

## **Brief academic opinion of economic professors and scholars on the project of acquisition of Endesa by Gas Natural**

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Julian Barquin, Pontificia Comillas University (Spain)

Lars Bergman, Stockholm School of Economics (Sweden)

Claude Crampes, University of Toulouse (France)

Jean-Michel Glachant, University Paris XI (France)

Richard Green, University of Birmingham (United Kingdom)

Christian Von Hirschhausen, Dresden University of Technology (Germany)

François Lévêque, Ecole des mines de Paris (France)

Steven Stoff (Berkeley, USA)

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## Executive summary

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This opinion describes what the signatories believe are consensus views in academia on three major economic questions that arise with the projected acquisition of Endesa by Gas Natural.

### **1. Do national gas-electricity mergers strengthen or deter the building of the European internal energy market?**

The belief that national energy champions would make competition more vibrant at the EU level is wrong. On the contrary, the creation of giants combining gas and electricity within national boundaries is likely to slow down the building of the internal market for the following reasons:

- National gas-electricity mergers create dual fuel barriers to entry that limit possibilities of foreign producers trying to gain a foothold in another EU market while contestable entry to electricity, helped by gas liberalisation, should be an alternative option to enlarge the competitive arena before sufficient new interconnections are built.
- Gas-electricity national champions have less incentive to grow beyond their borders. The proposed divestitures of Endesa's existing activities in other EU countries may just signal the national tropism of the new entity.
- The clearance of a locally anticompetitive merger generates an external effect by increasing suspicion of the Member State's fair play in building the internal energy market, while cooperation between Member States is crucial for achieving the European internal energy market.

### **2. For the sake of electricity consumers, should ineffective and overly-stringent remedies be viewed as equally undesirable?**

In order to protect consumers, economic theory recommends that merger control in electricity markets should be more cautious and stringent than in other sectors. That is, the antitrust authorities should be more willing to risk imposing overly-stringent pro-competitive remedies (type I errors) than to risk prescribing ineffective remedies (type II errors).

Due to the extremely weak demand elasticity, electricity markets are extremely susceptible to market power. Consequently, a type II error can easily cause a huge transfer of surplus from consumers to producers and force final consumers pay nearly the full cost of the anticompetitive outcomes of inappropriate mergers. By contrast, the cost of prohibiting

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mergers that provide efficiency gains (type I errors) will typically do very little harm consumers and suppliers, because significant efficiency gains from mergers are difficult to achieve in the electricity and gas sectors.

To keep the good (efficiency gains) without the bad (increased market power), competition law empowers antitrust authorities to impose merger remedies. But in the electricity and gas sector, the use of merger remedies is a risky game. Remedies can fail in a number of ways. Moreover, the risk of error is higher in markets recently opened to competition because competition authorities have to make guesses not only on the effects of the merger and on the effects of the remedies, but also on the future mode of competition and market boundaries before they are stabilised.

### **3. What are the potential anticompetitive effects of the projected acquisition?**

#### **Removal of an effective and growing independent competitor**

Because of some divestments by Endesa to Iberdrola, the Gas Natural/Endesa transaction is designed so that the total generation capacity of the merged company would be below the current capacity of Endesa. However, such a lowering may hide a market power increase in the energy market:

1. The market power of generators depends on whether for a given time (especially in *peak* hours) and a given place (in *load pockets*) a generator is indispensable to serve demand and to balance the system. Therefore, the unilateral effect of the merger greatly depends on the redistribution of plants.
2. As market power exercised by others has the same effects on price without the costs of withholding, the merged company can profit just as much by giving market power to an existing competitor as to itself.
3. The proposed merger could increase the risk of collusion in the Spanish wholesale electricity market, as it would remove the pressure of a strong independent new entrant. The bargaining over remedies between incumbents could also increase the symmetry between the two major Spanish producers and facilitate collusive practices.

#### **Elimination of strong and effective dual fuel competitors**

Where both Gas Natural and Endesa are incumbent distributors and retailers, the merger would eliminate a key dual fuel competition. This is because the two incumbents have strong local customer bases, established reputations and can save money in bundling gas and electricity. Moreover it would instantly give to the merged company the advantage of becoming a dual fuel incumbent.

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### **Input foreclosure**

Whereas the other anticompetitive effects would simply terminate one source of competition, the vertical integration of GN and Endesa would confer additional market power on the merged company if it was able to profitably raise the price of gas charged to competing generators. The merger could increase the market power of the new entity in three different ways that are detailed in the opinion.

### **Customer foreclosure**

In substituting exchanges through the market by exchanges within a single integrated firm, the merger may impede the development of the wholesale gas market, a key aspect of gas liberalisation. The elimination of a key purchaser may also decrease economies of scale that alternative gas suppliers would have achieved absent the merger, and thus may result in a price increase for their sales. If the integrated firm has enough market power on the wholesale gas market, it will follow the price increase rather than offer a lower price. In the short run, the foreclosure effect may concern only a small amount of gas (e.g. in excess of volumes contracted in the long term), but this would still contradict the objective of an integrated competitive gas market, that is supposed to achieve shorter contract durations and more liquid wholesale markets.

**To sum up,** vertical and horizontal anticompetitive effects of convergent mergers are several, and they may be individually strong. Clearing the merger with ineffective remedies could lead to tremendous costs born by final consumers. The merger would increase dual fuel barriers to entry in Spain, reduce the incentives for the merged company to grow outside its national borders, slow the building of the internal market, and reduce regional cooperation in Europe. We therefore strongly recommend that the pro- and anti-competitive features of the proposed GN/Endesa merger be accurately and thoroughly assessed using a detailed model of the electricity market according to established antitrust standards.

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## Introduction

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The signatories of this opinion have researched and written extensively on power system economics and competition policy (see appendix). This brief describes what we believe are consensus views in academia on some economic questions that arise with the acquisition of Endesa by Gas Natural.

In section 1, we discuss the creation of national giants in gas and electricity from a European energy internal market perspective. Our concern is that the transaction may slow down the building of the internal market. The following two sections adopt an antitrust perspective. Section 2 explains why antitrust authorities must be very cautious about clearing mergers in the electricity sector. Section 3 provides an overview of the potential vertical and horizontal effects of gas-electricity mergers.

The opinion results from research based on publicly available information. The research was financed by Endesa with the funds contributed to non profit research organisations and foundations. The opinion, however, only reflects the views of the signatories.

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## 1. The adverse effects of the transaction on the building of the European energy market

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It may seem puzzling to start with this concern. European energy law ignores mergers and acquisitions (hereafter M&As) and, for better or for worse, it does not empower a FERC-like institution to have a say in merger control. Competition law enforcement is the only EU standard. Moreover, whereas economic scholars are familiar with the assessment of the anticompetitive effects of a merger on a relevant market, they are far less well equipped to analyse market concentration from a market-development perspective.

However, one false belief and one salient fact have led us to comment on this concern.

Conventional wisdom holds that national energy champions would make competition more vibrant at the EU level. We agree that in football we would like to see a merged Real Madrid/Barça fighting with a merged Chelsea/Arsenal. We regret having to disagree with this opinion when it is applied to European gas and electricity industry, but economic competition works by different principles than does competition in sports. In sports tournaments the ultimate competition is between the top two contestants. In economics perfect competition is mainly approached as the number of competitors becomes very large, while competition between two giants is a duopoly. We have not seen yet any organisation of a yearly European energy championship, and are not aware that energy competitors have to put at risk the cups they won in previous seasons of the tournament. Furthermore, we do know that access to the industry playing field is open only when barriers to trade are removed, and that the easiest way to win a local industry race is to close access to the track lanes and the stadium to anyone who is not a member of the same national club. Moreover, if all European electricity and gas champions barricade access to their own stadiums when, where and with whom they will start training for the European cup?

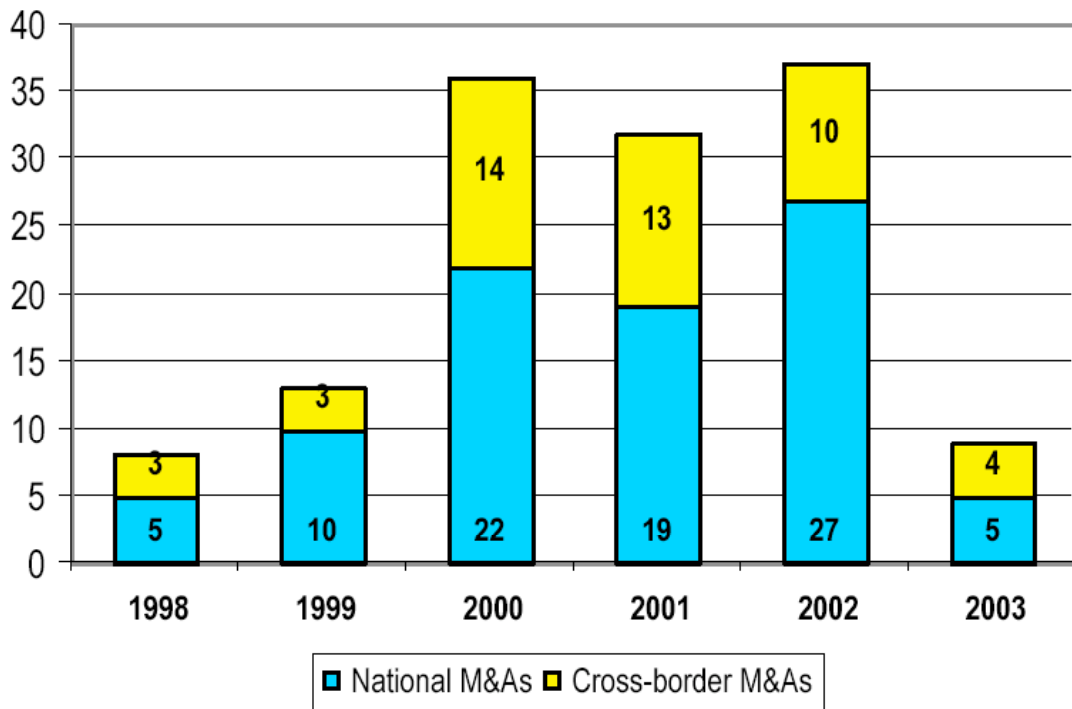
The fact is that from 1998 to 2003, there have been about 135 M&As in the EU gas and electricity sector with about one third being cross-border and two thirds national (Codognet et alii, 2003).

We would be surprised if this flow of M&As had no link with the design of the internal market and no effect on it. As scholars we are curious to know if this effect is positive or negative, because either is possible.

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### Number of mergers of European electricity companies from 1998 to 2003

(Source: Codognet et alii, 2003)



In the remainder of this section, we propose to analyse the impact on the construction of the European internal market of the acquisition of Endesa by Gas Natural (Hereafter, GN). We consider three types of effects: the contribution of the Spanish market to the European internal market; the Europeanisation of the energy companies operating in the different Members States; and the cooperation between national institutions (e.g., regulatory authorities) in the building of the European internal market.

#### **The erection of dual fuel barriers to entry as an obstacle to the European internal energy market**

There are two routes to effective competition in electricity and gas markets: the direct route is to ensure that production capacities are divided between sufficiently many competing companies so that no one has much influence over the price; the indirect route is to expose incumbent operators to a credible threat of entry if the price rises above the competitive level. But given the important and still growing concentration of both gas and electricity industries in many EU countries and given the constrained cross-border interconnections, the last door open for an electricity company to enter into a foreign market is often to generate electricity with gas bought from an “open-door to electricity” national gas company who could, in addition, offer its forces in the retail market to sell dual

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fuel services. Reciprocally, a foreign gas supplier could expect to enter the gas market by selling gas to an “open door to gas” national electricity generator, with a possible cooperation in the retail market to sell dual fuel offers. Furthermore, even relatively small entries in gas and electricity could encourage each other because the size of an efficient gas fired plant can be relatively small<sup>1</sup>. Lastly, contestable entry and gas liberalisation reduce transmission constraints (see D. Newbery, 2005). They are an alternative option to enlarge the competitive arena whenever investments in interconnections are hindered by local ‘Not in my backyard’ syndrome and the national tropism of TSOs<sup>2</sup>.

In contrast, the GN/Endesa transaction would render the Spanish industry structure more vertically compact and subsequently more closed to foreign initiative. Electricity generation, being the biggest and fastest growing customer of the gas industry, would be vertically embedded in the gas industry. The leading electricity and gas incumbent companies would instantly become dual fuel operators before any other existing or potential competitor has a chance to do so. Then, the barriers to enter the market from abroad would be higher and the risk taken by entrants would be higher too. If such an industrial structure was to be generalized in the EU, the dual fuel barriers to entry would make the corresponding markets much tougher for outsiders. This would dramatically affect the growth possibilities for the competitive fringe (being made of small new entries in countries’ incumbent yards). As a result, the European internal market would be made smaller and not bigger, with adverse effects for all European consumers. It would be reduced to very small spots and thin shores. One must keep in mind that the size of the internal market is not equal to the sum of all national markets but only to the parts that are truly open to competition in each national market.

### **Fewer incentives for the Europeanisation of energy companies**

Once each country is dominated by a national giant that integrates gas and electricity, it will be rare to find these champions engaging in cross-border competition. From this perspective, it is important not to fail to differentiate European energy firms competing on several regional and national markets without being dominant, and national champions dominating their national markets.

The reasons for lower incentives are threefold:

Firstly, their incentives to compete against each other are lower. With all countries having higher barriers to entry and tougher markets for entrants, why would a reasonable manager of any national gas-electricity champion spend time and money and take entry risks to

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<sup>1</sup> For example, the German and Swiss T-Power is going to build in Belgian Flanders a 400 MW plant; it could purchase gas from Norwegians or from Germans thanks to the gas hub of Zeebrugge.

<sup>2</sup> In the medium term, the focus should be kept on the expansion of transmission capacities, both for

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challenge another giant in its closed foreign territory? If the purpose was to make money, would profit expectations be worth the risk? If the purpose was to invest for the future growth of the company, while there is already plenty of investments to coordinate from upstream gas to downstream electricity to serve a growing market at home, would it be that attractive to invest abroad in more risky affairs? For an answer, we may have a look at the world's biggest gas and electricity M&A ever made between two national champions, namely Eon/Ruhrigas in 2002. Since the merger, how many foreign moves has Eon decided to invade any other national champion's territory? Actually none <sup>3</sup>.

Secondly, the bigger players are not necessarily the more agile in playing outside their home markets. It is true that size matters in order to increase economies of scale and scope. Moreover, an overly small company cannot expect to play an important role on the European scene because investigating and managing risky foreign scenarios consume time, money, people and skills that are all scarce resources. However, there are big and big. Until recently German RWE and Italian ENEL, each several times bigger than Vattenfall, had less invested than the Swedish company in foreign energy business<sup>4</sup>. It is not so obvious that Spanish players are too small at present. For instance, in the larger US electricity market, very few electricity companies can exhibit a bigger size than Endesa.

Furthermore, following a merger between GN and Endesa, much of these companies' time and skill will be concentrated on making the acquisition works. As a result, there is a serious concern that the resources of the merged company available to acquire a truly European dimension would not grow after the merger, but could rather decline for some years. The proposed divestitures to Iberdrola of Endesa's existing activities in other EU countries may merely signal the national tropism of the merged company.

### **A likely decrease in cooperation to achieve the construction of the European internal market**

Our concern is that the clearance of anticompetitive mergers may decrease the willingness and the ability to cooperate in the making of the European internal energy market.

The current EU legal framework for building the internal energy market is not elaborated enough to ensure that the goal will be achieved. The existing energy European directives and regulations have themselves been designed to give room to many countries in their

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electricity (Spain-France, Spain-Portugal) and natural gas (import pipelines, LNG terminal).

<sup>3</sup> Eon's investments in UK are precisely targeted in a market with a rather low concentration level compared to EU standards.

<sup>4</sup> Vattenfall is an interesting case to look at. It has quite the same home market share as Endesa in Spain (roughly half the market), but the Swedish electricity market is actually smaller than the Spanish and Swedes barely consume gas. All this did not stop Vattenfall from entering half a dozen foreign countries, while it was unable to deter in Sweden the entries of the Finnish operator Fortum (through a participation in Stockholm Energy) and of the German operator E.ON (through a participation in

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national implementations. Moreover, no common European regulatory agency has been created to fill in the gaps, for instance, in order to coordinate the required actions to enhance congested interconnections and favour cross-border trades. Legal compliance is therefore not the alpha and omega of the internal market.

Cooperation, especially at regional level, has appeared as a necessary supplementary ingredient. As recently, pointed out by a group of European scholars (J.-M. Glachant and F. Lévêque, 2005), the future of the internal energy market crucially depends on collective actions between national regulatory authorities, TSOs and power exchanges.

Of course, cooperation is confronted to free riding and trust has to be built and maintained. In this area also, legal compliance is not the alpha and omega. In fact, legal compliance with EU energy law is not sufficient to induce cooperation. For instance, the French perfectly legal situation where a 100% State-owned enterprise enjoys a share of about 95 % in a 450 TWh national market open only to the minimal EU Directive requirement has raised conflicts between France and other Member States. Neither is legal compliance with national merger control law. The legal clearance of the transaction between Eon and Ruhrgas by the German government is a good example. The merger has changed the architecture of German interests both at home and abroad. It has increased suspicion about Germany's fair play in contributing to the energy internal market.

In other terms, the clearance of an anticompetitive merger may signal a national defection in cooperating in the EU game for the building of the European internal energy market. By contrast, a rigorous assessing of mergers and their prohibition whenever they are anticompetitive reinforce trust and strengthen future cooperation.

We therefore strongly advocate that the GN/Endesa transaction be accurately and deeply assessed on its own pro and anticompetitive features according to the well-recognised and established antitrust standards.

## **2. The economic rationale for antitrust authorities to be very cautious in clearing transactions related to the electricity sector**

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According to a widely accepted legal and economic standard, mergers and acquisitions can only be authorized if consumers' welfare does not decrease as a result of the transaction. The economic assessment consists in comparing the efficiency gains from the transaction that will be passed on to consumers with the anticompetitive effects of the transaction. If the latter are larger than the former, the transaction should be prohibited. However, because competition authorities face informational constraints, errors are inevitable. Certain pro-competitive transactions are prohibited, so-called type I errors, whereas certain anticompetitive transactions are approved, so-called type II errors. This section discusses the effects of errors in the case of mergers related to the electricity sector, that is mergers between an electricity and a gas company (i.e., convergent mergers) and between two electricity companies (i.e., non convergent mergers).

### **Mergers in the electricity sector raise the concern of type II errors rather than type I errors**

As it is well known, electricity generation features several fundamental characteristics that give the industry a high potential for market power (see S. Stoft, 2002). Buyers and marketers in the middle cannot store the product to defend against a sudden price increase. Most end-users pay prices that are averaged over time and therefore are not responsive to short term price fluctuations (i.e., demand is inelastic). Both production and transmission face capacity constraints: i) the marginal cost of production at a power station steeply increases when it operates near or at its capacity limit - thus supply is also inelastic at peak times; ii) the transmission network may experience congestion - then the relevant geographical electricity market narrows and a single or a few producers may dominate the isolated local market. In a nutshell, traditional constraints on price increases, namely demand response in the relevant time frame, consumers' defection, supply substitution and potential entry are naturally weak in electricity markets.

It is also well known that in electricity the exercise of market power can be very damaging for consumers' welfare. Due to weak demand elasticity, a seeming small reduction in the competitiveness of the market can result in a huge transfer of surplus from consumers to producers. Protecting consumers from market power in electricity markets is therefore essential and type II errors can be tremendously costly for them.

Of course, type I errors are also costly for consumers. They prevent efficiency gains that could be passed on through lower prices. However, in electricity the costs of type I errors should not be overestimated. Efficiency gains that may result from mergers are difficult to achieve. Because of unanticipated events and difficulties in integrating activities, expected

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cost savings do not frequently materialise. According to Anderson (1999), only 15 % of M&As among US electric utilities have achieved the financial objectives that were expected. This pattern has been confirmed recently by Becker-Blease *et al.* (2004) on a sample of 152 proposed convergent and non convergent M&As between 1990 and 2002.

### **Role and drawbacks of remedies**

Competition law empowers antitrust authorities to clear mergers with conditions. If a remedy eliminates the anticompetitive effect raised by a transaction, a clearance under condition is a way to get the good (i.e., efficiency gains) without the bad (i.e., anticompetitive effects), whereas a merger control based on a pure 'yes' or 'no' decision would lead to a welfare decreasing clearance or prohibition.

Yet, the possibility of clearance with conditions leads to new types of mistakes. Weak type I errors occur whenever a merger is cleared with unnecessary conditions and weak type II errors happen whenever a merger is cleared with remedies that are ineffective in eliminating the anticompetitive effects.

The latter errors happen because remedies can go wrong in a number of respects:

Firstly, remedies can go wrong due to a combination of informational asymmetries and incentives of the parties that are not in line with the objective of restoring competition (M. Motta, 2004). For instance, the merging parties have better information on the assets they propose to divest than potential buyers and competition authorities. They can design a package of remedies that does not allow the buyer to be a viable competitor. Moreover, a merging firm's interest is not to select an aggressive competitor as a buyer. It is also obvious that an aggressive competitor is not always the most able to buy the divested assets, as he may not expect profits from the acquisition as high as a rival bidder with a softer strategy.

Secondly, remedies may facilitate collusion, especially when the divested assets increase symmetry and multi-market contacts (M. Motta and al., 2003). The risk of single-firm dominance decreases, as a competitor is made more powerful. However, to the extent that remedies redistribute capacity, market shares and other assets in a more symmetrical way, the risk of a collusive outcome increases. When the buyer is active in a neighbouring product market (e.g., in gas and in electricity) or in the same product market but in another geographic area, the merging firm and the buyer will have more possibilities to communicate with each other and to retaliate if one party defects. The risk of collective dominance is especially strong in electricity, where the list of conditions conducive to collective dominance maps almost exactly on to the characteristics of wholesale electricity markets (D. Newbery, 2005).

Thirdly, remedies can also go wrong because of uncertainty. An unexpected event (e.g., a

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technical or a demand change) can make the remedies ineffective (for instance, if divestment remedies in power generation are targeted on base-load plants, whereas unexpected demand growth in the future would have required divestments of flexible peak-load plants). According to a FTC study (1999) based on 35 merger cases completed between 1990 and 1994, 25 % of divestitures have not been successful in re-establishing the pre-merger level of competition. The problem is probably worse in markets recently opened to competition like electricity and gas markets, because competition authorities have to make guesses not only on the effects of the merger and on the effects of the remedies, but also on future modes of competition and market boundaries before they are stabilised. By contrast with other industries, merger control in recently liberalised markets requires competition authorities to read in the crystal ball three times. As a result, the risk of errors is higher.

Again, in so far as efficiency is difficult to achieve in mergers related to the electricity sector, whereas the cost of anticompetitive effects can be massive for consumers, one can expect the costs for consumers of weak type II errors to be higher than the costs of weak type I errors.

As a conclusion, in the electricity sector the use of merger remedies is a risky game to play with. To protect consumers, economics recommends merger controls to be more cautious and stringent than in other sectors, that is to take the risk of being wrong in prohibiting a merger or imposing severe pro-competitive remedies rather than to take the risk of being wrong in clearing a merger with possibly ineffective remedies.

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### 3. Anticompetitive effects of gas-electricity mergers

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Gas and electricity are both substitutes and complements. They are substitutes on the final market for certain energy uses (e.g., central heating, water heating, cooking) whenever consumers have to change their equipment. They are complements when power is produced by gas turbines and CCGTs. In fact in Spain, as in other countries such as the UK, the growth of demand for natural gas is fuelled by power generation. Note also that gas and electricity supply to final consumers may present redundant costs (e.g., billing costs, search costs) that may be eliminated in tying the two energies in a dual fuel offer.

There are therefore good reasons for so-called gas-electricity convergence. It results in the creation of firms owning assets, exercising capabilities and serving clients in both energies. Such an outcome may be beneficial to consumers depending on whether or not it increases the competitive pressures (e.g., a gas company investing in a CCGT plant, an electricity company attracting gas customers with a dual fuel offer and price rebates). When controlling a convergent merger, the competition authorities must assess whether the anticompetitive effects offset the benefits of convergence for the consumers.

#### Four main anticompetitive effects

The main potential anticompetitive effects of gas-electricity M&As are fourfold:

1. A horizontal effect on the electricity wholesale market through the elimination of a potential or effective competitor (i.e., the gas company's generation activity)
2. A horizontal effect on the electricity and gas retail markets through the elimination of a potential or effective competitor (i.e., the gas company in electricity retail and the electricity company in gas retail)
3. A vertical effect on the electricity wholesale market through an input foreclosure (e.g., higher price of gas to rival power generators)
4. A vertical effect on the gas wholesale market through a customer foreclosure (e.g., lower demand for rival gas suppliers).

Those multiple anticompetitive effects of convergent mergers are severe enough to have recently led two leading antitrust authorities to make a rare decision of prohibition. The Bundeskartellamt has disapproved the Eon/Ruhrgas transaction in January 2002 while the European Commission blocked the EdP/GdP transaction in December 2004. These two cases provide a sound basis to illustrate the *modus operandi* and the dangers of the four anticompetitive effects mentioned above.

The input and customer foreclosures were pinpointed in both convergent mergers. The

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general principle of foreclosure consists in raising prices and damaging competitors' performances by restricting access to a key input or a key purchaser. (i) Input foreclosure in a gas-electricity merger: the key input candidate is the gas produced by the upstream company, say Ruhrgas or GdP, and used by the rivals of the downstream company, say the competitors of Eon or EdP, who generate power with gas. Ruhrgas and GdP were found able to control the access of electricity producers to gas supply because of their dominance in gas import and in the wholesale gas market, and their involvement in gas transportation. (ii) Customer foreclosure in a gas-electricity merger: the key purchaser is the electrical company of the new entity. Its sourcing of gas for power plants and final dual fuel consumers may be ensured by the upstream gas division and therefore may be withdrawn from the market. In *Eon/Ruhrgas*, the Bundeskartellamt feared that the merger would foreclose as much as 20% of annual gas sales in Germany. In *EdP/GdP*, the Commission feared that, when the market opens to competition, the merger will foreclose all free competitive gas demand stemming from EdP for operating its CCGT generation plants and an affiliated local gas distributor in charge of retail supply.

In addition to vertical effects, the decision of European Commission in *EdP/GdP* also illustrates the anticompetitive horizontal effects a gas-electricity merger may raise. Commonly, horizontal effects occur because the two merger firms are effective competitors in certain markets. For instance, GN effectively competes with Endesa on the Spanish electricity wholesale market because GN is present on that market with a market share around 5%. Horizontal effects may also occur because firms involved in the transaction are potential competitors in some markets. In *EdP/GdP*, the European Commission found GdP to be a potential competitor of EdP in power generation, wholesale supply and ancillary services. The Commission established that GdP has strong incentives and the ability to build new CCGTs plants thanks to (i) its direct, flexible and economical access to gas, (ii) its concern to compensate future market losses when Portuguese gas markets open to competition and (iii) its interest in hedging electricity price volatility to compete on supply in the retail electricity market. As suggested by this last point, the Commission also found that GdP is a potential competitor of EdP vis-à-vis final consumers. Absent the merger, GdP is likely to sell electricity to its gas customers. Reciprocally, EdP is also a potential competitor of GdP in the retail market. It has incentives to trade gas at a larger scale, to spread its risks and achieve cost savings through economies of scale and to expand its activities in gas supply to its electricity customers. Both would enjoy the advantage of being the incumbent gas or electricity retailer and distributor (large customer base, well known brand, frequent customer contacts). As well documented by the UK case, such cross entries are the main competitive drive in the retail markets for small customers.

To conclude, it is important to note that vertical and horizontal anticompetitive effects of convergent mergers are several, and that they may also be very strong separately:

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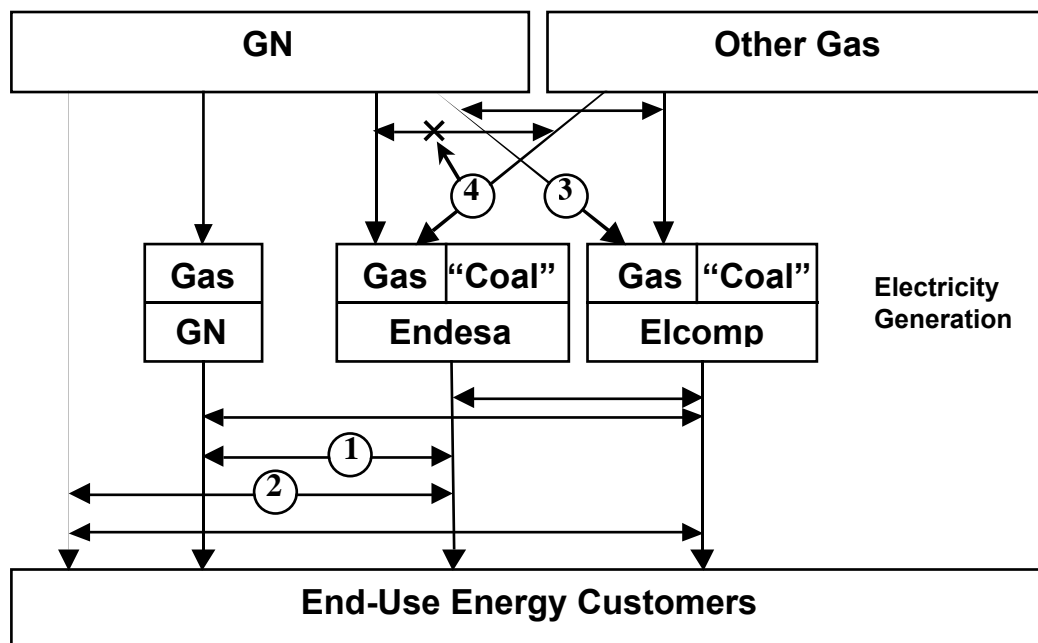


Eon/Ruhrgas was blocked on the grounds of vertical effects alone whereas in the case of EdP/GdP horizontal effects were claimed to be harmful enough although the two Portuguese firms were only potential competitors.

### The case of the projected GN/Endesa merger

In the case of GN and Endesa, the two merging firms are already today effective competitors. Moreover, GN is also effectively or potentially an important supplier of gas to Endesa and to the other electricity producers for their CCGTs (hereafter, Elcomps). The consequence is that none of the four anticompetitive effects mentioned above can be excluded in case of a merger between GN and Endesa (hereafter, the new entity is noted GNEnd).

They are illustrated in the diagram below. The horizontal arrows represent sources of competition before the merger. Three of the four anticompetitive effects, 1) elimination of a competitor, i.e. the gas company, in power generation, 2) removal of dual fuel competition between the merged companies in retail markets, and 4) customer foreclosure in the wholesale gas market, would simply terminate one source of competition, but effect 3) gas input foreclosure in power generation could confer additional market power on the merged company and could allow it to profitably raise the price of gas competing generators.



Each potential effect therefore deserves a close examination by antitrust authorities. Hereafter, we consider them successively.

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### **Horizontal effect on the wholesale electricity market**

GN has been a participant in the Spanish wholesale electricity market since 2001. It operates its own power plants and intends to build more CCGT plants in the near future. It is therefore already an effective competitor that will be eliminated. This elimination may raise unilateral and coordinated effects.

The transaction is designed in such a way that (i) the market share of the new entity GNEnd will be below the current market share of Endesa (ii) the market share of Iberdrola, the planned buyer of divested assets, will increase and (iii) the energy mix of Endesa and Iberdrola will become more similar.

It is important to understand that such a change does not necessarily mean that only the market power of Iberdrola may increase. In electricity the potential for market power depends whether for a given time (especially peak and off-peak hours) and a given place (especially in load pockets) a generator is necessary in serving demand. It is better measured by simulation models or, at least, by specific structural indices (e.g., Pivotal Supplier Index, Residual Supply Index) than by market shares in total output. In other terms, the unilateral effects of a merger greatly depend on the reallocation of plants i.e.g, the plants that are acquired through the merger, the plants that remain within the new entity and the plants that are sold to third parties. Only an in-depth investigation may permit us to conclude whether the merger (i) increases the market power only of Iberdrola or of Endesa, (ii) increases the market power of both Endesa and Iberdrola (iii) does not increase the market power of either Iberdrola or Endesa.

The current and future concentration in Spanish power generation deserves a few remarks. Note that the pre-merger HHI is already high, around 2700, and could grow higher with the proposed divestments to Iberdrola. In principle, divestitures should decrease the market share of the larger supplier and increase the share of a smaller supplier. Then with all else equal, market power should decrease. For example if shares change from 60/40 to 50/50, market power decreases (with an HHI decrease from 5200 to 5000). However, in the present case, the elimination of GN's small market share and the divestiture to an already large supplier are likely to undo this effect. For example, if shares are (5,40,30,15,10) for GN, Endesa, Iberdrola, and the two other competitors, and GN's 5% plus 5% from Endesa are transferred to Iberdrola to achieve a distribution of (0,35,40,15,10) market power increases (with an HHI increase from 2850 to 3150). Moreover, the merged company could be just as happy to give market power to an existing competitor as to itself. In the present case, it would be just as important to watch for new market power for Iberdrola as for GNEnd.

Furthermore, the risk of collusion may also increase because of the proposed merger. Certainly, GN is a small player in electricity. It is however a very different player: it is a

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recent entrant; it does not possess compensation for stranded costs (i.e., CTCs); it only owns CCGTs; it is vertically integrated on gas supply. Being a maverick, it lessens the risk of collusion and therefore its elimination increases the risk of collusion. Moreover, as mentioned above, the transaction results in more symmetry between the major Spanish electricity producers in terms of their energy mixes. Such an increase in symmetry may also increase the risk of collusion: when firms are homogeneous incentives to collude are higher, tacitly agreeing on a common plan of action is easier as well as the monitoring of defection. Finally, as pointed out in section 2, the bargaining over remedies between incumbents may facilitate collusive practices. Considering all these factors, the proposed transaction may increase the risk of collusion. An in-depth investigation is necessary to appreciate it.

In conclusion, the proposed GNEnd merger would lead to increased concentration and market power problems in the Spanish electricity wholesale market. Note that concentration is already a problem in the Spanish market and therefore it should not be aggravated. For instance, the White Paper of our esteemed colleague I. Perez Arriaga proposes a mechanism to mitigate market power in setting a cap on effective generation capacity at 22% on-peak and 19% off-peak, that is an HHI around 2200.

#### **Horizontal effect on retail markets**

Historically, electricity retail and distribution are ensured in Spain by regional vertically integrated monopolies. Today both activities are legally unbundled and the liberalised market has developed. However, Endesa and Iberdrola are still the main players in distribution - they own 80% of the distribution network – and in retail. In their respective distribution regions they account for more than 3/4 of the number of connections (or points of supply) and of delivered energy. In the still growing gas retail market, GN owns an almost monopoly in distribution and retail.

Unsurprisingly, at a local level, GN is the main challenger of Endesa in the electricity retail markets where Endesa is the incumbent electricity distributor and retailer (and reciprocally in the gas retail markets): GN is the second supplier in terms of points of supply and delivered energy in Endesa's distribution regions. As already argued the gas company is usually the most aggressive competitor because it already has a local customer base (its gas consumers), benefits from an established reputation and can save money in bundling electricity with gas. In Catalonia, for instance, 4/5 of households who shifted from Endesa to another supplier have contracted with GN. The acquisition of Endesa by GN would therefore eliminate a key competitor. The remaining competition in the local retail markets dominated by the merged company would mainly depend on the aggressiveness of other electricity operators, but without the advantage of being local incumbent suppliers.

In regional markets dominated by other incumbent electricity companies, GNEnd would

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keep the position of incumbent gas retailer (if the area is supplied in gas), but with an increased ability to bundle electricity with gas. Yet, if the proposed divestment of gas retail activities to Iberdrola occurred in the same area where it is already the incumbent electricity distributor and retailer, the deal would spread the effect of removing a key competitor beyond the regions where GN and Endesa's retail activities overlap. At a national level, the risk of an increase in collusion would not be null and would deserve a close analysis.

#### **Vertical effect on the wholesale electricity market**

Vertical anticompetitive effects are more complex to analyse than horizontal effects. They depend especially on the presence of market power at the upstream or downstream level, on relative performances of competitors, and on the effect of their elimination on consumers' surplus. In the following part of this section, we assume that, due to limited alternative gas sources, GN can influence the supply of gas as a primary fuel to its own electricity generators, to the gas-fired plants of Endesa and to the gas-fired plants of Elcomps. Under this assumption, one can expect that the merger would change the vertical relationship between GN, as an input supplier, and the electricity producers. Whereas the other anticompetitive effects would simply terminate one source of competition, the vertical integration of GN and Endesa would confer additional market power on the merged company and allow it to profitably raise the price of gas competing generators. It is important to trace the source of this additional market power through the electricity market because it is more inclusive than might be expected.

In the short run, one can expect some efficiency gains for the supply of gas to Endesa's plants. The internal price of supply between two production units belonging to the same corporate entity is likely to be lower than the price negotiated by a firm with independent for-profit firms. Consequently, after the merger, the merged entity GNEnd might benefit from the same lower price of gas as the GN's plants uses to pay, lower than the prices paid by Elcomps. This would be beneficial since the reduction of any margin has the positive effect of increasing production and reducing the deadweight loss on the intermediary market for gas. But it also means that one competitor on the electricity market, GNEnd, would have a lower cost of production. Without strong competitive pressures in power generation, one can fear that GNEnd's efficiency gains would not be passed on to consumers through lower prices, but could contribute to harmful horizontal anticompetitive effects (e.g. an increase in market concentration, as lower production costs should increase the market share of GNEnd at the expense of its competitors).

Moreover, the vertical effect would confer additional market power on the merged company and would allow it to profitably raise the price of gas competing generators. GN has two sources of profit from an increase of the price of gas sold to Elcomps: the revenue from the gas sale and the increase in electricity prices paid to its own gas-fired generation.

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Absent the merger, GN owns relatively little generation; therefore, the electricity price effect is relatively weak. After the merger, GN would profit from increased electricity prices not just for its previously-owned generation and the gas-fired generation of Endesa, but it would also profit from increased electricity prices paid to almost all non-gas-fired generation owned by Endesa. This is because other types of generation, such as coal, are generally selling power whenever gas-fired generation is in use. Raising the market price of electricity benefits all producing generators equally. There is always a cost as well as a benefit to exercising market power, and that cost would be a reduction in demand for GN's gas by Elcomps. But, after a merger, there would be a much greater increase in profits that could be used to offset this loss. Consequently greater price markups to Elcomps should be expected. It might still be argued that end-users could partially protect themselves from such electricity price increases by simply signing long-term contracts with non-gas-fired generators (if any) such as coal and nuclear units. But forward contract prices are set relative to expected spot prices, which feel the full impact of gas-price increases. Hence electricity customers would gain no protection by using forward markets. Raising the cost of gas would raise the cost of all electricity produced with lower marginal costs than costs of gas-fired units. Specifically, if the marginal unit was a gas unit half of the time, and these units had a cost increase of \$2/MWh (or are owned by GN), the average price of electricity over all hours from nuclear, coal, wind and run-of-river hydro would increase by \$1/MWh. This would be true even if only 20% of all power was generated with gas-fired units.

In effect, GN's default position, which is how much it would earn in the case of a negotiation breakdown, would be enhanced by the takeover as it could use more gas in its own turbines. If in the short run, the gas price billed to Elcomps is probably fixed because it is part of contracts signed in the past, for the future, harsher negotiations should result in a progressive increase in the gas price billed to competitors. For the same reason, the merger would increase GN's incentives to keep inefficient allocation mechanisms, such as "first come, first served", for the use of some essential gas infrastructures (pipelines, LNG terminals) in order to keep its market power on gas imports.

But, there is also a risk of contingent foreclosure in peak-load generation. Gas is not an essential input to produce electricity when coal-fired stations are available. However, to produce electricity at peak periods, gas is the best choice because it has lower fixed costs and is used in flexible plants that can respond within minutes to the dispatcher's order. After the hydro reservoirs, gas turbines are the best candidates to do so. When the hydro resources are limited by natural inflows, the largest gas supplier can easily exert a strong power and exclude some competitors.

Albeit complicated, the vertical effects of the GN/Endesa transaction on the wholesale electricity market deserve a close examination.

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### **Vertical effect on the wholesale gas market**

Today and tomorrow Endesa's sourcing of gas for power plants and final dual fuel consumers may be ensured by GN and therefore may be withdrawn from the market. In substituting exchanges through market by exchanges within a single integrated firm, the merger may impede the development of the wholesale market, a key aspect of gas and electricity liberalisation as we already pointed out. Note that the elimination of a key purchaser of gas may decrease economies of scale that alternative suppliers would have achieved absent the merger, and then may result in a price increase of their sales. If the integrated firm has enough market power on the wholesale gas market, it will follow the price increase rather than offer a lower price.

However, long term contracts for gas concluded before the merger would not be affected in the short run. The foreclosure effect may concern only a small demand of gas (e.g. CCGTs short run requirements above long term contracted volumes), but this would still contradict the objective of an integrated competitive gas market, that is supposed to achieve shorter contract duration and more liquid wholesale markets. Due to the lack of transparency of the wholesale gas markets, more information is needed to assess the possible effect of gas demand foreclosure. An in-depth investigation is necessary to appreciate it.

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## Appendix : Short bios of signatories to the brief

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### **Julian Barquin, Pontificia Comillas University**

Julian Barquin is professor at Universidad Pontificia Comillas de Madrid (ICAI). He is a specialist of Power Systems with a special interest in the Economics of Energy (he has been Visiting Scholar at the Department of Applied Economics at the University of Cambridge). He has been involved in the development of different models for the simulation of oligopolistic and non-oligopolistic electricity markets, including the antecessor of the one used in the White Paper on Electricity Reform in Spain, as well as in several studies on market power assesment in electricity markets.

### **Lars Bergman, Stockholm School of Economics**

Lars Bergman is professor of economics at SSE since 1984. Since 1991 he has an endowed chair in energy and environmental economics. He is a Member of the Royal Swedish Academy of Engineering Sciences and Chairman of the Swedish Association for Energy Economics which serves as a platform for regular meetings between academics, power industry representative, regulators and other parties interested in the development of the energy sector in general and the electricity market in particular. He has served as an expert in several government commissions on energy and environmental policy issues and as an advisor to the Sydkraft Research Foundation. He is also associated with SNS (Swedish Centre for Business and Policy Studies) and participates frequently in SNS meetings and conferences with industry representatives.

### **Claude Crampes, University of Toulouse**

Claude Crampes is Professor of economics at University of Toulouse and Research Director at IDEI (Institut d'Economie Industrielle). He is a specialist of Industrial Organization with a special interest in the Economics of Energy. He published breakthrough articles in *Economica*, *European Economic Review*, *Rand Journal of Economics* and *Journal of Regulatory Economics*. He recently co-signed a paper with N. Fabra on the Spanish Electricity System in a special issue of *The Energy Journal* edited by D. Newbery.

### **Jean-Michel Glachant, University Paris XI**

Jean-Michel Glachant is permanent professor and Head of the Department of Economics at the University of Paris XI, as well as head of the "Electricity Group Jean Monnet" at the ADIS research center. He edited "*Competition in European Electricity Markets: A Cross-Country Comparison*" (Edward Elgar, 2003), "*The Economics of Contracts. Theory and Applications*" (Cambridge University Press, 2002). He took part in the study "*Indicators of*

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*Internal Market of Electricity*” for the European Commission - DG TREN (2000-2001). He recently coordinated with François Lévêque a large European research programme on Electricity Reforms (SESSA) and co-authored “Electricity internal market in the European Union – What to do next?”. Jean-Michel Glachant is a member of the International Society for New Institutional Economics, member of the International Association for Energy Economics, and the Association Française de Science Economique.

**Richard Green, University of Birmingham**

Richard Green is professor of economics at the University of Birmingham and Director of the Institute for Energy Research and Policy. He has been studying the economics and regulation of the electricity industry since 1989, just before the industry in England and Wales was privatised. With David Newbery, he was responsible for the most influential study of competition in the British electricity spot market. He has spent a year on secondment to the Office of Electricity Regulation, and has been a visiting Fellow at the World Bank Institute, the University of California Energy Institute and the Massachusetts Institute of Technology.

**Christian Von Hirschhausen, Dresden University of Technology**

Christian von Hirschhausen is professor of energy economics and public sector management at Dresden University of Technology, and research professor at DIW Berlin, the German Institute for Economic Research. He is specializing in applied industrial organization issues in the energy sector, with a focus on natural gas economics. Previous positions as Visiting Professor, TU Berlin University of Technology, Workgroup for Infrastructure Infrastructure Policy (WIP), Member of the German Group of Advisors to the Government of Ukraine.

**François Lévêque, Ecole des mines de Paris**

François Lévêque is professor of economics at Ecole des mines de Paris and visiting professor at University of California at Berkeley. He is Director at Cerna, the research centre of the Ecole des mines in industrial economics. François Lévêque has published several books in antitrust economics (*Antitrust, Patents and Copyright*, Edward Elgar, 2005; *Merger Remedies in American and European Union Competition Law*, Edward Elgar 2003) and in Economics of Regulation (*Economie de la réglementation*, Editions La Découverte, 1999 et 2005; *Transport Pricing of Electricity Networks*, Kluwer Academic Publishers, 2003). He recently coordinated with Jean-Michel Glachant a large European research programme on Electricity Reforms (SESSA) and co-authored with him a policy report “*Electricity internal market in the European Union – What to do next?*”.

**Steven Stoft, Berkeley**

Steven Stoft has a twelve-year experience in power market analysis and design. He is the

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author of *Power System Economics, Designing Market for electricity*, IEEE, 2002. He is now an advisor of PJM and California Electricity Oversight Board. Previously. He was a Senior Research Fellow at the University of California Energy Institute, had worked on regulatory and restructuring issues at Lawrence Berkeley National Laboratory and at UCEI and as an economist with the Office of Economic Policy, Federal Energy Regulatory Commission.