstream market. Although they can be considered to be separate markets, competition problems can arise if electricity and gas players are big or dominant in one specific area. The competition problem is exacerbated if the two firms operate in the same geographical area. This guarantee to one electricity producer control over one of most important energy sources for the production of electricity in future years. Vertically integrated incumbents would be able to manipulate the wholesale price in order to create difficulties for new entrants. For example, in the absence of continuous monitoring, an upstream integrated incumbent would be able to sell its gas production at a higher price than it receives from an electricity firm in its group, making it more difficult to achieve a competitive market. To avoid such problems, the new entrant must enter the gas and electricity markets at

¹³ It can also be used for ordinary or extraordinary maintenance as a motivation to withdraw capacity.

the same time. This represents an entry barrier because it enhances the investments and costs (due to the increase in risk) for new actors.

A second category of problems is represented by the existence of particular features of this sector favouring possible future collusion as a successive step after the wave of mergers.

First, a small number of electricity power generators will dominate the European electricity market. These “brothers” will be able to monitor each other, thereby facilitating collusion. One of the characteristics of electricity as a commodity is its homogeneity, making easier monitoring among firms¹⁴. In this sense, the monitoring power of national regulatory authorities was enhanced by the second electricity directive, but at European level there is no regulatory authority in the US, which makes the continuous monitoring of prices and market anomalies difficult.

Second there is the respective upstream and downstream integration of generators in the gas sector and retail segment of the electricity sector. As already described in mergers between gas and electricity generators, this increases the entry barriers for new entrants. In the absence of continuous monitoring, vertically integrated incumbents are able to manipulate the wholesale price in order to create difficulties for new actors. Again, in order to avoid problems, this means new entrants must enter different markets at the same time.

Moreover, the theory of multimarket contacts explains us that when firms compete in more than one market, the possibility of successful collusion is easier compared to the case where firms meet only in one market. Firms will collude only if the gains from collusion will be higher than the loss in case of price war. As the number of markets increases, the cost of price war becomes higher relative to the short run gains from cheating¹⁵. Vertical (and horizontal) concentration is hence able to make difficult the entrance of new actors and it reduces the number of competitors, making easier collusion among integrated firms (Green, 2006).

Connected to this situation, the theory of cartels recognizes territorial exclusivity as one factor motivating firms to establish cartels, allowing them to exercise market power in their own territory. Even if territorial exclusivity did not exist in the electricity sector, there would still be some important issues. The network infrastructure and its constraints in terms of capacity, to some extent limit the electricity that can be introduced in the grid. In this sense, incumbents enjoy location advantages, which they can transform into market power. This can operate to split up the territory. This could be one of the reasons why there is a continuing lack of investment in interconnection

¹⁴ While there may be some consciousness about competitors’ costs, we must always remember the existence of asymmetry of information among regulators and market players in assessing costs.

¹⁵ Several authors have criticised this view, because if a firm is present in many markets, it can deviate in all of them at the same time. In other words, this situation has a double effect: on the one hand, it enhances the long-term cost of punishment but on the other, it also increases the short-term gains of cheating. However, there are different plausible circumstances where this theory can facilitate cooperation among firms (see Bernheim and Whinston, 1990).

capacity. There is no incentive for incumbents to invest in interconnection, because it would give more scope for the competition and reduce the possibilities for exploiting market power in a particular region. If on the one hand lack of cross-border interconnection seems to be making collusion among a few big firms difficult in the near future, on the other hand it can represent a common strategy for incumbents to maintain market power in their territories.

Various measures have been taken by the European Commission and national authorities, but there are others that should be considered in order to avoid the risks outlined above. The next section analyses in detail current remedies and further steps that could be taken to avoid market power and future danger of collusion.

8. Remedies against concentration in the European electricity sector

In considering M&A in the European electricity sector, we should note the role of the European Commission as the authority on general competition issue, and in particular, the introduction in 2004 of the EC Merger Regulation 139/2004. This new regulation takes into account a more sophisticated analysis of unilateral and coordinated effects in assessing mergers. It is difficult, however, to estimate prospective future outcomes from the new market structure. Furthermore, we have seen how the two-thirds rule does not always allow the European Commission to limit the political influence of national governments in creating national champions in the electricity sectors.

Codognet *et al.* (2003) report that there were 135 major M&A in the electricity sector in the period between 1998 and 2003. Certain remedies are used by European Commission and by national authorities to mitigate the anticompetitive effects generated by mergers. These can be described as behavioural and structural remedies (Motta *et al.*, 2003). Behavioural remedies are applied in the electricity industry to avoid discrimination against other operators and new entrants, while structural remedies are used to influence the market structure, for example, by requiring generation capacity divestment¹⁶.

Both of these remedies have some drawbacks. The first relates to the high level of uncertainty in these decisions in trying to anticipate possible anticompetitive problems. Moreover, competition authorities and in particular the European Commission, suffer a high degree of information asymmetry in a specific knowledge sector such as electricity (Christiansen, 2005).

This situation introduces another factor: the discretionary power of antitrust authorities in assessing these remedies. In this highly specific sector of electricity, in allowing or

¹⁶ To mitigate the market power of electricity incumbents, many regulators are using the instrument of the Virtual Power Plant. This obliges the incumbent generator to sell (on paper) part of its production to other market actors. However, this sale is virtual, the incumbent generator remains the owner of the power plant and its production does not change, but the production is controlled by another market actor, which pays the variable production costs to the incumbent. This is considered a behavioural remedy. Virtual divesture is preferred to real divesture because of the changing nature of this industry. When markets become more integrated and the incumbent's dominant position is weakened, it can recover control over its production (Willems, 2006). In this way, authorities can reduce concentration and promote competition without having to take irreversible decisions.

forbidding a merger it is necessary to have a lot of information to in order to foresee the future in this continually changing landscape. The European Commission, for example, must be able to foresee the future changes in market structure and take into account the probability that some anticompetitive behaviour will occur; moreover it must be able to establish if the remedies proposed by the parties are sufficient (Nilsson, 2005). This situation will lead to what is described in the literature as Type I and Type II errors. A Type I error would be to prohibit a merger that is not anticompetitive, while a Type II error would be allowing an anticompetitive merger. Some studies have suggested that in the case of electricity sector Type II errors are more harmful because of the low elasticity of demand (Barquin *et al.*, 2006). The exercise of market power deriving from an anticompetitive merger will produce significant losses for consumers. In the case of Type I errors, the loss to consumers depends on the extent of the lower prices¹⁷ (Leveque, 2006). However, this analysis does not imply that competition authorities should implement a rigid approach toward M&A in the electricity sector, but only that they should pay great attention to the pros and cons of mergers, and take into account the high level of uncertainty in their decision.

The FERC in the US is a good example of a central electricity authority, with specific competences in this particular sector (Newbery, 2005b). The absence of a European regulator has not become paramount because the internal market is still far from being implemented.

Due to the characteristics of the electricity sector, anticompetitive behaviour is very difficult to assess. First, it is difficult to determine whether the withdrawal of capacity is for strategic or technical reasons (breakdown, ordinary or extraordinary maintenance). Second, because of the high asymmetry of information, it is complicated to assess the costs of an electricity generator (Lévêque, 2006). In the US, for example, the Division of Energy Market Oversight (DEMO) was set up and given the task of informing the FERC on a regular basis, about day to day changes in the prices proposed by generators in the wholesale market.

If the low level of electricity market integration does not lead to the need for an authority to monitor price levels in the European electricity wholesale market, this option could be a good mechanism to monitor the market, once more interconnection has been achieved.

Some authors suggest that the provisions of Article 82 concerning abuses of dominant positions could be used as a tool to combat excessive prices in some markets and future risks from the trend towards concentration. However, these provisions have been applied only four times in 40 years and their use in the electricity sector, due to the particular features of this market, would generate particular problems in terms of assessing the dominant position¹⁸. Moreover the practice of assessing excessive prices could influence the future level of investments in generation and interconnection.

¹⁷ This statement is supported by different studies demonstrating that past M&A in the electricity sector did not achieve the goal of efficiency (Anderson, 1999, Becker-Blease *et al* 2004).

¹⁸ E.g., the definition of a geographically relevant market in the electricity industry is *time dependent*. When there is congestion in transmission, the geographic market becomes smaller for the duration of the congestion and small firms with low market share can exercise market power (Beccarello and Piron, 2005).

9. Enhancing investments in interconnection: the internal market as a solution to anticompetitive behaviour?

Following the analysis of possible anticompetitive problems resulting from the process of consolidation, and the role played by the European Commission, it is important to point out how implementation of the internal market may be a solution. It may also demonstrate how the second objective of the European electricity policy, security of supply can be achieved. Although some progress has been made, the situation is still far from being one of an internal market.

Several advantages are expected to accrue from the creation of an internal market. First, the increased competition thanks to cross-border trade will enhance interaction among competitors. The creation of an internal market is expected to increase competition as a result of major interconnection capacity and hence a reduction in the possible negative effects of high concentration at national and regional levels.

Second, as a result of greater interconnection, the need for spare capacity will decrease, thus enhancing efficiency. In this way, the risk of black-outs will be diminished with more capacity available across Europe. At the same time the level of spare capacity for each country will be lower, implying the maintenance of less costly power plants and the utilization of the cheaper inframarginal power plants available at times of peak demand. This situation will have the ultimate effect of lowering prices for consumers.

However, the achievement of an internal market in Europe is still some way off. The infrastructure has been built to meet national needs and not in anticipation of an internal market. This promotes regular network congestion problems in cross border trade, particularly in Italy, Spain and Portugal.

There are differences in prices among Member States. The day ahead price level in 2005 varied from more than 51 euro in Italy to less than 30 euro in the Nord Pool¹⁹ (EC, 2007). Lack of cross-border interconnection is a barrier to cross border trade leading a persistent differences in prices (Brunekreeft *et al.*, 2005).

The European Commission's energy enquiry has shown that most of the interconnection network infrastructure between Member States is congested, meaning that generally demand is higher than the existing network transmission capacity, with a few exceptions, i.e.those between Italy and France, Belgium and France, and Germany and Austria. Nevertheless congestion in cross-border interconnection is increasing. Several European electricity markets remain separated and imports are limited, which has significant negative effects. First, market concentration in power generation in several Member States remains high, creating the possibility to exploit market power. Second, consumers in some Member State pay more than others for electricity.

The Barcelona Council required a level of interconnection capacity in terms of imports for each Member State, of at least 10% of the internal production capacity. This target has not been met by all Member States²⁰. For some Member States, Holland being one,

¹⁹ Nordic countries reached the network connection in the 1990s creating the Nord Pool and also deriving advantages from the integration of Norway's hydro based system.

²⁰ Italy, Spain, Ireland, Portugal and Poland have not respected this requirement.

despite having respected this target, it has not solved their congestion problems (EC, 2007).

This produces several problems. It is difficult to assess the benefits of cross-border trade. It is useful to analyse the case of an electricity market integrated within a broader market. In this case the generator (within one region), with low production costs, exports energy to other connected markets. However, this means that the price increases in region where production takes place. This makes it difficult to assess whether the losses suffered by some consumers are lower than gains reaped by others (Green, 2006).

Advocates of free competition often argue that the market will provide the right level of investment in interconnection. However, there are concerns regarding the particular features of some segments of the sector. For example, the building of new and unregulated cross border interconnection capacity (merchant capacity) can pose complex problems for a range of reasons such as coordination and the difficulty involved in obtaining permission for environmental protection reasons. Moreover increasing cross country network capacity is not enough if the internal network capacity is not sufficient to transport the electricity. This is the case in many European countries, where the domestic transmission interconnection infrastructure is geared to internal needs.

The European Community has implemented two main mechanisms to promote investments in interconnection capacity.

The first is the Trans-European Energy Network Program (TEN-E) providing financial support to interconnection investments²¹ (Meeus *et al.*, 2005). However, this programme does not represent a large share of investment in interconnection capacity (EC, 2004).

The second mechanism derives from the actual framework for investment in interconnection included in the Regulation 1228/2003. Article 6 requires that revenues from the allocation of interconnection capacity (congestion revenue) must be used for one or more of three main purposes: a) ensuring the availability of allocated capacity; b) investments in increasing or maintaining the interconnection network; c) lowering the cost of network access fees.

The European Commission's energy sector inquiry shows that most transmission operators prefer to use the extra congestion revenue to reduce the tariffs for interconnection rather than investing in transmission. This is a cosmetic solution that favours both incumbents and TSOs, making entry for new actors more difficult. First, without real separation of the transmission and distribution network operators from generators, incentives to invest in cross-border interconnection infrastructure are very difficult to assess. Less interconnection certainly guarantees national market power to incumbents. In this sense, the second electricity Directive needs to be formally in order to guarantee a real separation of these segments. Secondly, the provisions of Regulation 1228/2003 need to be changed in order to provide the right incentives for TSOs to increase their network infrastructure investments. A TSO may be reluctant to invest in interconnection because this will lower its congestion revenue.

²¹ The program usually co-finances interconnection projects by up to 50% of the total cost of the investment.

One of the main explanations for the slow advancement of the internal market for electricity is the inadequate unbundling of supply activities and network businesses. When electricity suppliers also own the interconnection infrastructure, the incentive to invest can be distorted. For the same reason it is difficult for regulators to ensure non-discriminatory Third Party Access. The European Commission has been considering two ways of dealing with these issues. The first is to impose a full separation of ownership for TSOs owning and operating the network. The second is to separate ownership from the operation of the system. An Independent System Operator (ISO) will deal with this task, while generators can continue to own the infrastructure (EC, 2007). It could be argued that the first option seems preferable because it offers a good incentive for both non-discriminatory access to the infrastructure and investment in interconnection. The intervention of regulators will be still essential to ensure incentives for TSOs to invest, and to avoid the exploitation of scarcity rents.

Another solution would be the creation of incentives for generators to invest in existing interconnection capacity, giving them some priorities to recover investments. But such priorities would mean imposing a charge for using the transmission capacity and hence would lead to anticompetitive disadvantages that the European Commission would attempt to eliminate through unbundling.

In sum, increasing the interconnection among Member States may produce various advantages, mainly increased competition and efficient security of supply. Nevertheless there are problems involved in achieving this objective. The incentives for TSOs to invest in cross country interconnection are few for a variety of reasons. First, investment in the national grid is needed. Second, congestion guarantees extra revenues to TSOs. Third, it could be that TSOs preference to maintain a low level of investments is related to the interests of the national generator incumbents. In the next section, some lessons from experience in other countries will be considered.

10. Some lessons from international experiences

Before deregulation had begun at European level with the first electricity directive, a few countries had already implemented some liberalization of the electricity sector.

In the US the liberalization process began with the Energy Policy Act of 1992. In England and Wales, the process started in the 1990s with the creation of the wholesale electricity market and the unbundling of generation from transmission and distribution. Nord Pool is another example of an early liberalization.

The experiences of these countries, when isolated from their particular contexts, can provide some useful lessons for the European process of liberalization. In this section we identify useful policy advice for Europe deriving from the experiences of the US, the UK and Scandinavia.

10.1 United States: towards a common Standard Market Design

In 1992 various steps were taken in the US in relation to liberalization and to improve integration among several markets. This nation presents some similarities to Europe in

terms of size, but also some differences in the number of separate electricity markets (140 wholesale markets). These characteristics need to be taken into consideration. This market fragmentation in the US initially created some problems in terms of achieving efficiency in transmission and generation,²² but ultimately led to the achievement of effective solutions.

The liberalization reform took place mainly at national level. After the California electricity crisis²³, the Enron scandal and the collapse of other market players, FERC laid down rules to achieve some kind of market design and to improve cross border trade (Brunekreeft *et al*, 2005), and particularly rules relating to transmission access fees, congestion management, transmission investments, which were introduced in a non-compulsory way.

This set of rules, known as Standard Market Design²⁴, was inspired by the Pennsylvania, New Jersey and Maryland model. This system presents some problems such as a pre-fixed cap for electricity prices in wholesale markets (complemented by strong monitoring of prices). While prices include a margin to recover the cost of maintaining adequate generation and transmission capacity, the major criticism of this system relates to the cap: it does not provide incentives for generators to invest in new capacity since it does not allow the fixed costs of new investments to be recovered.

Empirical evidence has shown that TSOs have incentives to invest in the regional grid, but not in interconnection which gets ignored, because benefits are not fully internalized (Brunekreeft, 2003). FERC attempted to solve this problem by creating large TSOs in order to “internalize” the benefits of more interconnection (Joskow, 2005).

This was only a partial solution. The transmission congestion problem is being solved slowly with the growth of interconnection and trade between different regional markets. In Europe, on the other hand, investments in interconnection are stagnant and cross-country trade is not improving. Thus, a common set of rules for interconnection at European level would create other benefits and help to achieve an internal market (Glachant and L  v  que, 2006).

It is clear from these experiences that there would be benefits in a common set of rules for all European electricity markets: it would improve interconnection and help to establish an internal market. The imposition of price caps as in the US, would reduce market power in wholesale markets, but would also reduce the incentives to invest in new generation capacity. This is important in the context of Europe, where new generating capacity will be needed in the near future.

²² The difficulty in achieving efficiency was mainly due to the different amounts paid to each TSO and the fact that these network fees were negotiated (Newbery, 2005b).

²³ The California crisis of 2000-2001, which was the result of regulatory failure, market power and external factors, led to scepticism about liberalization of this sector.

²⁴ The characteristic elements of the Standard Market Design in the US are essentially:(1) an independent transmission system operator; (2) a single transmission tariff for all the market players giving free access to the grid; (3) a nodal price mechanism; (4) an access fee to recover transmission system costs; (5) congestion revenue rights allocated by auction; (6) wholesale market working in the first instance with power exchange and bilateral contracts; (7) continuous monitoring of the market (Beccarello and Piron, 2005).

10.2 England and Wales: generator power and effective privatization

The analysis of the British electricity market is also instructive for European Member States.

Before deregulation started, the England and Wales market was mainly concentrated in the hands of two generators. Regulators required them to divest some generation capacity to other market players in order to reduce their market power. In exchange, these generators were allowed to integrate vertically with supply²⁵.

This divestiture guaranteed substantially decreased prices demonstrating that increased competition in the wholesale market can have important positive effects (Newbery, 2004).

The first lesson for Europe from this experience is not anti-concentration (at least not market based concentration), but it underlines the importance of stronger competition. The creation of an internal market aims at eliminating any possible future risk to competition.

A second important lesson from the UK experience is related to privatisation. The British programme of privatisation in the electricity wholesale market avoided the creation of “national champions”. This allowed entry into the British market of a number of foreign generators with important market shares. Examples are the German company E.ON and the French EDF (see Table 1). Real implementation of privatisation in the electricity generation market has circumvented political influence in this sector. In other words, effective privatisation could be the “cure” for national champions in EU Member States.

10.3 The Nord Pool: integration of different markets

The Nord Pool was created in 1996 when Sweden joined the Norwegian electricity market. Subsequently, Finland and Denmark also joined. Today the market is well functioning. Various reasons, including the enhancement of competition through the regional market, have led to the lowest prices for electricity in Europe.

In order to solve congestion problems in interconnection zones, Nord Pool implemented a system of nodal pricing for transmission system capacity payments. In practice, the market is divided into various zones depending on congestion. This allows the imposition of higher transmission prices in situations of network capacity constraints. This mechanism utilizes prices to allocate the external costs of congestion. However it also creates scope for the abuse of market power in periods of peak demand. Producers can concentrate their activity on small markets creating congestion through the introduction in the grid of overload electricity (Newbery, 2005a). This, coupled with a high level demand, gives generators the possibility to increase prices and to abuse their market power in the congested area.

According to several authors, one of the main reasons for low prices in the Nord Pool market is the low concentration in generation²⁶: it limits the market power of electricity producers (Ferrari and Giulietti, 2005).

²⁵ As we have already seen in the case of convergent mergers, vertical integration has the effect of protecting against market price volatility, but it also increases the entry barriers for new actors.

²⁶ E.g., the Swedish operator Vattenfall owned 50% of the national market before Sweden joined the Norwegian electricity market, a move that has limited the market power of Vattenfall.

The results achieved by this market indicate how integrating different national markets can limit diverging prices among zones during periods of peak demand (Newbery, 2005a). This is another good reason for the implementation of an internal market in Europe where prices diverge widely among different electricity wholesale markets. Integrated markets work better. They can enhance competition limiting market power even in the case of high national concentration. Nevertheless, the market power issue cannot be solved in a congested zone, emphasizing the need for investment in interconnection capacity to avoid market congestion.

11. Conclusions

Over recent years a number of changes have occurred in the European electricity sector and the complexity of the industry has led to difficulties in implementing the liberalization process.

The theoretical framework of the European electricity policy seems well designed, but its implementation is posing numerous problems. There are several elements to it that are hampering the achievement of an internal market in the electricity sector. Although a second package of electricity directives attempted to correct the limitations in the previous legislative framework, several problems still exist.

Added to these problems, are the reactions of incumbents to the new environment created by the liberalization process, and their strategies to increase concentration. The particular characteristics of this sector coupled with the recent trend of M&A has enhanced the risk of abuse of market power and future collusion.

In absence of interconnection, the abuse of market power by incumbents is a very present threat and several characteristics of this sector can induce future risks of collusion. Lack of effective privatisation in some Member States, ineffective unbundling, the absence of regulatory authorities that are independent of national governments, and the two-thirds rule allow the formation of non-market based “national champions”. Moreover, the trend towards convergent mergers between gas suppliers and electricity generators needs to be taken into consideration. Even though on the one hand these concentrations are driven by reasons of efficiency, on the other hand they strengthen the market power of incumbents raising other anticompetitive issues.

In addition, the achievements of the second and third pillars of European electricity policy present problems. In order to maintain internal security of supply, the expected and growing demand for electricity needs to be countered with new investments in generation capacity (Finon, 2006) and transmission networks. Moreover, as indicated by the third pillar, additional generation capacity should be in the form of new green energy investments. Neither of these goals is presently being met.

In sum, while the trend towards concentration is increasing, the internal market is far from being achieved. A new European policy is needed to create incentives to invest, particularly in interconnection infrastructures to connect the different regional and national wholesale markets. The existing interconnection infrastructures do not guarantee limitation of the possible anticompetitive effects deriving from concentration in national markets (Jamasp and Pollitt, 2005).

The achievement of an internal market will solve most of the problems in the electricity sector. It will enhance competition, reducing the risk of market abuse and future collusion. Investments in interconnection are key to limiting most of the present and future risks for competition. Moreover, they will guarantee that future M&A will be for economic efficiency reasons and not to exploit market power. In addition, security of supply will be increased by the creation of an internal market. There are a number of reasons for high price levels, such as fuel costs, the need for investments, the development of renewable energy sources, new environmental obligations. A better implementation of the internal market will ensure an open and competitive industry with the best prices for final consumers. However, this is a long way from being realized.

Technology will play an important role in the future. New discoveries coupled with increasing quotas of green energy will bring new players into the market and will lead to new investments in innovation. The policies of the regulatory authorities need reinforcement to promote these changes²⁷.

The broader strategies of the big European incumbents are interesting. They are increasing their attention on different markets and new geographical areas, towards the creation of giant multi-utilities. Companies such as Suez, Endesa, EDF, RWE, E.On., are diversifying into gas, electricity, water, waste and communications services. EDF is active in the energy and waste businesses, Endesa in the energy and communication services area, and Enel has interests in the energy, water and communication services sectors. This trend of diversification by utilities will continue in the future, raising other concerns about possible anticompetitive behaviours.

This framework shows that liberalization and integration in Europe will be a process of discovery, involving continuous interactions between the market players and the regulatory authorities²⁸. The change in industry structure coupled with effective implementation of the European directives could lead in the near future to new dynamic interactions and challenges in the electricity sector.

²⁷ Different mechanisms exist to stimulate innovation and green energy, nevertheless they are still marginal. One example is represented by the feed-in tariffs (see Jacobsson and Lauber, 2006).

²⁸ Some authors argue that to achieve an internal market, a third package of directives will be needed.

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